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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, July – 2024

FUNDAMENTALS OF AGRICULTURAL ECONOMICS

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 X 1 = 20 Marks**

1	The remuneration paid for the use of labour is ----------	1 Mark	L1	CO1
2	Macro Economics is otherwise called as ----------	1 Mark	L1	CO1
3	Economics is "An enquiry into the nature and causes of the wealth of nations" defined by ----------	1 Mark	L1	CO1
4	Father of Economics is ----------	1 Mark	L1	CO1
5	---------- is the study of man's actions in the ordinary business of life	1 Mark	L1	CO1
6	---------- goods have only value in use and no value in exchange	1 Mark	L1	CO1
7	For ---------- goods, demand is more than supply	1 Mark	L1	CO2
8	An example for external, non-material and non-transferable good is ----------	1 Mark	L1	CO2
9	The slope of price line in Indifference curve technique indicates ----------	1 Mark	L1	CO2
10	According to Engel's law of family expenditure, as the income of the family increases, the --------- expenditure on luxuries and comforts increases	1 Mark	L1	CO3
11	The slope of demand curve is ---------- to origin	1 Mark	L1	CO3
12	In case of inferior goods, if price of the commodity is increased, demand for the commodity----------	1 Mark	L2	CO3
13	Storage function gives ---------- utility to the product	1 Mark	L1	CO4
14	Expand LEMU___	1 Mark	L1	CO4
15	Apples and oranges are considered what kinds of goods. a) Expensive goods b) Complimentary goods c) Substitute goods d) a and b	1 Mark	L1	CO4
16	---------- refers to various quantities of goods offered by the seller at various prices	1 Mark	L1	CO4
17	Write the formula for MC ----------	1 Mark	L1	CO5
18	In monopolistic competition, the product is ----------	1 Mark	L1	CO5
19	---------- is the amount of money available with the private individuals to spend.	1 Mark	L1	CO5
20	When the paper money is backed up by an equal amount of gold or silver kept in reserve by the issuing authority, it is called ----------	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 X 3 = 30 Marks**

1	Differentiate between micro and macro economics.	3 Marks	L2	CO1
2	Give broad classification of goods.	3 Marks	L3	CO1
3	Explain the degrees of elasticity of demand with the help of diagrams.	3 Marks	L3	CO2
4	Write the importance and assumptions and importance of LDMU.	3 Marks	L1	CO2
5	Write about consumer`s surplus and give its importance.	3 Marks	L2	CO3
6	Explain different cost concepts with the help of diagrams.	3 Marks	L3	CO3
7	Write the all the factors of production in economics and their characteristics.	3 Marks	L4	CO3
8	Classify the market based on structure and list out the characteristics of perfect competition.	3 Marks	L3	CO3
9	Explain different degrees of elasticity of supply.	3 Marks	L1	CO4
10	Explain different concepts of national income.	3 Marks	L3	CO4
11	Differentiate between direct tax and indirect tax.	3 Marks	L3	CO5
12	List out prevailing economic systems in the world and enlighten main features of mixed economy.	3 Marks	L3	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, July – 2024

SOIL AND WATER CONSERVATION ENGINEERING

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	----------is a specialized field of study that focuses on sustainable management and conservation of soil and water resources.	1 Mark	L1	CO1
2	---------- reduces the productivity of cropland by removing and washing away plant nutrients and organic matter.	1 Mark	L1	CO1
3	Erosion is a three-phase process involving ----------	1 Mark	L1	CO1
4	Expand the DDP ----------	1 Mark	L1	CO1
5	Erodere" which means ----------	1 Mark	L1	CO1
6	The rills are shallow drainage lines ----------deep and ----------wide.	1 Mark	L2	CO2
7	When the particles of soil are very small (lessthan0.1mm) they are carried over long distances by the wind called ----------	1 Mark	L2	CO2
8	When rills get larger in size and shape due to prolonged occurrence of flow through them and cannot be removed by tillage operation, these are called ----------	1 Mark	L3	CO2
9	----------is the removal of soil in thin layers by raindrop impact and shallow surface flow.	1 Mark	L3	CO2
10	Expand USLE ----------	1 Mark	L3	CO2
11	----------is a spillway whose discharge is conveyed from the upper reach of the channel or a reservoir to the downstream channel level through an open channel placed along a dam, abutment (supporting wall), or through a saddle.	1 Mark	L2	CO3
12	----------are recommended for areas with low annual rainfall (<600 mm), agricultural fields with permeable soil, and having a land slope of < 6%.	1 Mark	L3	CO3
13	Chute structures are useful for gully head control and they could be used for drops up to ----------	1 Mark	L2	CO3
14	Expand PGCS ----------	1 Mark	L2	CO3
15	----------are constructed on hillsides that have gradients in the range of 15 to 30% or more and the land surface has a medium to high degree of soil erosion.	1 Mark	L1	CO3
16	----------is a system of grouping soils primarily based on their capability to produce commonly cultivated crops and pasture plants without deterioration over a long period.	1 Mark	L1	CO4
17	The ----------are constructed by excavating the soil from the ground surface and construction is limited to a land slope of less than 4% and the water table lies within 1.5-2 meters depth from the ground surface.	1 Mark	L3	CO4
18	----------is defined as the method for inducing, collecting, storing, and conserving local surface runoff for agriculture in arid and semi-arid regions.	1 Mark	L1	CO4

19	In the land capability subclasses "t" describes ----------	1 Mark	L3	CO4
20	----------Soils have severe limitations that restrict the range of crops or require special conservation practices or both.	1 Mark	L2	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	What are the Causes of Soil Erosion?	3 Marks	L1	CO1
2	Write the objectives of the 10^{th} and 11^{th} five-year plan period program.	3 Marks	L2	CO1
3	List the different programs taken up by the government for soil conservation in India and also write about the desert development program.	3 Marks	L2	CO1
4	i. Write about the Rain erosivity and erodibility index. ii. Write the importance and limitations of the USLE. iii. Calculate the annual soil loss in a catchment area having the Rad chalka sandy loam soils where the USLE plots were used for soil loss collection. The total erosivity index is 30 t/acer and the erodibility index is 0.11.	3 Marks	L4	CO2
5	Explain the multi-slot divisor with a neat sketch.	3 Marks	L3	CO2
6	Explain the stages of development of Gullies.	3 Marks	L3	CO2
7	Explain the mechanical measure that was constructed for wind erosion control.	3 Marks	L2	CO3
8	What is meant by Grassed Waterways and write its purpose?	3 Marks	L2	CO3
9	Explain the basic components of PGCS.	3 Marks	L2	CO3
10	What are the constraints and factors influencing in application of the LCC?	3 Marks	L3	CO4
11	Explain the long-term runoff harvesting techniques.	3 Marks	L3	CO4
12	Write about the non-arable land capability classification and its characteristics.	3 Marks	L3	CO4

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, July – 2024

INTRODUCTION TO FORESTRY

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	Annual rainfall exceeds 250 cm is the characteristic of which type of the forest----------	1 Mark	L2	CO1
2	----------is a process in which the branch of a plant is cut off in the height of 2.5M in order to produce a flush of new shoots.	1 Mark	L3	CO1
3	----------means the cutting of branches from the bole in order to maintain the quality of timber.	1 Mark	L4	CO1
4	----------is a protective plantation in a certain area, against strong winds usually comprised of a few rows of trees (or shrubs) spaces at 0.5 to 2.5 m apart.	1 Mark	L2	CO1
5	---------- a forest, by artificial means on an area which previously bore forest vegetation, and which may have been felled or otherwise cleared in the recent past.	1 Mark	L1	CO1
6	The identification and systematic classification of trees ----------	1 Mark	L4	CO2
7	----------operations are carried out in the forest crop at different stages of growth in order to provide a healthy environment for their development	1 Mark	L2	CO2
8	---------- trees crowns occupy a subordinate position in the canopy.	1 Mark	L3	CO2
9	----------is defined as the elimination of branches in order to obtain trees with clean bole.	1 Mark	L1	CO2
10	---------- thinning is the most commonly used thinning practice in forestry.	1 Mark	L2	CO2
11	Expand DBH----------	1 Mark	L5	CO3
12	----------is the measurement of length, mass and time	1 Mark	L1	CO3
13	----------is the linear distance of an object normal to the surface of the earth.	1 Mark	L2	CO3
14	Name two instruments for height measurement	1 Mark	L5	CO3
15	The main stem of a tree known as----------	1 Mark	L4	CO3
16	Native of tamarind ----------	1 Mark	L2	CO4
17	Botanical name and family of karanj ---------- and----------	1 Mark	L3	CO4
18	Expand IGFRI----------	1 Mark	L5	CO4
19	Shifting cultivation is called as ----------in AP and ---------- in north-eastern states	1 Mark	L3	CO4
20	Expand MPT's ----------	1 Mark	L5	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Discuss about dry tropical forests.	3 Marks	L3	CO1
2	Define following terms: i) Afforestration ii) Breast height iii) Lopping	3 Marks	L1	CO1
3	Define silviculture and describe about objectives of silviculture.	3 Marks	L2	CO1
4	Write about the natural regeneration of forest from seed.	3 Marks	L2	CO2
5	What are the objectives of Tending operations- Thinning?	3 Marks	L1	CO2
6	Write about the crown classification of trees.	3 Marks	L2	CO2
7	Describe about diameter measurement and its significance	3 Marks	L3	CO3
8	Write about increment boring method of age determination.	3 Marks	L2	CO3
9	Explain about instruments used in diameter measurement.	3 Marks	L2	CO3
10	Analyse about ecological classification of Agroforestry.	3 Marks	L5	CO4
11	Mention the benefits that are derived from the Eucalyptus tree.	3 Marks	L2	CO4
12	What is meant by Agrisilvopastural system? Write about home garden.	3 Marks	L1	CO4

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, July – 2024

AGRICULTURAL MICROBILOGY

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	All the main kinds of unicellular organisms like protozoa, fungi, algae, and bacteria were first described by _____	1 Mark	L1	CO1
2	Who first disproved the theory of spontaneous generation _____	1 Mark	L1	CO1
3	Pebrine in silkworm is caused by a protozoan *Nosema* sp. is first identified by _____	1 Mark	L1	CO1
4	Dr. Hesse replaced the solidifying agent gelatin (Protein) with agar a complex polysaccharide obtained from _____	1 Mark	L1	CO1
5	_____ is the hair like helical appendages that protrude through the cell wall and are responsible for swimming motility	1 Mark	L1	CO1
6	_____ bacteria exhibit swimming motility by means of endoflagella	1 Mark	L2	CO2
7	Techoic acids is seen in _____ bacteria	1 Mark	L2	CO2
8	Cysts are thick walled, desiccation resistant, dormant forms that develop by differentiation of vegetative cells is seen in _____	1 Mark	L3	CO2
9	The carbon undergoes different oxidation – reduction states cyclically by processes known as _____	1 Mark	L3	CO2
10	_____ is the key element of protoplasm of living cells	1 Mark	L3	CO2
11	Example for denitrifying bacteria is _____	1 Mark	L2	CO3
12	The conversion of molecular nitrogen into ammonia by microorganisms is known as _____	1 Mark	L3	CO3
13	_____ propagation method is used for Azolla multiplication	1 Mark	L2	CO3
14	Azolla is commonly known as _____	1 Mark	L2	CO3
15	The mutualistic association between plant roots and a specific group of soil fungi is known as _____	1 Mark	L1	CO3
16	Hartig net is a branch systems which can provide a large surface contact between cells of the two symbionts was present in _____	1 Mark	L1	CO4
17	_____ bacteria is required for the preparation of silage	1 Mark	L3	CO4
18	Example for phosphate absorbers _____	1 Mark	L1	CO4
19	The living organisms which are sprayed on crop plants are known as _____	1 Mark	L3	CO4
20	_____ is an antibiotic produced by the *Agrobacterium radiobacter*	1 Mark	L2	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Write about the scientific contributions of Robert Koch.	3 Marks	L1	CO1
2	Write a short note on pollution microbiology and geochemical microbiology.	3 Marks	L1	CO1

3	Explain in detail about cell wall of bacteria.	3 Marks	L2	CO1
4	Difference between gram-positive and gram-negative bacteria.	3 Marks	L3	CO2
5	Describe in detail about cell division and reproduction methods in bacteria.	3 Marks	L1	CO2
6	Write a short note on genetic recombination through bacterial transformation.	3 Marks	L3	CO2
7	Write a short note on Nitrogen immobilization.	3 Marks	L2	CO3
8	Write a short note on different groups of biological nitrogen fixers.	3 Marks	L2	CO3
9	Define mycorrhiza. Write a short note on ectomycorrhiza.	3 Marks	L1	CO3
10	What is rhizosphere? Write about functions of root exudates.	3 Marks	L3	CO3
11	Define biofertilizer. Write about rhizobium biofertilizer.	3 Marks	L2	CO4
12	What are biofuels? Write a short note on advantages and disadvantages of biofuels?	3 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations July – 2024

FUNDAMENTALS OF PLANT BIOCHEMISTRY AND BIOTECHNOLOGY

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	Give an example for pentose sugar ----------.	1 Mark	L1	CO1
2	Mannitol is a sugar alcohol (T/F) .	1 Mark	L1	CO1
3	The molecular formula of cholesterol is ----------.	1 Mark	L2	CO1
4	The major storage form of lipids is ----------.	1 Mark	L1	CO1
5	The amino acids that are not synthesized in the body and are obtained from the diet are amino acids termed as ----------.	1 Mark	L1	CO2
6	Amino acids are joined by ----------.	1 Mark	L1	CO2
7	The naturally occurring form of amino acid in proteins----------.	1 Mark	L1	CO2
8	Enzymes can only speed up the reaction but can't initiate the reaction (T/F)	1 Mark	L1	CO2
9	Nucleic acids were first discovered by ----------.	1 Mark	L1	CO3
10	Ribosomal RNA makes up to more than ---------- of the total RNA of the cell.	1 Mark	L1	CO3
11	In plants, the glyoxylate cycle occurs in special peroxisomes which are called ----------.	1 Mark	L1	CO3
12	----------is the end product of anaerobic glycolysis .	1 Mark	L1	CO3
13	The most common solidifying agent used in micropropagation is-------.	1 Mark	L1	CO4
14	The formation of root and shoot from callus culture is called as---------.	1 Mark	L1	CO4
15	----------is the genetic potential of a plant cell to produce the entire plant.	1 Mark	L1	CO4
16	The culturing of cells in liquid agitated medium is called as ---------.	1 Mark	L2	CO4
17	----------is considered as natural genetic engineer.	1 Mark	L2	CO5
18	RFLP stands for----------.	1 Mark	L2	CO5
19	DNA is soluble in ----------.	1 Mark	L1	CO5
20	Charge on DNA is ----------.	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Define carbohydrates and classification of carbohydrates based on carbon atoms with examples.	3 Marks	L1	CO1
2	Compare between lipids and fatty acids.	3 Marks	L4	CO1
3	Define isomerism and types of isomerism.	3 Marks	L2	CO1
4	Write down the functions of proteins.	3 Marks	L2	CO2
5	What are the zwitterions and properties of zwitterions?	3 Marks	L1	CO2
6	Define enzyme and write down its properties and functions.	3 Marks	L2	CO2
7	Discuss the A, B, and Z DNA.	3 Marks	L4	CO3
8	Difference between RNA and DNA.	3 Marks	L4	CO3

9	Expand the following: i) HEPA; ii) TDZ; iii) BAP; iv) 2iP; v) IAA ; vi) IBA	3 Marks	L1	CO4
10	Differentiate between the following: i) Hybridization and cybridization ii) Homokaryons and heterokaryon iii) Spontaneous and induced fusion	3 Marks	L4	CO4
11	Write short notes on: i) Gene gun ii) Electroporation iii) Microinjection	3 Marks	L2	CO5
12	How PCR works?	3 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations July – 2024

FUNDAMENTALS OF ENTOMOLOGY

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 X 1 = 20 Marks**

1	---------- was appointed as first entomologist to Government of India	1 Mark	L1	CO1
2	Abbreviate NCIPM ----------	1 Mark	L3	CO1
3	Geniculate antenna is present in Ants Wasps Weevils All the above	1 Mark	L1	CO1
4	In house flies, ---------- act as balancing organs	1 Mark	L1	CO1
5	In oligopod larva, ---------- larva is 'C' shaped, cylindrical and stout	1 Mark	L2	CO2
6	Foregut, Hindgut are ----------in origin, while midgut are ---------- in origin	1 Mark	L1	CO2
7	Most terrestrial insects excrete waste product as ---------- while, aquatic insects excrete ----------	1 Mark	L2	CO2
8	Polyembryony is seen in ---------- Endoparasitic Hymenoptera Cecidomyiids Grasshoppers All of the above	1 Mark	L1	CO2
9	In ---------- family of Coleoptera, antennae is long as than the body itself and it can flexed backwards	1 Mark	L1	CO3
10	In thrips ---------- mandibles are absent	1 Mark	L1	CO3
11	Match and tick the correct option a) Nymphalidae ( ) 1. Sulfur butterflies b) Papilionidae ( ) 2. Brush footed butterflies c) Lycaenidae ( ) 3. Metallic blues/copper butterflies d) Pieridae ( ) 4. Swallow tail butterflies a. 2, 4, 3, 1 b. 2, 1, 4, 3 c. 4, 2, 1, 2 d. 4, 2, 1, 3	1 Mark	L1	CO3
12	In ---------- family of Diptera, last larval instar possess a sternal spatula or breast bone on the ventral side of the prothorax	1 Mark	L3	CO3
13	---------- is the study of individual organisms or an individual species in relation to the environment	1 Mark	L1	CO4

14	Persistent pest is ---------- Scales Mealy bugs Thrips All the above	1 Mark	L2	CO4
15	---------- trap crop used against American bollworm, *Helicoverpa armigera*	1 Mark	L1	CO4
16	Alternate drying and wetting at 10 days interval starting from 35 DAT reduces the---------- and ---------- population	1 Mark	L1	CO4
17	----------and ---------- are the entomopathogenic nematodes	1 Mark	L3	CO5
18	---------- is the father of host plant resistance.	1 Mark	L1	CO5
19	Match and tick the following option a) *Isotima javensis* ( ) 1. Rugose spiralling whitefly b) *Telenomus remus* ( ) 2. Sugarcane top shoot borer c) *Goniozus nephantidis* ( ) 3. Maize fall army worm d) *Encarsia guadeloupae* ( ) 4. Coconut black headed caterpillar a. 2, 3, 4, 1 b. 4, 3, 2, 1 c. 1, 2, 4, 3 a. 2, 1, 3, 4	1 Mark	L2	CO5
20	---------- is an antidote used against organophosphates	1 Mark	L2	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 X 3 = 30 Marks**

1	List out the differences between subclasses Apterygota and Pterygota.	3 Marks	L2	CO1
2	Explain any six types of insect legs along with neat diagrams.	3 Marks	L2	CO1
3	Describe about the different types of Apodous larvae.	3 Marks	L2	CO2
4	Enlist the various functions of insect blood.	3 Marks	L1	CO2
5	List out the differences between Apposition eyes and Superposition eyes .	3 Marks	L2	CO2
6	Briefly explain any six rules and procedure to be followed while naming organisms.	3 Marks	L2	CO3
7	Explain characteristic features of any six economically important families of order Diptera.	3 Marks	L3	CO3
8	Write the differences between sub orders Anisoptera and Zygoptera.	3 Marks	L1	CO3
9	Describe the host plant selection process by an insect.	3 Marks	L3	CO4
10	Define simple parasitism, super parasitism and multiple parasitism.	3 Marks	L2	CO4
11	Explain characteristic features of any three insecticides of plant origin.	3 Marks	L1	CO5
12	List out any four symptoms due to organophosphate and carbamate insecticides poisoning. List out any two specific antidotes against those insecticides.	3 Marks	L1	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, July – 2024

FUNDAMENTALS OF AGRICULTURAL EXTENSION EDUCATION

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	---------- can be defined as ability to do things.	1 Mark	L1	CO1
2	The fundamental objective of extension education is to raise the ---------- of the rural people by helping them in using their natural resources in the right way.	1 Mark	L1	CO1
3	An effective extension educational programme involves ----------essential and interrelated steps.	1 Mark	L1	CO1
4	----------is proclamation, prospectus, listing of events to be done in chronological fashion.	1 Mark	L1	CO1
5	Extension programmes should fix up priority on the basis of available ----------and ----------	1 Mark	L1	CO1
6	A group of ----------villages was the centre of the Shri Niketan project.	1 Mark	L2	CO2
7	Firka development programme started in ----------	1 Mark	L2	CO2
8	Expand IADP.	1 Mark	L2	CO2
9	Etawah pilot project was started with the aim of introducing work on the rural ----------front.	1 Mark	L1	CO2
10	IADP is popularly known as ----------	1 Mark	L1	CO2
11	Private consultancy mostly adopts personal contact methods, rather than group approach (True/False).	1 Mark	L2	CO3
12	During last 50 years emphasis was given on ----------Led- Extension.	1 Mark	L2	CO3
13	The rural development is not merely agriculture development but it is rural ----------	1 Mark	L2	CO3
14	Expand MNREGA.	1 Mark	L2	CO3
15	Mission / Vision Statement of District Rural Development Agency is ----------	1 Mark	L1	CO3
16	Classification of extension teaching methods according to function are----------	1 Mark	L1	CO4
17	The term 'communication' stems from the Latin word '---------- meaning' ----------	1 Mark	L1	CO4
18	Circular model of communication is also known as----------	1 Mark	L1	CO4
19	The three main types of empathy are.	1 Mark	L3	CO4
20	---------- are the last people to adopt new practices and are traditional.	1 Mark	L2	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	What is education? Explain different types of education.	3 Marks	L2	CO1
2	What is the scope of agricultural extension?	3 Marks	L2	CO1
3	Explain any six principles of extension.	3 Marks	L1	CO1
4	Write down the various objectives of Etawah pilot project.	3 Marks	L3	CO2
5	What are the distinctive features and criteria of selection of district for IADP?	3 Marks	L2	CO2
6	What are the objectives of Institution-Village linkage programme?	3 Marks	L3	CO2
7	What is market led extension and why is it required?	3 Marks	L2	CO3
8	Explain various merits and problems encountered in private extension system.	3 Marks	L3	CO3
9	Define leadership and mention different types of rural leaders.	3 Marks	L1	CO3
10	What are the strong and weak points of individual contact teaching methods in extension?	3 Marks	L2	CO4
11	Illustrate the five-stage model of adoption process.	3 Marks	L4	CO4
12	Differentiate between diffusion and communication.	3 Marks	L4	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, July – 2024

PRODUCTION TECHNOLOGY FOR VETETABLES AND SPICES

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	As per ICMR, what is the per capita requirement of vegetables per day?---------- a) 300g b) 500g c) 200g d) 400 g	1 Mark	L1	CO1
2	In the world, indicate the position ---------- of our country in respect of area, production of vegetables. a) 1st b) 2nd c) 3rd d) 4th	1 Mark	L3	CO1
3	The spice which is exported in maximum quantity is _____	1 Mark	L1	CO1
4	Which one of the following vegetables is the richest source of protein ---------- a) peas b) okra c) watermelon d) curry leaves	1 Mark	L1	CO1
5	The pungency in chillies is due to ----------	1 Mark	L3	CO1
6	Okra fruits are excellent source of ---------- a) Calcium b) Magnesium c) Manganese d) Iodine	1 Mark	L2	CO2
7	Central Potato Research Institute (CPRI) is located at ----------	1 Mark	L1	CO2
8	Hard shells of mature fruits are used as musical instruments. a) snake gourd b) bitter gourd c) bottle gourd d) ridge gourd	1 Mark	L2	CO2
9	Dull sound when the fruit is thumped an indication of maturity seen in ----------	1 Mark	L3	CO2
10	Expand-IISR----------	1 Mark	L1	CO2
11	Sweet potato is propagated by ---------- a) Terminal stem cutting b) Tuber c) Grafting d) Air layering	1 Mark	L2	CO3
12	Which of the following vegetable is perennial? a) Drumstick b) Cauliflower c) Garlic d) Beans	1 Mark	L2	CO3
13	Which vegetable belongs to the group of bulb crops? a) Potato b) Sweet potato c) Beet root d)Garlic	1 Mark	L3	CO3
14	The pungency of onion is due to the presence of ----------	1 Mark	L2	CO3
15	The edible part of cauliflower is known as. a) Head b) Curd c) Stem d) Leaf	1 Mark	L3	CO3
16	India is known as home of ---------- a) Vegetables b) Spices and Medicinal c) Fruits d) Flowers	1 Mark	L3	CO4
17	Which is the origin place of the black pepper? a) Eastern Ghats, India. b) Western Ghats, India. c) Himalayan region. d) Plains of India.	1 Mark	L3	CO4
18	Which the economic part of clove? a) Flower after opening. b) Unopened flower buds. c) Both a and b. d) None of the above	1 Mark	L3	CO4
19	Curcumin is extracted from a) Turmeric b) Kokum c) Ginger d) Curry leaf	1 Mark	L2	CO4
20	Scientific name of fenugreek ----------	1 Mark	L2	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Write in details about economy importance of vegetable and spice crops.	3 Marks	L2	CO1
2	Give Name 6 ICAR research institutes working on vegetables and spice crops in India.	3 Marks	L3	CO1
3	Write any six family along with their scientific names of vegetable crops.	3 Marks	L3	CO1
4	Explain various physiological disorders of tomato along with their causal factors and control measures.	3 Marks	L2	CO2
5	What are the maturity indices for harvesting of musk melon and water melon?	3 Marks	L3	CO2
6	What are the different types of flowers in brinjal based on their style length and which of them does not set fruits?	3 Marks	L3	CO2
7	Describe physiological disorders in cauliflower.	3 Marks	L2	CO3
8	Describe physiological disorders in potato.	3 Marks	L1	CO3
9	Write uses of cluster bean.	3 Marks	L2	CO3
10	Write in detail about types of shoots grown in black pepper.	3 Marks	L3	CO4
11	Explain in detail about soil, climate and harvesting of coriander .	3 Marks	L3	CO4
12	Write in detail about shade and shade regulation management in cardamom.	3 Marks	L1	CO4

CODE No.: PPHY162 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, July – 2024

FUNDAMENTALS OF PLANT PHYSIOLOGY

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	The water potential of pure water is ----------	1 Mark	L1	CO1
2	Father of plant physiology----------	1 Mark	L1	CO1
3	Solute potential is also known as ----------	1 Mark	L1	CO1
4	The components of water potential are----------	1 Mark	L2	CO1
5	Loss of water in transpiration is about----------%	1 Mark	L1	CO1
6	Pahla blight of sugarcane is deficiency of----------	1 Mark	L1	CO2
7	Blossom end rot is deficiency of ---------- element in ---------- crop	1 Mark	L1	CO2
8	Hen and Chicks is a disorder in ---------- crop and is due to the deficiency of ----------element.	1 Mark	L2	CO2
9	Exhanthema is due to the deficiency of ----------	1 Mark	L1	CO2
10	In CAM plants, stomata ---------- during Night & ----------during Day.	1 Mark	L2	CO3
11	Formation of ATP in mitochondria is called ----------	1 Mark	L1	CO3
12	Splitting of water molecule into OH^- and H^+ ions in the presence of light is called as----------	1 Mark	L1	CO3
13	Value of R.O. is one when respiratory substrates are ----------	1 Mark	L1	CO3
14	The anti-gibberellin compound present in plant is ----------	1 Mark	L1	CO4
15	Mention one chemical used as ethylene absorbent is----------	1 Mark	L1	CO4
16	Give example for naturally occurring cytokinin in plant is----------	1 Mark	L1	CO4
17	Name one PGR involved in inducing senescence----------	1 Mark	L1	CO4
18	---------- hormone is closer of stomata of under stress plants.	1 Mark	L1	CO5
19	Example of Xerophytes ----------	1 Mark	L1	CO5
20	An example for resurrection plants is----------	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Write various types of antitranspirants with examples.	3 Marks	L1	CO1
2	Explain stomatal movements with different theories.	3 Marks	L3	CO1
3	Draw a neat labeled diagram of stomata and mention the parts	3 Marks	L2	CO1
4	Describe the important role, deficiency and correction measures of potassium and boron.	3 Marks	L4	CO2
5	Describe deficiency symptoms of Iron, Boron, Zinc and Sulphur.	3 Marks	L4	CO2
6	Write the differences between C_3 and C_4 plants.	3 Marks	L1	CO3
7	Explain Calvin cycle of photosynthesis.	3 Marks	L3	CO3
8	Differentiate between photosynthesis and respiration.	3 Marks	L3	CO3
9	Explain the different stages of the growth curve.	3 Marks	L3	CO4
10	Differentiate climacteric and non-climacteric fruits with example.	3 Marks	L3	CO4
11	Methods to overcome drought.	3 Marks	L3	CO5
12	Write short notes on osmolytes and osmotic adjustment.	3 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

AGRICULTURAL MARKETING TRADE AND PRICES

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	Agricultural marketing deals with both ---------- and ---------- marketing.	1 Mark	L1	CO1
2	In primary wholesale market, the transactions of commodities are usually between ---------- and ----------.	1 Mark	L2	CO1
3	A market in which commodities are transacted in small quantities is -----.	1 Mark	L1	CO1
4	---------- refers to purchasing the commodities when the prices are low in the market and selling the produce at times when prices rise in the market.	1 Mark	L1	CO1
5	Perfect market deals with ---------- good.	1 Mark	L2	CO1
6	The markets which are permanent in existence are called ---------- markets.	1 Mark	L2	CO1
7	---------- is that quantity of farm produce which is made available to the non-farm population irrespective of the farm population requirements.	1 Mark	L1	CO1
8	---------- is the market situation in which there are large number of sellers and buyers dealing with heterogenous product.	1 Mark	L3	CO1
9	---------- is an attempt to recognize distinct stages in the sales history of the product.	1 Mark	L3	CO2
10	The speed of movement through various stages of life cycle will be the same for all goods(True /False).	1 Mark	L1	CO2
11	The product life cycle have ---------- number of stages.	1 Mark	L1	CO2
12	Grading done by the farmers or at the farmers' level is called ----------.	1 Mark	L2	CO3
13	---------- method of sale is more common in the regulated markets in India.	1 Mark	L3	CO3
14	The formula for market efficiency by Acharya's method is ----------.	1 Mark	L2	CO3
15	It is estimated that, -------% of value of produce is being lost every year due to poor storage facilities.	1 Mark	L2	CO3
16	Holding and preserving the commodities or products from the time they are produced till they are needed for consumption is called ----------.	1 Mark	L2	CO3
17	Expand HACCP----------.	1 Mark	L1	CO4
18	Central Warehousing Corporation was established in ----------.	1 Mark	L3	CO4
19	Expand CACP----------.	1 Mark	L1	CO4
20	The single largest agency in India, responsible for procuring, storing and distribution of food grains in the country is ----------.	1 Mark	L4	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Explain about producer's surplus of agricultural commodities in India.	3 Marks	L2	CO1
2	Explain the types of markets based on degree of competition.	3 Marks	L3	CO1
3	Differentiate oligopoly and monopolistic competition.	3 Marks	L3	CO1
4	Write about the factors influencing marketable surplus.	3 Marks	L2	CO2
5	Diagrammatically explain the meaning and stages of product life cycle.	3 Marks	L3	CO2
6	Write about the 4P`s of marketing.	3 Marks	L4	CO2
7	Explain the buying and selling methods prevalent in the Indian markets.	3 Marks	L2	CO3
8	Classify the market functionaries and describe about commission agents.	3 Marks	L1	CO3
9	Write about storage practices in both small scale and large scale in India.	3 Marks	L2	CO3
10	Write about different functions of agricultural marketing in detail.	3 Marks	L3	CO3
11	Write about functions of FCI.	3 Marks	L3	CO4
12	Write short notes on administered prices.	3 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

CROP PRODUCTION TECHNOLOGY –II (RABI CROPS)

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	Most critical stage for irrigation in wheat crop is ……	1 Mark	L1	CO1
2	Salt tolerant variety of barley a) Amber b) Neelam c) RD137 d) RD101	1 Mark	L2	CO1
3	Nipping in chick pea is a process – a) To enlarge branching b) To reduce plant height c) To protect plants against lodging d) To protect from diseases	1 Mark	L1	CO2
4	Weed in lentil can be controlled by applying a) 2,4-D b) Fluchloralin c) Both d) Glyphosate	1 Mark	L1	CO2
5	Pea maturity is measured by – a) Tendrometer b) Hydrometer c) Peatometer d) Speedometer	1 Mark	L2	CO2
6	What is the seed rate of kidney bean a) 10 kg/ha b) 150 kg/ha c) 60-65 kg/ha d) 20 kg/ha	1 Mark	L2	CO2
7	Oil content in mustard a) 12-15% b) 33-39% c) 0.5-1.5% d) 70-85%	1 Mark	L1	CO3
8	White seeded sesame variety a) Rajeshwari b) Aruna c)Vikas d) Kohli	1 Mark	L3	CO3
9	First hybrid of sunflower a) BSH-1 b) BCH-1 c) Mordan d) BSH-5	1 Mark	L3	CO3
10	Moisture sensitive stage for safflower crop……	1 Mark	L1	CO3
11	Which oilseed crop is having omega-3 fatty acid…….	1 Mark	L2	CO3
12	Ginning percentage of cotton…….	1 Mark	L3	CO4
13	Optimum temperature of water for retting……..0c	1 Mark	L2	CO4
14	Water requirement for sugarcane crop……	1 Mark	L2	CO4
15	Blind hoeing term related to which crop……..	1 Mark	L1	CO4
16	The sugarbeet seed is a ……which gives out four seedlings per "glomerule" (seedball).	1 Mark	L3	CO4
17	Volume occupied by unit weight of cut tobacco is called……	1 Mark	L3	CO5
18	Seed rate of fodder maize……..	1 Mark	L1	CO5
19	Glucosides present in roots, stems of lucerne……	1 Mark	L4	CO5
20	Rhizobium culture suitable for berseem crop……	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Briefly explain Integrated Nutrient Management (INM) in wheat.	3 Marks	L2	CO1
2	Write uses of barley.	3 Marks	L3	CO1
3	Write about Kabuli X Desi type chick pea.	3 Marks	L3	CO2
4	Difference between field pea and garden pea.	3 Marks	L2	CO2

5	Write two varieties, fertilizer schedule and water requirement of sesame .	3 Marks	L3	CO3
6	Write climatic requirement of mustard.	3 Marks	L4	CO3
7	Differentiate Monopodial and Sympodial branhes of cotton.	3 Marks	L2	CO4
8	Differences between the two cultivable species of jute.	3 Marks	L1	CO4
9	Differentiate between hibiscus cannabinus and hibiscus sabdariffa.	3 Marks	L2	CO4
10	List out planting methods of sugarcane and explain any of three.	3 Marks	L3	CO4
11	Explain topping and desuccering in tobacco and its advantages.	3 Marks	L3	CO5
12	Discuss Economic importance of sugarbeet.	3 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

RENEWABLE ENERGY AND GREEN TECHNOLOGY

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	The capacity to do work or capability to produce an effort is called ----.	1 Mark	L2	CO1
2	---------- is the most convenient form of energy that can be easily transported, controlled and converted into other forms of energy at about 100% efficiency.	1 Mark	L2	CO1
3	Water power and nuclear power contributing only ---------- % of total energy production.	1 Mark	L1	CO1
4	It is estimated that, ---------- million tons of organic manure per annum would be produced in biogas plants.	1 Mark	L1	CO1
5	The biogas can be upgraded to synthetic natural gas (SNG) by removing ---------- and ---------- gases.	1 Mark	L2	CO2
6	The treatment of any slurry or sludge containing a large amount of organic matter utilizing bacteria and other organisms under anaerobic condition is commonly referred as ---------- digestion.	1 Mark	L1	CO2
7	pH value between ---------- and ---------- must be maintained for best fermentation and normal gas production during anaerobic digestion.	1 Mark	L1	CO2
8	---------- is the process in which destructive distillation of organic materials heated at slow rate at about 270°C in the absence or minimum presence of oxygen.	1 Mark	L1	CO2
9	---------- is used to measure total radiation (direct and diffuse).	1 Mark	L1	CO3
10	Drying under ---------- cabinet can be done faster and in a controlled condition.	1 Mark	L1	CO3
11	A solar pond is designed to reduce ---------- and ---------- heat losses so that useful amounts of heat can be collected and stored.	1 Mark	L2	CO3
12	Glazing materials for the solar pond are ---------- and ----------.	1 Mark	L2	CO3
13	---------- are the suitable places for the erection of wind mills.	1 Mark	L3	CO4
14	---------- wind mill works on the principle of cup anemometer.	1 Mark	L2	CO4
15	---------- type of wind mills have good power coefficient, high starting torque, simple and are low in cost	1 Mark	L1	CO4
16	The temperature at which the oil in solid form starts to melt or pour is called ----------.	1 Mark	L2	CO4
17	---------- is the fuel which is made from natural (biological) renewable resources which can be used directly in conventional diesel engines.	1 Mark	L2	CO5
18	---------- is commonly produced by the transesterification of the vegetable oil or animal fat feedstock.	1 Mark	L1	CO5
19	The calorific value of bio diesel is about ---------- MJ/L.	1 Mark	L1	CO5
20	---------- country is the first and biggest producer of cheapest bio-ethanol in the world.	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	List out the advantages of renewable energy.	3 Marks	L1	CO1
2	What can you say about the thermo-chemical conversion? Explain the processes involved in the thermo-chemical conversion.	3 Marks	L2	CO1
3	How can you explain different types of densification processes?	3 Marks	L4	CO2
4	Discuss about the Updraft Gasifier with neat diagram.	3 Marks	L4	CO2
5	What are the different applications of solar energy?	3 Marks	L4	CO3
6	What can you say about the basic principle in solar thermal energy systems?	3 Marks	L2	CO3
7	Write about the advantages and limitations of photovoltaic solar energy conversion.	3 Marks	L2	CO4
8	Discuss the pros and cons of wind energy.	3 Marks	L2	CO4
9	How would you explain the vertical axis type wind mill with a neat sketch?	3 Marks	L2	CO5
10	What do you remember about the Kinematic viscosity, Density, Calorific value and melt or pour point?	3 Marks	L1	CO4
11	Discuss about the fuel properties of jatropha oil and its biodiesel Properties.	3 Marks	L2	CO5
12	Write about the KVIC type biogas plant with neat diagram.	3 Marks	L1	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations May – 2024

FARMING SYSTEM AND SUSTAINABLE AGRICULTURE

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	----------system refers to combination of forest, agriculture, livestock and fisheries with well-founded soil and water conservation base.	1 Mark	L1	CO1
2	In ---------- farming entire production is for family consumption. There is no surplus to sell in markets.	1 Mark	L1	CO1
3	---------- is a resource management strategy to achieve economic and sustained agricultural production to meet diverse requirements of farm livelihood	1 Mark	L1	CO1
4	Farming in estates where single cash crop is grown for sale is called as ----------	1 Mark	L1	CO1
5	In ---------- farming agriculture mainly depends on the rainfall	1 Mark	L1	CO1
6	Expand CLUI ----------	1 Mark	L2	CO2
7	Each chandrika can accommodate ---------- worms depending upon the silkworm race	1 Mark	L2	CO2
8	Mulberry leaf protein is the source for the silkworm to bio-synthesize the silk, which is made up of two proteins ---------- and ----------	1 Mark	L3	CO2
9	Culturing and maintenance of honeybees for the purpose of honey extraction is called as ----------	1 Mark	L3	CO2
10	Write the botanical name of mulberry silkworm----------	1 Mark	L3	CO2
11	Expand HEIA ----------	1 Mark	L2	CO3
12	What is the per capita arable land availability in India ----------	1 Mark	L3	CO3
13	----------is defined as minimal soil disturbance (no-till) and permanent soil cover (mulch) combined with rotation of the crops	1 Mark	L2	CO3
14	---------- is the adoption of forestry practices by the society to meet its common requirements such as fuel, fodder etc	1 Mark	L2	CO3
15	Farm in which 50 per cent or more income of total crop production is derived from a single crop is called as ----------	1 Mark	L1	CO3
16	Estimate the productivity of a component and compare with the crop component expressed in terms of ----------	1 Mark	L1	CO4
17	Predominant farming system in Godavari zone of AP ----------	1 Mark	L3	CO4
18	Food materials taken by human beings should contain vitamins, carbohydrates, proteins, fats, niacin, calcium, iron etc. then only we can say it is a ----------	1 Mark	L2	CO4
19	The cultivation of crops re-growth coming out of roots or stalks of the preceding crop after harvest is called as ----------	1 Mark	L2	CO4
20	Expand LISA ----------	1 Mark	L3	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Define cropping system, cropping pattern and alley cropping.	3 Marks	L2	CO1
2	Explain about the classification of farming system according to size of farm.	3 Marks	L3	CO1
3	Write about components of farming system.	3 Marks	L3	CO1
4	Discuss about any three agro forestry systems.	3 Marks	L2	CO2
5	Write a short note on honey collection.	3 Marks	L3	CO2
6	Explain about housing of poultry shed.	3 Marks	L2	CO2
7	Discuss about some distinguishing features of conventional and conservation agriculture systems.	3 Marks	L1	CO3
8	Write advantages of IFS.	3 Marks	L1	CO3
9	Write advantages and disadvantages of high external input agriculture.	3 Marks	L2	CO3
10	Write about any four Site specific development of IFS models for different agro climatic zones of India.	3 Marks	L3	CO3
11	Discuss about benefits and hurdles in traditional farming.	3 Marks	L3	CO4
12	Explain about Crop – fish –poultry system farming system.	3 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

FUNDAMENTALS OF STRESS PHYSIOLOGY

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	The plants growing at places where water is always available is called …….	1 Mark	L1	CO1
2	An example of water spenders' types of plant is……	1 Mark	L1	CO1
3	……and …….. hormone is synthesized under drought stress situation in plants.	1 Mark	L1	CO1
4	An example for true xerotypic of plant is……	1 Mark	L2	CO1
5	Ability of the plants to complete its life cycle before severe water stress is called……..	1 Mark	L1	CO1
6	One visible symptom of high temperature stress in plants is the wilting of …….	1 Mark	L1	CO2
7	…….. is also referred as molecular chaperons.	1 Mark	L2	CO2
8	Plants tolerance to freezing injury is a consequence of alteration in ……. composition of plasma membrane.	1 Mark	L1	CO2
9	…….is an example of Reactive oxygen species.	1 Mark	L2	CO3
10	The enzyme …… is responsible for scavenging hydrogen peroxide and converting it into water.	1 Mark	L2	CO3
11	An example of non- enzymatic antioxidant is……..	1 Mark	L1	CO3
12	The enzyme which removes oxidative stress in plants is……	1 Mark	L1	CO4
13	Salt sensitive plant are also called …….	1 Mark	L1	CO4
14	……., ……and ……..ions potentially toxic to plants.	1 Mark	L1	CO4
15	Halophytic crops are plants specifically adapted to grow in …….. environments and are highly salt-tolerant.	1 Mark	L1	CO4
16	Salinity stress affects crop growth by disrupting ……balance within plant cells.	1 Mark	L1	CO4
17	Phytochelatins are synthesized from …….amino acid.	1 Mark	L1	CO5
18	Increased heavy-metal concentration in the environment is mainly …..	1 Mark	L1	CO5
19	An example of Heavy metal ion in agriculture field is ……	1 Mark	L1	CO5
20	The uptake of heavy metals by crops is influenced by factors such as soil …….. and plant species.	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Write short notes on osmolytes and osmotic adjustment.	3 Marks	L1	CO1
2	Enumerate drought mitigation strategies and techniques.	3 Marks	L2	CO1
3	Define anti-traspirants and write a classification of anti-traspirants.	3 Marks	L1	CO1

4	What role do heat shock proteins play in helping plants cope with high temperature stress?	3 Marks	L2	CO2
5	What role do antioxidants play in mitigating low-temperature stress in crops?	3 Marks	L2	CO2
6	What role do antioxidants play in mitigating oxidative stress in crops?	3 Marks	L2	CO3
7	What are the visible symptoms of oxidative stress in crop plants?	3 Marks	L2	CO3
8	Mention the methods to employ to cope with water logging conditions at the field.	3 Marks	L2	CO4
9	What role do antioxidants play in mitigating salinity stress in crops?	3 Marks	L2	CO4
10	Write the classification of plants based on salinity.	3 Marks	L2	CO4
11	Briefly explain the tolerance mechanisms of heavy metal stress on plants.	3 Marks	L3	CO5
12	Write briefly about methods to mitigate air, soil, and water pollution.	3 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

MANAGEMENT OF BENEFICIAL INSECTS

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	---------- and ---------- species of honey bees constructs parallel combs.	1 Mark	L2	CO1
2	Scientific name of stingless honey bee ----------.	1 Mark	L1	CO1
3	In honey bees, fertilized eggs develop into ---------- and unfertilized eggs develops into ----------.	1 Mark	L1	CO1
4	The plants which are visited by honey bees only for nectar ----------. i) Tamarind ii) Neem iii) Pongamia iv) All the above	1 Mark	L1	CO1
5	Scarcity of food to honey bees is termed as ----------.	1 Mark	L2	CO1
6	Underground ant nests are eliminated by either dusting ---------- or by pouring ----------.	1 Mark	L2	CO2
7	*Acarapis woodi* causes ---------- condition in bees, where the wings are held at unusual angle and bees are unable to fly.	1 Mark	L1	CO2
8	Fungal disease of honeybee (causal organism) ----------. Streptococcus pluton Ascosphaera apis Nosema apis Bacillus larvae	1 Mark	L1	CO2
9	Open ended cocoons are produced by ----------.	1 Mark	L1	CO2
10	---------- refers to any type of silk that is produced without harming or killing the silk worms.	1 Mark	L2	CO2
11	Silkworm rearing shed should be faced in ---------- direction.	1 Mark	L2	CO3
12	Rearing of I, II & III silk worm larval instars is called ----------.	1 Mark	L2	CO3
13	Methods of rearing late age worms ----------. Shelf rearing Floor rearing Shoot rearing All the above	1 Mark	L2	CO3
14	The number of kilograms of cocoons required to obtain one kg of reeled silk is called ----------.	1 Mark	L2	CO3
15	---------- disease of silkworm is transovarian transmission.	1 Mark	L1	CO3
16	---------- and ---------- are lepidopteran predators of lac insect.	1 Mark	L2	CO4
17	Syrphids are characterized by ---------- crossing r-m between radius (R_{4+5}) and media (M_{1+2}).	1 Mark	L2	CO4
18	Expand IINRG ----------.	1 Mark	L2	CO4
19	---------- beetle was introduced to control *Parthenium hysterophorus.*	1 Mark	L1	CO4
20	Hind femora greatly enlarged, ventral surface with a row of teeth or spines is a taxonomic character of ----------.	1 Mark	L2	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	What is beekeeping, its importance and limitations?	3 Marks	L3	CO1
2	Write in detail about caste and sex determination in honeybees.	3 Marks	L3	CO1
3	Explain types of communication in bees.	3 Marks	L1	CO1
4	Write about nature of damage and management of mite species complex of honeybees.	3 Marks	L3	CO2
5	Write about nature of damage and management of fungal diseases of honey bees.	3 Marks	L1	CO2
6	Write about different planting systems of mulberry.	3 Marks	L1	CO2
7	Describe briefly about damage symptoms and management aspects of mulberry mealy bug and thrips.	3 Marks	L3	CO3
8	Explain briefly about young age and late age silkworm rearing.	3 Marks	L3	CO3
9	Write a short notes on shell Ratio, Non Breakable Filament Length and Reelability.	3 Marks	L1	CO3
10	Write in detail about natural enemies of lac insect.	3 Marks	L2	CO3
11	Write down the differences between Ichneumonidae and Braconidaet are the specific functions of PACs.	3 Marks	L3	CO4
12	List out important species of pollinators and weed killers (scientific name).	3 Marks	L1	CO4

CODE No.: GPB212 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

CROP IMPROVEMENT-II (RABI CROPS)

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	The Centre of origin of wheat is----------.	1 Mark	L1	CO1
2	The reason for dwarfism in wheat is ----------.	1 Mark	L1	CO1
3	The gene pool in which intermating (crossing) is easy and leads to production of fertile hybrids is known.	1 Mark	L2	CO1
4	---------- are the primitive cultivar which were selected and cultivated by the farmers for many generations.	1 Mark	L1	CO1
5	IRRI situated in----------.	1 Mark	L2	CO1
6	---------- is a major trait in pulse crop.	1 Mark	L2	CO2
7	Improvement of Sulphur containing amino acids are important in ---------- crops.	1 Mark	L1	CO2
8	What is the chromosome number of red gram?	1 Mark	L3	CO2
9	Give an example of perennial barley.	1 Mark	L3	CO2
10	State a wild relative of field pea.	1 Mark	L1	CO2
11	State a high yielding and wilt resistant cultivar of chick pea.	1 Mark	L2	CO3
12	---------- is a asexual phenomenon is useful for fixing Heterosis.	1 Mark	L3	CO3
13	----------defined as the hybrid production which exceeds the parental phenotypes.	1 Mark	L2	CO3
14	State the botanical family of safflower.	1 Mark	L2	CO3
15	State the chromosome number of Berseem.	1 Mark	L1	CO3
16	The closely related species of Napier grass is----------.	1 Mark	L3	CO4
17	----------is cultivated species of mango crop.	1 Mark	L3	CO4
18	The useful fodder sorghum spp is----------.	1 Mark	L1	CO4
19	Sugarcane leads to cross pollination due to ---------- phenomenon.	1 Mark	L4	CO4
20	The seeds whose viability drops drastically if their moisture content is reduced below 12% are called as_____.	1 Mark	L1	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Why plant breeding is important and describe their role in Wheat, Barley and oat?	3 Marks	L1	CO1
2	Define domestication and characteristics of domestication.	3 Marks	L1	CO1
3	What is apomixes, explain its significance in plant breeding with suitable example?	3 Marks	L2	CO1
4	Explain the concept of U triangle in Brassica species.	3 Marks	L3	CO2
5	Describe about the germplasm conservation. Why it is important for crop improvement?	3 Marks	L4	CO2
6	Write in detail about reproductive biology of sorghum.	3 Marks	L5	CO2

7	Why breeding attempts are necessary for fodder crops? List some key achievements in forage/fodder crop breeding.	3 Marks	L2	CO3
8	Explain breeding procedures for the improvement of potato.	3 Marks	L1	CO3
9	Explain the breeding achievements in safflower.	3 Marks	L2	CO3
10	Breeding methods in fruit crops. Give emphasis for mango improvement.	3 Marks	L3	CO3
11	State the novel breeding techniques to bring homozygosity in a segregating population. Explain with suitable example.	3 Marks	L3	CO4
12	How do you conserve the plant genetic resources and explain its significance in plant breeding?	3 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

PRODUCTION TECHNOLOGY FOR FRUIT AND PLANTATION CROPS

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 X 1 = 20 Marks**

1	India is the second largest producer of fruits after ---------- country.	1 Mark	L1	CO1
2	Family of mango is ----------.	1 Mark	L2	CO1
3	Scientific name of pear is ----------.	1 Mark	L1	CO1
4	India is largest producer of ----------. a) Mango b) Papaya c) Papaya d) All of these	1 Mark	L1	CO1
5	Give two examples for highest "vitamin-c" rich fruit crops ----------.	1 Mark	L2	CO1
6	Spongy tissue physiological disorder is observed in ----------variety of mango.	1 Mark	L2	CO2
7	Mango variety, most suitable for high density planting----------.	1 Mark	L1	CO2
8	Hen and chicken physiological disorder found in ----------.	1 Mark	L3	CO2
9	Most of the cultivated bananas are diploids (false /true).	1 Mark	L3	CO2
10	The outer layer of fruit rind in citrus is known as ----------.	1 Mark	L1	CO2
11	Bhagwa is a commercial variety of which crop ----------.	1 Mark	L2	CO3
12	In fruit of pine apple fruit contain ---------- type of enzyme.	1 Mark	L3	CO3
13	Commercial method of propagation in Strawberry----------.	1 Mark	L2	CO3
14	An example for Non-climacteric fruit is ----------.	1 Mark	L2	CO3
15	Commercial method of propagation in Strawberry----------.	1 Mark	L1	CO3
16	Coffee belongs to the family ----------.	1 Mark	L3	CO4
17	Expand-CPCRI----------.	1 Mark	L3	CO4
18	Assam is leading state area and production of ----------beverage crop.	1 Mark	L1	CO4
19	Expand-CBD----------.	1 Mark	L2	CO4
20	NRC for Cashewnut is located at ----------.	1 Mark	L1	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 X 3 = 30 Marks**

1	Write shot notes on importance of fruit and plantation crops in India.	3 Marks	L2	CO1
2	Explain nutritional importance of fruit and plantation crops.	3 Marks	L3	CO1
3	Write in details about economy importance of fruit and plantation crops.	3 Marks	L3	CO1
4	Describe malformation in mango.	3 Marks	L2	CO2
5	Write down the types of suckers and explain desuckering in banana.	3 Marks	L3	CO2
6	Write down soil and climatic requirements of apple.	3 Marks	L3	CO2
7	Write in detail about training systems followed in pomegranate.	3 Marks	L2	CO3
8	Explain different planting systems followed in Strawberry.	3 Marks	L1	CO3
9	Explain about soil and climatic requirement of pear.	3 Marks	L2	CO3
10	Economic importance of Coconut.	3 Marks	L3	CO4
11	Discuss different types of pruning in Tea.	3 Marks	L3	CO4
12	Describe different tapping methods in Rubber.	3 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (MBU-22) Regular Examinations, May – 2024

DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT-I

[B.Sc. Agriculture]

Time: 3 hours **Max. Marks: 50**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1	Name the causal organism for the pathogen which is causing rice blast disease _____.	1 Mark	L1	CO1
2	The khaira disease of rice is due to deficiency of _____ .	1 Mark	L1	CO1
3	Anthracnose or red leaf spot disease in sorghum is caused by_____.	1 Mark	L1	CO1
4	The symptom is seen by exudation of small droplets of light pinkish or brownish sticky fluid (honey dew) from the infected spikelets is known as _____.	1 Mark	L1	CO1
5	Late leaf spot in groundnut is caused by_____.	1 Mark	L4	CO2
6	The primary source of inoculum for the leaf spot in groundnut is ____.	1 Mark	L3	CO2
7	Mosaic disease in case of soybean is caused by _____ .	1 Mark	L2	CO2
8	The bacterial leafspot in soybean is caused by _____.	1 Mark	L1	CO2
9	Stem blight in pigeonpea is caused by _____.	1 Mark	L1	CO3
10	The insect vector involved in the transmission of yellow mosaic in blackgram is _____.	1 Mark	L1	CO3
11	Phytophthora blight in castor crop is spreads through _____ .	1 Mark	L1	CO3
12	Mosaic in tobacco is transmitted through _____.	1 Mark	L1	CO3
13	The nematode species which aggravates the guava wilt disease is ___.	1 Mark	L2	CO4
14	Genetic nature of bunchy top virus is _____.	1 Mark	L1	CO4
15	Brown to black oily spots are produced on the pericarp of fruit with L or Y shaped cracks on pomegranate is due to _____.	1 Mark	L1	CO4
16	Defender and Gladiator are resistant varieties used against _____.	1 Mark	L1	CO4
17	_____causes the fruit rot or blight in case of brinjal.	1 Mark	L2	CO5
18	Name the collateral host for Bhendi yellow vein mosaic _____.	1 Mark	L1	CO5
19	Wilt of coconut is caused by _____.	1 Mark	L1	CO5
20	_____ spores are involved in the primary and secondary spread of coffee rust.	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Explain in detail about symptomology of rice blast disease.	3 Marks	L2	CO1
2	Explain in detail about symptomology of grain mold disease of sorghum.	3 Marks	L1	CO1
3	Write about symptoms and disease cycle of ergot of bajra.	3 Marks	L1	CO2
4	Explain in detail about symptomology of groundnut leafspot disease.	3 Marks	L1	CO2
5	Explain in detail about symptomology and management of groundnut wilt.	3 Marks	L3	CO3

6	Explain in detail about symptomology and etiology of mosaic disease in soybean.	3 Marks	L2	CO3
7	Explain in detail about symptomology and disease cycle of phytophthora blight in pigeonpea.	3 Marks	L4	CO4
8	Explain in detail about symptomology and disease cycle of black shank in tobacco.	3 Marks	L2	CO4
9	Write about symptomology and management of panama wilt.	3 Marks	L2	CO5
10	Write about symptomology and management of foot rot disease in papaya.	3 Marks	L1	CO5
11	Write about symptomology and management of early and late blight disease in tomato.	3 Marks	L1	CO5
12	Write about symptomology and management of blister blight in tea.	3 Marks	L1	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH-23) Regular Examinations, July – 2024

PHARMACEUTICAL ORGANIC CHEMISTRY-I

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are Homocyclic compounds?	2 Marks	L1	CO1
	b)	What are Aromatic compounds give some examples?	2 Marks	L1	CO1
	c)	Define Isomerism..	2 Marks	L1	CO2
	d)	What are Dienes? Give its classification.	2 Marks	L1	CO2
	e)	What are Electophiles give some examples?	2 Marks	L1	CO2
	f)	What is Hybridization ? Give its types.	2 Marks	L1	CO2
	g)	Give any one qualitative test for Alcohols.	2 Marks	L1	CO3
	h)	Draw the structure and uses of Acetone and Vanilin.	2 Marks	L1	CO2
	i)	Draw the structure and uses of Lactic acid.	2 Marks	L1	CO2
	j)	What are Esters?	2 Marks	L1	CO3

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	What are Organic compounds? Write its classification.	5 Marks	L1	CO1
	b)	Classify Isomerism in detail.	5 Marks	L1	CO1
3.	a)	Write about Functional Isomerism with examples.	5 Marks	L1	CO2
	b)	Explain about electrophilic addition reaction of alkenes with Markownikoff's orientation.	5 Marks	L1	CO2
4.		Explain in detail about SN1 and SN2 reactions with kinetics and stereochemistry.	10 Marks	L1	CO2

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain about root word, prefix and suffix with some examples.	5 Marks	L1	CO3
6.	Explain about electrophilic addition reactions of alkenes.	5 Marks	L2	CO3
7.	Explain SP^3 hybridization in alkanes give some examples.	5 Marks	L1	CO2
8.	What are Alkyl halides and give its Classification?	5 Marks	L2	CO2
9.	Write the structures and uses of the following: i) Benzyl alcohol ii) Glycerol iii) Propylene glycol	5 Marks	L1	CO2
10	What are alcohols and write any two identification tests for alcohols?	5 Marks	L1	CO2
11.	Write in detail about the aldol condensation reaction.	5 Marks	L1	CO2
12.	Write a note on basicity of Aliphatic amines.	5 Marks	L1	CO2
13.	Write a note on Perkin condensation reaction.	5 Marks	L1	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH-23) Regular Examinations, July – 2024

BIOCHEMISTRY

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Draw a neat labelled diagram of eukaryotic cell.	2 Marks	L6	CO1
	b)	What are Endergonic and Exergonic reactions?	2 Marks	L1	CO1
	c)	Write about the fatty liver.	2 Marks	L6	CO2
	d)	Write about phenylketonuria.	2 Marks	L1	CO2
	e)	Define Isoenzymes.	2 Marks	L1	CO2
	f)	Draw the structures of DNA & RNA.	2 Marks	L6	CO2
	g)	What is Gluconeogenesis?	2 Marks	L1	CO3
	h)	Define ETC & Oxidative Phosphorylation.	2 Marks	L1	CO2
	i)	Write about Hyperuricemia.	2 Marks	L1	CO2
	j)	Explain Gibb's free energy.	2 Marks	L2	CO3

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Explain the chemical classification of aminoacids.	5 Marks	L2	CO2
	b)	Explain the general reactions of Amino acid metabolism.	5 Marks	L2	CO2
3.	a)	Give the types of Fatty acids.	5 Marks	L6	CO2
	b)	Explain the β-Oxidation of Fatty acids.	5 Marks	L2	CO2
4.	a)	Explain the Catabolism of Purine Nucleotides.	5 Marks	L1	CO3
	b)	Explain the function of DNA & RNA.	5 Marks	L1	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.		Write about HMP Shunt.	5 Marks	L1	CO3
6.		Explain in detail about the Watson & Crick's model of DNA.	5 Marks	L2	CO3
7.		Explain about the Enzyme Classification given by IUB.	5 Marks	L2	CO2
8.		Draw a neat sketch of Urea Cycle.	5 Marks	L6	CO2
9.		Explain about Diabetes Mellitus.	5 Marks	L2	CO2
10	a)	Describe the mechanism involved in ElectronTransport chain.	3 Marks	L2	CO2
	b)	Explain the concept Oxidative Phosphorylation.	2 Marks	L2	CO2
11.		Explain the Synthesis and Biological significance of Nor adrenaline.	5 Marks	L2	CO2
12.		Illustrate about Atherosclerosis.	5 Marks	L2	CO4
13.		What is Michaeli's Menton equation? Explain.	5 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH-23) Regular Examinations, July – 2024

HUMAN ANATOMY AND PHYSIOLOGY-II

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write a note on the organization of the Nervous system.	2 Marks	L6	CO1
	b)	Write a note on Progesterone hormone.	2 Marks	L1	CO5
	c)	Define Depolarisation and Repolarisation.	2 Marks	L1	CO1
	d)	Enlist the Sex hormones.	2 Marks	L3	CO5
	e)	Write a note on the Pharynx.	2 Marks	L6	CO3
	f)	Draw a neat labelled diagram of Digestive system.	2 Marks	L3	CO2
	g)	Write a note on MALT.	2 Marks	L6	CO2
	h)	Short notes on Goiter.	2 Marks	L6	CO4
	i)	Short notes on actions of Glucagon.	2 Marks	L6	CO4
	j)	Short notes on disorders of kidney.	2 Marks	L6	CO3

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Explain the formation and functions of Acetylcholine	3 Marks	L1	CO1
	b)	Describe the phases and functions of EEG	4 Marks	L1	CO1
	c)	Explain the types of Neuro receptors	3 Marks	L1	CO1
3.		Explain the Anatomy and physiology of Respiratory system	10 Marks	L1	CO3
4.		Enlist the endocrine secretion and Explain any one mechanism from Negative feedback and Positive feedback systems of endocrine system.	10 Marks	L1	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain the Lung Volumes and capacities with graph.	5 Marks	L1	CO3
6.	Describe the classification of Neuroglia.	5 Marks	L1	CO1
7.	Illustrate the parts and functions of Mid brain and Cerebellum.	5 Marks	L1	CO1
8.	Description on Role of RAS in kidney and disorders of kidney.	5 Marks	L1	CO3
9.	Describe the role of pepsin in protein digestion.	5 Marks	L1	CO2
10	Explain the source and actions of Oxytocin and Calcitonin. Hormone.	5 Marks	L1	CO4
11.	Describe the role of Insulin in glucose metabolism and its disorders.	5 Marks	L1	CO4
12.	Explain the Mechanism of respiration and its regulation.	5 Marks	L1	CO3
13.	Describe the Fertilization and Oogenesis.	5 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH-23) Regular Examinations, July – 2024

PATHOPHYSIOLOGY

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Electrolyte imbalance.	2 Marks	L1	CO1
	b)	Write the signs and symptoms of Diabetes Mellitus.	2 Marks	L1	CO3
	c)	Write the causative organism and signs, symptoms for UTI..	2 Marks	L1	CO5
	d)	Write the causative organism for Leprosy.	2 Marks	L1	CO5
	e)	Write the signs and symptoms of Hyperthyroidism..	2 Marks	L1	CO3
	f)	Define Meningitis. Classify Infectious Meningitis..	2 Marks	L1	CO5
	g)	Define tuberculosis and its types.	2 Marks	L1	CO5
	h)	Write the causative agent, mode of transmission for AIDS.	2 Marks	L1	CO5
	i)	Write the Causative agent, mode of transmission of Hepatitis.	2 Marks	L1	CO5
	j)	Define Hypogonadism and Gynaecomastia.	2 Marks	L1	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Write in detail the vascular events involved in the process of Inflammation.	10 Marks	L1	CO1
3.	Define hypertension. Discuss the pathogenesis of essential hypertension.	10 Marks	L1	CO2
4.	What are metabolic disorders? Explain the pathogenesis of diabetes mellitus.	10 Marks	L1	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	What are the various biochemical intracellular accumulations found in Cell Injury?	5 Marks	L1	CO1
6.	Define myocardial infarction. Briefly, write the morphology of infarction.	5 Marks	L2	CO2
7.	Explain the etiology, pathogenesis, signs and symptoms of COPD.	5 Marks	L1	CO2
8.	Write a note on Jaundice.	5 Marks	L2	CO4
9.	Differentiate between intrinsic and extrinsic asthma.	5 Marks	L1	CO2
10	Write pathogenesis of Goitre.	5 Marks	L1	CO4
11.	Define metastasis. Briefly discuss the routes of metastasis.	5 Marks	L1	CO4
12.	Explain the Pathophysiology of IDA.	5 Marks	L1	CO4
13.	What is Cerebrovascular Disease? Explain the pathogenesis of Stroke.	5 Marks	L1	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH-23) Regular Examinations, July – 2024

COMPUTER APPLICATIONS IN PHARMACY

Time: 2 hours **Max. Marks: 50**

PART - A

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

1.	Discuss the standard operating procedures in preclinical drug development.	10 Marks	L2	CO1
2.	Write about Pharmacist role in medical adherence and Mathematical Modelling in Drug Discovery and Development.	10 Marks	L4	CO2
3.	Write and describe stages in Software Development Life Cycle.	10 Marks	L4	CO2

PART - B

Answer any SIX Question.
All Questions Carry Equal Marks

6 x 5 = 30 Marks

4.	Define Database and its types.	5 Marks	L2	CO4
5.	Write about Web servers and its types.	5 Marks	L2	CO4
6.	Difference between HTML and XML.	5 Marks	L2	CO4
7.	Benefits of E-Prescription and Barcode Medication Administration.	5 Marks	L1	CO4
8.	Write about PUBMED and Its importance.	5 Marks	L2	CO5
9.	What are the differences between Windows and DOS?	5 Marks	L3	CO5
10.	Write About Usage of Computers in Hospital Pharmacy and Other Applications of Computers.	5 Marks	L4	CO5
11.	Convert the following: i) $(0110101100)_2 = (\ ?\ )_{16}$ ii) $(23D)_{16} = (\ ?\ )_8$	5 Marks	L3	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SoP-BPH-23) Regular Examinations, July – 2024

ENVIRONMENTAL SCIENCES

Time: 2 hours **Max. Marks: 50**

PART - A

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

1.	What is land resource? Write in detail about land degradation and soil erosion.	10 Marks	L1	CO1
2.	Write in detail about sources of water pollution and effects of water pollution.	10 Marks	L1	CO3
3.	What is energy flow in the ecosystem? Write in detail about water cycle and carbon cycle.	10 Marks	L1	CO2

PART - B

Answer any SIX Question.
All Questions Carry Equal Marks

6 x 5 = 30 Marks

4.	Write briefly about functions of forest.	5 Marks	L1	CO1
5.	Write a note on mineral resources.	5 Marks	L1	CO1
6.	Write about abiotic component of ecosystem.	5 Marks	L1	CO2
7.	Write in detail about producers and consumers of ecosystem.	5 Marks	L1	CO2
8.	Define pollutant. Write classification of pollutants.	5 Marks	L2	CO3
9.	Write briefly about sources of air pollution.	5 Marks	L1	CO3
10.	Write briefly about food resources.	5 Marks	L1	CO1
11.	What is non renewable energy? What are the environmental impacts of coal?	5 Marks	L1	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the truth table for $(p \rightarrow \neg q)$.	2 Marks	L1	CO1
	b)	Write Contrapositive and Inverse of the implication $(p \rightarrow q)$ where p:2 is an integer and q: 9 is a multiple of 3	2 Marks	L1	CO1
	c)	Find matrix of a relation $R = \{(1,2),(1,3),(2,2),(3,1)\}$ on $A = \{1,2,3\}$.	2 Marks	L1	CO2
	d)	Define Lattice and give one examples which is not Lattice.	2 Marks	L1	CO2
	e)	Define Reflexive and Transitive relation.	2 Marks	L1	CO3
	f)	Explain Pigeon hole principle.	2 Marks	L2	CO3
	g)	Find the generating function for the sequence 1,-1,1,-1,….	2 Marks	L1	CO4
	h)	Find the sequence for the function $4x(1-x)^{-1}$.	2 Marks	L1	CO4
	i)	Define Path and Cycle .	2 Marks	L1	CO5
	j)	How many edges are there in a graph with 10 vertices each of degree 3?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write the truth table for $\neg(p \rightarrow q) \leftrightarrow (\neg p \rightarrow \neg q)$.	8 Marks	L1	CO1
	b)	Obtain the PDNF and PCNF of $p \rightarrow \{(p \rightarrow q) \wedge \neg(\neg q \vee \neg p)\}$.	8 Marks	L1	CO1
		(OR)			
3.	a)	Show that $\{(p \vee q) \wedge (p \vee \neg q)\} \vee q \equiv p \vee q$.	8 Marks	L2	CO1
	b)	Evaluate the Principal Conjunctive Normal form (PCNF) of $(\neg p \rightarrow r) \wedge (q \leftrightarrow r)$.	8 Marks	L2	CO1

MODULE-II

4.	a)	Show that positive divisors of 36 under the relation division is Lattice.	8 Marks	L2	CO2
	b)	rove that 1. $R \cup S$ and $R \cap S$ are reflexive, if R and S are reflexive. 2. $R \cup S$ and $R \cap S$ are symmetric, if R and S are symmetric.	8 Marks	L1	CO2

(OR)

5.	a)	Let $S = \{a,b,c\}$ and $P(S)$, the power set of S. On $P(S)$, define the relation R by ARB if and only if $A \subseteq B$. Show that this subset relation is a partial ordering relation on $P(S)$. Draw its Hasse diagram.	8 Marks	L2	CO2
	b)	Define function and list the types of the function with example.	8 Marks	L2	CO2

MODULE-III

6.	a)	By using mathematical induction, prove that $1^2 + 2^2 + 3^2 + \ldots\ldots + n^2 = \frac{n(n+1)(2n+1)}{6}, n \geq 1$.	8 Marks	L3	CO3
	b)	Show that the set of all positive rational numbers forms an Abelian group under the composition defined by $a * b = \frac{ab}{2}$.	8 Marks	L2	CO3

(OR)

7.	a)	Define the terms Semi group, Monoid, Homomorphism, Isomorphism with suitable examples.	8 Marks	L1	CO3
	b)	Does monoid homomorphism preserves the property of invertibility? Explain with an example.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Find the coefficient of x^{25} in $(x^2 + x^3 + x^4 + x^5 + x^6)^7$.	8 Marks	L1	CO4
	b)	Solve the recurrence relation using generating function $a_n - 6a_{n-1} + 9a_{n-2} = 0$ for $n \geq 2$ where $a_0 = 5, a_1 = 12$.	8 Marks	L3	CO4

(OR)

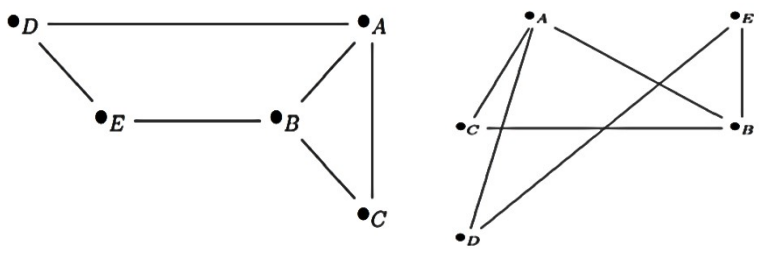
9.	a)	Use generating function to determine the number of four element subsets of $S = \{1,2,3,\ldots 15\}$ that contain no consecutive integers.	8 Marks	L3	CO4
	b)	Solve the recurrence relation $F_{n+2} = F_{n+1} + F_n$ for $n \geq 0$ where $F_0 = 0, F_1 = 1$.	8 Marks	L3	CO4

MODULE-V

10.	a)	Show that in every graph the number of vertices of odd degree is even.	8 Marks	L2	CO5
	b)	Explain DFS algorithm with suitable example.	8 Marks	L2	CO5

(OR)

11.	a)	Determine whether the following graphs are isomorphic.	8 Marks	L3	CO5



	b)	Obtain MST using prim's and Kruskal's algorithm. Consider any graph which has atleast 7 nodes, atleast 12 edges and atleast3 edges having same weight.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January - 2024

DATA STRUCTURES AND ALGORITHMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Mention the various features of good program.	2 Marks	L2	CO1
	b)	Define Space complexity of an algorithm.	2 Marks	L1	CO1
	c)	Illustrate in How many ways can you categorize Data structures.	2 Marks	L3	CO2
	d)	Define an algorithm. What do you understand by its efficiency?	2 Marks	L1	CO2
	e)	What is Asymptotic notation of an algorithm.	2 Marks	L3	CO2
	f)	Write an algorithm to find the sum of first N natural numbers.	2 Marks	L1	CO2
	g)	Compare time complexity of different sorting algorithms.	2 Marks	L2	CO1
	h)	Which one will you prefer to use linked list or Array? When?	2 Marks	L3	CO1
	i)	Specify the time and space complexity of Linear and Binary search.	2 Marks	L2	CO1
	j)	What is Polynomial and give examples.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss about asymptotic notation of an algorithm briefly.	8 Marks	L2	CO1
	b)	Write a program to implement a sort technique which sorts the numbers based on individual digits.	8 Marks	L3	CO1
		(OR)			
3.	a)	Sort the given integers using Selection sort: 35, 12, 14, 9, 15, 45, 32, 95, 40, 5.	8 Marks	L1	CO1
	b)	Compare all the sorting methods and Justify how to pick up best sorting method.	8 Marks	L4	CO1

MODULE-II

4.	a)	Define Double Linked List. Write a program to delete a node at all cases when list is having a single element.	8 Marks	L4	CO2
	b)	Given a Linked list that contains alphabets. The alphabets may be in Upper case or in lower case. Create two linked lists one stores upper case another which stores lower case alphabets.	8 Marks	L3	CO2
		(OR)			
5.	a)	How to create a Circular Linked List and insert node at the end, Explain.	8 Marks	L3	CO2
	b)	Summarize about Sparse matrix representation of polynomial a and its performance analysis.	8 Marks	L1	CO2

MODULE-III

6.	a)	Briefly explain the operations of Queue with example.	8 Marks	L4	CO3
	b)	Write a program for balancing of symbols in an arithmetic expression using suitable data structure.	8 Marks	L3	CO3
		(OR)			
7.	a)	What is queue? Explain the array representation of it with suitable example.	8 Marks	L3	CO3
	b)	Write the steps to evaluate a post fix expression. Evaluate the following post fix expression using stack: 8 3 4 + - 4 9 3 / + * 2 ^ 3 +.	8 Marks	L1	CO3

MODULE-IV

8.	a)	If the depth of the binary tree is k, the maximum number of nodes in the binary tree is 2k-1.Prove.	8 Marks	L4	CO4
	b)	Recommend the result of inserting 3, 1, 4, 6, 9, 2, 5, 7 into an initially empty binary search tree.	8 Marks	L3	CO2
		(OR)			
9.	a)	Give an algorithm for converting a tree to its mirror. Mirror of a tree is another tree with left and right children of all non-leaf nodes are interchanged.	8 Marks	L1	CO2
	b)	As a workflow for compositing digital images for visual effects what data structures used? Identify it and explain it with possible operations.	8 Marks	L1	CO1

MODULE-V

10.	a)	Explain the need of graphs and how a graph can be represented as linear list and linear array.	8 Marks	L4	CO3
	b)	Analyze Static and Dynamic Hashing in terms of better usage.	8 Marks	L2	CO2
		(OR)			
11.	a)	What data structure used in telecommunication network routing and optimization, workload assignment, matching, supply chain optimization and public transport planning?. Explain it in detail.	8 Marks	L3	CO4
	b)	To design a printed circuit board with the minimum number of traces, write an algorithm to establish connections between pins and explain it with example.	8 Marks	L4	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering,
Computer Science and Engineering (Artificial Intelligence and Machine Learning),
Computer Science and Engineering (Data Science),
Computer Science and Engineering (Cyber Security), Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Explain static in Java.	2 Marks	L1	CO1
	b)	Mention the advantages and disadvantages of arrays in Java	2 Marks	L1	CO1
	c)	How many values can be returned by a Method in Java?	2 Marks	L1	CO1
	d)	Specify the rule for using super in a class.	2 Marks	L2	CO1
	e)	What are the limitations of recursion?	2 Marks	L1	CO2
	f)	What are command-line arguments? Explain briefly	2 Marks	L1	CO2
	g)	What is the purpose of finally in Java?	2 Marks	L2	CO3
	h)	Define finalize().	2 Marks	L1	CO3
	i)	What is the use of notify() and notifyAll()?	2 Marks	L1	CO4
	j)	Explain a syntax for main() method.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain history and evolution of java	8 Marks	L2	CO1
	b)	Give the structure of java program?	8 Marks	L2	CO1

(OR)

3.	a)	Write a java program to print first 100 Fibonacci numbers.	8 Marks	L3	CO1
	b)	Classify different data types in Java.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the Usage of "Super" keyword, with an example program.	8 Marks	L2	CO1
	b)	What are various Member access rules explain with an example.	8 Marks	L1	CO1

(OR)

5.	a)	Write a Java code to demonstrate method overriding.	8 Marks	L3	CO1
	b)	What is final keyword? Explain its importance in java with an example program.	8 Marks	L1	CO1

MODULE-III

6.	a)	Explain the usage of throw keyword? Write with an example.	8 Marks	L2	CO2
	b)	Define the usage of throws keyword in exception handling? Explain with an example program.	8 Marks	L2	CO2

(OR)

7.	a)	What are Java's built-in exception? Write the importance of finally block.	8 Marks	L3	CO2
	b)	What are try, catch, and finally keywords in with an example?	8 Marks	L2	CO2

MODULE-IV

8.	a)	Explain various interfaces used in Collection framework.	8 Marks	L2	CO3
	b)	List and Explain Hierarchy of Collection Framework.	8 Marks	L2	CO3

(OR)

9.	a)	Define List Interface and explain various methods used in list interface.	8 Marks	L2	CO3
	b)	Write a Java Program to Update Elements in a List.	8 Marks	L3	CO3

MODULE-V

10.	a)	Explain about Event listeners and Event Classes in Java with suitable example.	8 Marks	L2	CO4
	b)	Write a Java program to handle Mouse Listener events.	8 Marks	L3	CO4

(OR)

11.	a)	Write a Java Program to demonstrate the event actions associated with a keyboard.	8 Marks	L3	CO4
	b)	Explain commonly used constructors in JLabel class.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

ENGINEERING CHEMISTRY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Recall the units of hardness.	2 Marks	L1	CO1
	b)	Define reverse osmosis.	2 Marks	L1	CO1
	c)	Write the structure of polycarbonate.	2 Marks	L1	CO2
	d)	Give any two examples of natural biodegradable polymers.	2 Marks	L1	CO2
	e)	What is a primary battery? Give an example.	2 Marks	L1	CO3
	f)	List the various types of electronic transitions in UV spectroscopy.	2 Marks	L1	CO3
	g)	Write the applications of Teflon.	2 Marks	L1	CO4
	h)	Distinguish between SEM and TEM.	2 Marks	L1	CO4
	i)	Define calorific value. Write its significance.	2 Marks	L1	CO5
	j)	What are cloud point and pour point?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.		Describe the Nalgonda deflouridation method and list its advantages and disadvantages.	16 Marks	L2	CO1

(OR)

3.	a)	What are boiler troubles? How they are caused? Explain various prevention methods for the removal of scales from the boilers.	10 Marks	L2	CO1
	b)	Discuss the desalination of brackish water by reverse osmosis	6 Marks	L2	CO1

MODULE-II

4.		Explain the mechanism of degradation of biodegradable polymers and list the practical applications of biodegradable polymers.	16 Marks	L2	CO2

(OR)

5.	a)	Nano-materials are the backbone of any technology. Justify	8 Marks	L4	CO2
	b)	Outline the electrical conductance in the conducting polymer by taking one example.	8 Marks	L2	CO2

MODULE-III

6.		Discuss the construction and working of the lead-acid storage battery with a neat diagram and list its applications.	16 Marks	L2	CO3

(OR)

7.		Describe the construction, working, and applications of the solid-oxide fuel cell.	16 Marks	L2	CO3

MODULE-IV

8.		Illustrate the instrumentation and working of UV-spectroscopy with a block diagram. Write its applications.	16 Marks	L2	CO4
		(OR)			
9.		Describe the instrumentation and working of the IR spectrophotometer with a block diagram. Write its applications.	16 Marks	L2	CO4

MODULE-V

10.	a)	Describe the manufacture of gasoline by the Fischer-Tropsch process with a neat diagram.	10 Marks	L2	CO5
	b)	Calculate the gross and net calorific values of a coal sample containing 84% carbon, 1.5% sulphur, 0.6% nitrogen, 5.5% hydrogen, and 8.4% oxygen.	6 Marks	L3	CO5
		(OR)			
11.		Discuss the classification of lubricants.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

CIVIL ENGINEERING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Name different types of stones.	2 Marks	L1	CO1
	b)	Define efflorescence.	2 Marks	L1	CO1
	c)	What are different types of glass?	2 Marks	L1	CO2
	d)	Enlist defects in timber.	2 Marks	L1	CO2
	e)	What are the ingredients used in manufacturing cement?	2 Marks	L1	CO3
	f)	List different tests performed in identifying the strength of concrete.	2 Marks	L1	CO3
	g)	List the types of slump.	2 Marks	L1	CO4
	h)	Mention the effects of compaction.	2 Marks	L2	CO4
	i)	What is modulus of rupture?	2 Marks	L1	CO5
	j)	Define Characteristic Strength of concrete.	2 Marks	L1	CO6

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Classify stones and explain in detail.	8 Marks	L4	CO1
	b)	Define stone quarrying and explain briefly the methods of quarrying of stones.	8 Marks	L2	CO1
		(OR)			
3.	a)	Compare the clamp burning and kiln burning of bricks.	8 Marks	L4	CO1
	b)	How is clay tiles manufactured? Explain its properties and applications	8 Marks	L4	CO1

MODULE-II

4.	a)	Draw and explain the cross-section of an exogenous tree.	8 Marks	L2	CO2
	b)	Differentiate between: i) exogenous and endogenous trees ii) soft wood and hard wood	8 Marks	L4	CO2
		(OR)			
5.	a)	Applications of G. I sheet. Explain.	8 Marks	L2	CO2
	b)	What are sustainable materials used in building construction? Explain.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the manufacturing process of OPC.	8 Marks	L2	CO3
	b)	What is standard consistency of cement? How it is determined in the laboratory?	8 Marks	L4	CO3

(OR)

7.	a)	Define chemical admixture and differentiate plasticizer and super plasticizer.	8 Marks	L4	CO3
	b)	Explain the mechanical properties of aggregates in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What do you understand by batching of concrete? Briefly explain different methods of batching.	8 Marks	L4	CO4
	b)	How the workability of concrete is tested in field and in laboratory?	8 Marks	L4	CO4

(OR)

9.	a)	Discuss the factors affecting the workability in fresh concrete.	8 Marks	L2	CO4
	b)	Distinguish Segregation and bleeding in concrete in detail.	8 Marks	L4	CO4

MODULE-V

10.	a)	Briefly explain factors affecting the modulus of elasticity of concrete.	10 Marks	L2	CO5
	b)	Explain the relation between creep and time.	6 Marks	L2	CO5

(OR)

11.		Design a concrete mix to be used in structural elements by IS method for following requirements.	16 Marks	L5	CO6

	Characteristic compressive strength at	
(i)	28 days, f_{ck}	25N/mm^2
	Maximum size of the available	
(ii)	aggregate	20 mm
	Shape of coarse	
(iii)	aggregate	angular
	Degree of workability desired, compacting	
(iv)	factor	0.85
	Degree of quality	
(v)	control	good
(vi)	Type of exposure	moderate
	Test data for concrete making materials	
	Specific gravity of	
	cement	3.15
	Specific gravity of coarse aggregate	2.72
	Specific gravity of fine aggregate	2.66
	Water absorption (air dry to saturated surface	
	dry) in coarse aggregate, per cent	0.5
	Surface moisture	
	coarse aggregate	nil
	Fine aggregate, percent	2
	Compressive strength of cement at 28	
(vi)	days,	51 N/mm^2
	Sieve analysis	Zone II

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

ENVIRONMENTAL SCIENCE

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Computer Science and Engineering(Artificial Intelligence and Machine Learning), Computer Science and Engineering(Data Science), Computer Science and Engineering(Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the different layers in environment?	2 Marks	L2	CO1
	b)	List out the factors causing deforestation.	2 Marks	L1	CO1
	c)	Distinguish between Pyramid in number and pyramid in biomass.	2 Marks	L1	CO2
	d)	Define endemic species.	2 Marks	L2	CO2
	e)	Write the various sources of nuclear pollution.	2 Marks	L2	CO3
	f)	List out the causes of Tsunamis.	2 Marks	L1	CO3
	g)	Define global warming.	2 Marks	L1	CO4
	h)	Discuss the wildlife protection act.	2 Marks	L1	CO4
	i)	Define population explosion.	2 Marks	L2	CO5
	j)	Write the significance of information technology.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Justify that ecological uses of forests surpass commercial uses.	8 Marks	L1	CO1
	b)	Explain the causes and effects of energy resources.	8 Marks	L2	CO1

(OR)

3.	a)	Discuss the major environmental impacts of deforestration.	8 Marks	L1	CO1
	b)	Discuss the role of individual in conservation of natural resources.	8 Marks	L2	CO1

MODULE-II

4.	a)	Briefly explain the forest ecosystem.	8 Marks	L4	CO2
	b)	Write short notes on i) Energy Flow ii) Ecological Pyramids	8 Marks	L2	CO2

(OR)

5.	a)	What is the concept and values of biodiversity?	8 Marks	L1	CO2
	b)	What are threats of biodiversity? Discuss their salient features.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the causes and adverse effects of water pollution.	8 Marks	L1	CO3
	b)	Enumerate the major sources of air pollution.	8 Marks	L1	CO3

(OR)

7.	a)	Explain the latest development in pollution controls.	8 Marks	L1	CO3
	b)	Write short notes on i) Floods ii) Earthquakes	8 Marks	L3	CO3

MODULE-IV

8.	a)	What is sustainable development? What are the measuring techniques?	8 Marks	L1	CO4
	b)	Explain the concept of green technologies.	8 Marks	L2	CO4

(OR)

9.	a)	Discuss briefly National green tribunal and explain its importance.	8 Marks	L2	CO4
	b)	Explain environment protection act and its importance.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss briefly population growth and explain the population characteristics.	8 Marks	L1	CO5
	b)	What is the role of human rights in Indian constitution?	8 Marks	L2	CO5

(OR)

11.	a)	Explain the roles and responsibilities of Women and Child welfare departments.	8 Marks	L2	CO5
	b)	Discuss the salient features of IT in environment.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

RURAL TECHNOLOGY

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write the significance of IAY and PMGSY.	2 Marks	L2	CO1
	b)	Give the full form of NIF and CAPART.	2 Marks	L1	CO1
	c)	Compare renewable energy and non-renewable energy sources with proper examples.	2 Marks	L4	CO2
	d)	What is biomass energy?	2 Marks	L1	CO2
	e)	Define micro-propagation.	2 Marks	L1	CO3
	f)	List few economic plants.	2 Marks	L1	CO3
	g)	What is a recharge pit?	2 Marks	L1	CO4
	h)	Compare the advantages and disadvantages ofpisciculture and Aquaculture.	2 Marks	L4	CO4
	i)	Give examples of ICT used in Rural Development	2 Marks	L1	CO5
	j)	Expand SAGY and give its importance.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Write a short note on the following: i) NABARD ii) CSIR	8 Marks	L1	CO1
	b)	List the various schemes that are related to rural housing. Analyze, how the schemes will be helpful for the rural areas.	8 Marks	L4	CO1

(OR)

3.	a)	Elucidate the significance of science and technology for the elimination of poverty in rural areas.	8 Marks	L2	CO1
	b)	Analyze, how technology transfer helps rural development.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain the working principle of solar water pumps. How the implementation this technique in agriculture fields foster sustainability.	8 Marks	L2	CO2
	b)	Differentiate between reuse and recycle and explain how it helps in reducing the waste generation.	8 Marks	L4	CO2

(OR)

5.	a)	What is bio-gas? Discuss how one can process and generate biogas using the locally available raw materials as an alternative for conventional cooking fuel.	8 Marks	L3	CO2
	b)	Discuss various non-conventional sources of energy and their importance for a sustainable development.	8 Marks	L2	CO2

MODULE-III

6.	a)	Define tissue culture. Relate in detail how this technology helps in protecting the endemic or endangered plant species.	8 Marks	L1	CO3
	b)	Report the latest developments in building construction technologies that are feasible to implement in rural India.	8 Marks	L2	CO3

(OR)

7.	a)	Write a short note on tissue culture and its applications. Also report latest advancements in tissueculture.	8 Marks	L1	CO3
	b)	Explain in detail about cultivation and the processing of economic plants.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What is meant by apiculture? Explain opportunities present in apiculture.	8 Marks	L3	CO4
	b)	Describe the importance of bio-fertilizers and how they help in improving the fertility of soil.	8 Marks	L2	CO4

(OR)

9.	a)	Report the latest developments in cultivation and processing of aromatic plants.	8 Marks	L2	CO4
	b)	Explain the significance of environment and sanitation in community development.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the role of private sector participation in agriculture and service sectors.	8 Marks	L2	CO5
	b)	Mention different village adoption schemes promoted by central government for the benefit of rural villages.	8 Marks	L2	CO5

(OR)

11.	a)	Explain in detail the role of information technology and its usage in day to day life in rural community	8 Marks	L2	CO5
	b)	Write a brief note on SAGY. Explain how this program focuses on social and cultural development in rural areas.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

DIGITAL LOGIC DESIGN

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Determine the value of base x if $(211)_x=(152)_8$.	2 Marks	L2	CO1
	b)	Add 0110 1000 and 0101 1100 using binary addition.	2 Marks	L2	CO2
	c)	Define K-Map method and specify its role in representing in Boolean functions.	2 Marks	L1	CO2
	d)	Convert the given expression in canonical SOP form Y = AC + AB + BC.	2 Marks	L2	CO2
	e)	Draw the circuit diagram of 2×4 decoder.	2 Marks	L1	CO3
	f)	Design full adder circuit by applying suitable logic gates.	2 Marks	L3	CO3
	g)	Define the following: i) State table. ii) Truth table. iii) Characteristic table. iv) Excitation table.	2 Marks	L1	CO3
	h)	Analyze the operation of D flip-flop.	2 Marks	L2	CO3
	i)	Distinguish between synchronous & Asynchronous sequential circuits.	2 Marks	L2	CO4
	j)	List the various types of RAM's and define each type of RAM.	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Convert the following numbers into decimal numbers. i) $(1011011101101110)_2$ ii) $(A0CB.EE)_{16}$	8 Marks	L2	CO1
	b)	Explain the procedure of following conversions with an example. i) Gray to binary ii) Binary to gray	8 Marks	L2	CO1

(OR)

3.	a)	Find the minterm expansion of f (a, b, c, d) = a' (b'+d) +acd' .	10 Marks	L2	CO1
	b)	State the postulates and theorems of Boolean algebra.	6 Marks	L2	CO1

MODULE-II

4.		Simplify the following Boolean functions using K-map and realize the circuit i) F1(A, B, C, D) = ∑(0, 2, 3, 5, 7, 8, 10, 11, 14, 15). ii) F2(A, B, C, D) = ∑(1, 3, 4, 5, 10, 11, 12, 13, 14, 15).	16 Marks	L3	CO2
		(OR)			
5.	a)	Simplify the following Boolean expression using Quine McCluskey method: F = ∑m (0,9,15,24,29,30) + d(8,11,31).	10 Marks	L3	CO2
	b)	Obtain the Complement of Boolean Expression i) A+B+A'B'C ii) AB + A (B +C) + B'(B+D)	6 Marks	L1	CO2

MODULE-III

6.	a)	Explain how decoder acts as a demultiplexer.	8 Marks	L2	CO3
	b)	Implement full subtractor using NAND gates only.	8 Marks	L3	CO3
		(OR)			
7.	a)	Implement the following function using suitable multiplexer. F(A,B,C,D)=Σ(0,1,3,4,8,9,15).	8 Marks	L3	CO3
	b)	Realize the function f(A,B,C,D) = π(1,4,6,10,14)+d (0,8,11,15) using 16:1 MUX.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the operation of SR flip flop with necessary functional table.	8 Marks	L2	CO3
	b)	With a neat diagram explain about 4-bit bidirectional shift register.	8 Marks	L1	CO3
		(OR)			
9.	a)	Convert S-R flip flop into JK-flip flop. Draw and explain the logic diagram.	8 Marks	L3	CO3
	b)	Design a ripple counter and explain its operation.	8 Marks	L3	CO3

MODULE-V

10.	a)	Design a PLA using following function F1 (A, B, C) = ∑ (0, 1, 3, 5) and F2 (A, B, C) = ∑ (1, 2, 4, 7)	8 Marks	L3	CO4
	b)	Generate the following Boolean function with PAL with 4 inputs and 4 outputs. Y_3= a'bc'd+a'bcd'+abc'd Y_2=a'bcd'+a'bcd+abcd Y_1=a'bc'+a'bc+ab'c+abc' Y_0=abcd	8 Marks	L2	CO4
		(OR)			
11.	a)	Implement the following Boolean functions using PAL. w(A,B,C,D) = Σ m (0,2,6,7,8,9,12,13) x (A,B,C,D) = Σ m (0,2,6,7,8,9,12,13,14) y (A,B,C,D) = Σ m (2,3,8,9,10,12,13)	8 Marks	L3	CO4
	b)	Explain about RAM in detail.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

PYTHON PROGRAMMING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define multiline statement in python.	2 Marks	L2	CO1
	b)	What are the rules for writing an identifier?	2 Marks	L1	CO1
	c)	What is range() function?	2 Marks	L3	CO1
	d)	Write the general syntax of the for-in loop.	2 Marks	L1	CO1
	e)	What is **len** function and explain how it is used on strings with an example.	2 Marks	L3	CO1
	f)	Mention the features of lists in Python.	2 Marks	L1	CO1
	g)	List some built in modules in Python.	2 Marks	L2	CO3
	h)	How to open a new file in Python?	2 Marks	L3	CO4
	i)	What are basic overloading methods?	2 Marks	L2	CO5
	j)	How to create a destructor in Python? Give an example.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is an operator and explain about the arithmetic operators and assignment operators in Python with example.	8 Marks	L2	CO1
	b)	Write a program to find the sum of all even numbers up to a number specified by the user.	8 Marks	L3	CO1

(OR)

3.	a)	List out the keywords available in Python. Brief their purpose.	8 Marks	L2	CO1
	b)	Discuss the int(), float(), str(), chr() and complex() type conversion functions with examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain in detail about different iterative statements with an example.	8 Marks	L2	CO1
	b)	Write a python script to print factorial of a given number.	8 Marks	L3	CO1

(OR)

5.	a)	Explain different types of selection statements with suitable example.	8 Marks	L2	CO1
	b)	Write a python program to check whether a given number is palindrome or not.	8 Marks	L3	CO1

MODULE-III

6.	a)	What is list? Explain the concept of slicing and indexing with proper examples.	8 Marks	L2	CO1
	b)	Write a Python program to remove duplicates from a list.	8 Marks	L3	CO1

(OR)

7.	a)	What is dictionary? Illustrate with an example python program the usage of nested dictionary	8 Marks	L2	CO1
	b)	What is regular expression? What are the different steps to be follow to use a regular expression in Python.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Write a Python function that checks whether a passed string is palindrome or not.	8 Marks	L4	CO3
	b)	With necessary examples briefly explain how to define a function and call a function.	8 Marks	L2	CO3

(OR)

9.	a)	Write a Python program to illustrate the use of command-line arguments.	8 Marks	L2	CO3
	b)	What are the key properties of a file? Explain in detail file reading/writing process with an example of python program.	8 Marks	L2	CO4

MODULE-V

10.	a)	Write a brief note on Object Oriented programming concepts.	8 Marks	L2	CO4
	b)	Write about the different types of inheritance supported in Python.	8 Marks	L2	CO4

(OR)

11.	a)	List some few common Exception types and explain when they occur.	8 Marks	L2	CO4
	b)	Design three classes STUDENT, EXAM and RESULT. The STUDENT class has data members such as rollno, name. Create a class EXAM by inheriting the STUDENT class. The EXAM class adds data members representing the marks scored in six subjects. Derive the RESULT from the EXAM class and has its own data members such as total marks. Write a python program to model this relationship.	8 Marks	L4	CO4

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January - 2024

PROGRAMMING IN C AND DATA STRUCTURES

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define time complexity and space complexity.	2 Marks	L1	CO2
	b)	What are Lvalues and Rvalues.	2 Marks	L1	CO1
	c)	List the five types of Tokens in C program.	2 Marks	L2	CO1
	d)	Differentiate between entry and exit control loop.	2 Marks	L2	CO1
	e)	Define Array.	2 Marks	L1	CO3
	f)	What is Scope and extent?	2 Marks	L1	CO3
	g)	Give an Example of Array of Pointers.	2 Marks	L2	CO4
	h)	What is Linear data structure?	2 Marks	L2	CO4
	i)	Define Self referential structure.	2 Marks	L1	CO5
	j)	What are the operations on stack?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the operators in C language with an example.	8 Marks	L1	CO1
	b)	Explain while loop with an example.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain Arithmetic, Logical, Relational and Conditional Operators with example.	8 Marks	L1	CO1
	b)	Write a C program to find the simple interest for the given amount, time and rate of interest.	8 Marks	L3	CO1

MODULE-II

4.	a)	Compare pre-test and post-test loops with an example.	8 Marks	L2	CO2
	b)	Define flowchart. Draw the flowchart for swapping of two numbers.	8 Marks	L2	CO2
		(OR)			
5.	a)	Write a C program to perform arithmetic operations using switch statement.	8 Marks	L3	CO2
	b)	Explain the top-down design technique for solving the given problem.	8 Marks	L1	CO2

MODULE-III

6.	a)	Write a C program that uses pointers to initialize the members of the structure.	8 Marks	L3	CO2
	b)	Explain different types of dynamic memory allocation functions.	8 Marks	L3	CO2

(OR)

7.	a)	With an example, explain how to declare and access structure members.	8 Marks	L2	CO2
	b)	Write a C program to find a sub-string in a main string.	8 Marks	L3	CO2

MODULE-IV

8.	a)	Write a program to insert element into singly linked list.	8 Marks	L3	CO2
	b)	Explain the process of infix to postfix with an example.	8 Marks	L1	CO2

(OR)

9.	a)	Explain nested structures briefly.	8 Marks	L1	CO2
	b)	Explain array of pointers briefly.	8 Marks	L3	CO2

MODULE-V

10.	a)	Explain in detail about the implementation of Staks using Arrays.	8 Marks	L2	CO3
	b)	Explain selection sort with an example.	8 Marks	L2	CO4

(OR)

11.	a)	Write a program to perform linear search along with the tracing.	8 Marks	L2	CO4
	b)	Write a program to implement bubble sort with an example.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations January – 2024

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Compare active and passive transducer.	2 Marks	L2	CO1
	b)	List the elements in the any pressure measuring systems	2 Marks	L1	CO1
	c)	Compare bonded and unbonded strain gauges.	2 Marks	L2	CO2
	d)	List the advantages and advantages of LVDT.	2 Marks	L1	CO2
	e)	Explain the working principle of vapour pressure thermometer.	2 Marks	L2	CO3
	f)	Is thermocouple being an active transducer? Justify.	2 Marks	L2	CO3
	g)	How to measure using electromagnetic principle?	2 Marks	L2	CO4
	h)	Differentiate the null balance and potentiometric type of device for measurement of acceleration.	2 Marks	L2	CO4
	i)	What are digital sensors and why they are called digital sensors?	2 Marks	L1	CO4
	j)	State the principle of magnetotransistor.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the generalized measurement system with a block diagram.	10 Marks	L2	CO1
	b)	Explain the static accuracy and precision with example.	6 Marks	L2	CO1
		(OR)			
3.	a)	Define Accuracy, Threshold, Linearity, Dead space, Measuring Lag. What is the basis for static and dynamic characteristics? Which of these come under static and dynamic?	12 Marks	L2	CO1
	b)	List the various errors occurred in measuring instruments.	4 Marks	L1	CO1

MODULE-II

4.	a)	Demonstrate the working principle of change in distance between the plates of the capacitor along with its characteristics. Explain with an application.	8 Marks	L2	CO2
	b)	Describe the construction, principle of working and applications of Hall Effect transducers.	8 Marks	L2	CO2
		(OR)			
5.	a)	Can a variable reluctance sensor be used for measurement of displacement? Justify.	8 Marks	L2	CO2

	b)	A parallel plate capacitive transducer uses plates of area 500mm^2 which are separated by a distance 0.2mm. Calculate the value of capacitance when the dielectric is air having a permittivity of 8.85 x 10^{-12} F/m. Calculate the change in capacitance if a linear displacement reduces the distance between the plates to 0.18mm. Also calculate the ratio of per unit change of capacitance to per unit change of displacement.	8 Marks	L2	CO2
		MODULE-III			
6.	a)	Select a suitable NTC temperature sensor for measurement of very low temperatures. Explain the design concepts of the setup in detail.	8 Marks	L2	CO3
	b)	What are thermopiles? Explain how these can be used to measure for high temperatures.	8 Marks	L2	CO3
		(OR)			
7.	a)	Illustrate the construction and working of IC temperature sensors.	8 Marks	L2	CO3
	b)	A thermistor has a resistance of 3980Ω at 0°C and 794Ω at 50°C. The resistance temperature relationship is given by $R_T = aR_0e^{\frac{b}{T}}$. Find the range of resistance to be measured in case the temperature varies from 40°C to 100°C.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	State different methods for torque measurement. Explain any one in detailed.	8 Marks	L2	CO4
	b)	With a neat sketch explain the working of reluctance type accelerometers.	8 Marks	L2	CO4
		(OR)			
9.	a)	Compare the selection of different speed measuring transducers with respect to applications.	8 Marks	L2	CO4
	b)	Discuss the digital transducer in torque measurement.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain the working principle of the following sensors. i) Magneto diodes ii) Resonant sensors	8 Marks	L2	CO4
	b)	Distinguish the characteristics of Free gyroscope and Single-axis restrained gyro with suitable diagram.	8 Marks	L2	CO4
		(OR)			
11.	a)	Explain the working of magnetic incremental position encoders.	8 Marks	L2	CO4
	b)	Select and apply a suitable vibration sensor for seismic applications.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

SENSORS AND MEASURING INSTRUMENTS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Name the components of measurement system.	2 Marks	L1	CO1
	b)	Describe precision with example.	2 Marks	L2	CO1
	c)	Name the sensors used for measurement of resistance.	2 Marks	L1	CO2
	d)	Mention the applications of ultrasonic sensors.	2 Marks	L2	CO2
	e)	Sketch the circuit diagram of wheat stone bridge.	2 Marks	L2	CO3
	f)	Formulate the unknown parameter of Anderson bridge.	2 Marks	L2	CO3
	g)	Define electroluminescence and fluorescence.	2 Marks	L2	CO4
	h)	Differentiate dual beam and dual trace CRO.	2 Marks	L2	CO4
	i)	List the specifications of display devices.	2 Marks	L2	CO5
	j)	Describe the working principle of digital storage recorder.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the technique involved in DC ammeter and derive the shunt resistance of ammeter.	8 Marks	L4	CO1
	b)	A set of independent current measurements were taken by six observers and were recorded as 12.8A, 12.2A, 12.5A, 13.1A, 12.9A and 12.4 A. Calculate arithmetic mean, average deviation, standard deviation.	8 Marks	L4	CO1
		(OR)			
3.	a)	Define Accuracy, Threshold, Dynamic error, Sensitivity, Measuring Lag. What is the basis for static and dynamic characteristics? Which of these come under static and dynamic?	8 Marks	L3	CO1
	b)	Describe the working of Thermocouple type AC voltmeter with neat sketch.	8 Marks	L2	CO1

MODULE-II

4.	a)	Elaborate the working of potentiometers in detail and prove that they are linear devices.	8 Marks	L2	CO2
	b)	Sketch eddy current sensor and explain the working principle with its characteristics.	8 Marks	L3	CO2
		(OR)			
5.	a)	Describe displacement measurement with capacitive transducer and explain its working.	8 Marks	L2	CO2
	b)	Describe the working of piezoelectric sensors in detail.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the theory and method of measurement used in Q-meter.	8 Marks	L2	CO3
	b)	Draw the circuit diagram of Maxwell's bridge and Derive the conditions for balancing the bridge.	8 Marks	L4	CO3
		(OR)			
7.	a)	Describe the theory and method of measurement of high resistance.	8 Marks	L2	CO3
	b)	Draw the circuit diagram ofSchering bridge. Derive the conditions for balancing the bridge.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Describe the working of Frequency selective and Heterodyne wave analyzers with respect to working principle.	8 Marks	L2	CO4
	b)	Draw the block diagram of total harmonic distortion analyzer and explain each block in detail.	8 Marks	L2	CO4
		(OR)			
9.		Elaborate the following: i) Vertical deflection system ii) Dual beam CRO iii) Sampling oscilloscope	16 Marks	L3	CO4

MODULE-V

10.	a)	Mention the block of X-Y recorder and explain procedure of recording in it.	8 Marks	L2	CO5
	b)	Write short notes on 7 segment display devices.	8 Marks	L2	CO5
		(OR)			
11.	a)	Illustrate the applications of following devices. i) LCD Devices. ii) Data recorders.	8 Marks	L2	CO5
	b)	Explain the working of potentiometric recorder in detail.	8 Marks	L2	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

SEMICONDUCTOR DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Draw the VI characteristics of Tunnel diode.	2 Marks	L2	CO1
	b)	Define avalanche break down mechanism.	2 Marks	L1	CO1
	c)	Draw the block diagram of Linear mode power supply.	2 Marks	L1	CO2
	d)	Define Peak inverse Voltage, Transformer Utilization factor of a Full Wave Rectifier.	2 Marks	L1	CO2
	e)	Draw the input and output characteristics of CE transistor.	2 Marks	L1	CO3
	f)	Define stability factor and write expression for S.	2 Marks	L1	CO3
	g)	Why MOSFET is called as voltage control devise?	2 Marks	L1	CO3
	h)	Draw the circuit diagram of Voltage Divider Bias.	2 Marks	L1	CO3
	i)	Write the applications of JFET.	2 Marks	L1	CO4
	j)	State Barkhusen criterion.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Find the value of DC resistance and AC resistance of a germanium junction diode at 25˚ cg with I_o=25μA and at an applied voltage of 0.2V across the Diode.	8 Marks	L2	CO1
	b)	Explain the construction, principle of operation of Schottky Barrier Diode and draw its V-I characteristics.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the effect of temperature on Diode characteristics.	8 Marks	L1	CO1
	b)	What is PN Junction? How it is formed?	8 Marks	L1	CO1

MODULE-II

4.		Derive the expression for Ripple factor and Efficiency of a Full Wave Rectifier.	16 Marks	L3	CO2
		(OR)			
5.		A 230V, 50 Hz voltage is applied to the primary of 5:1 step down center-tap transformer used in a full-wave rectifier having a load of 900Ω. If the diode resistance and secondary coil resistance together has a resistance 100Ω, determine i) DC voltage across the load ii) DC current flowing through load iii) DC power delivered to the load iv) PIV across diode.	16 Marks	L3	CO2

MODULE-III

6.	a)	Explain why CC transistor is called as Emitter Follower.	8 Marks	L1	CO3
	b)	Draw the input and output characteristics of CE transistor and justify how β value changes with change in α?	8 Marks	L2	CO3
		(OR)			
7.	a)	Draw the input and output characteristics of CB configuration and explain.	8 Marks	L1	CO3
	b)	Draw the circuit diagram of Collector-Emitter Feedback Bias and justify it is better than Collector Feedback bias.	8 Marks	L1	CO3

MODULE-IV

8.		Explain the construction & operation of an n-channel depletion MOSFET and draw drain characteristics and transfer characteristics?	16 Marks	L1	CO3
		(OR)			
9.	a)	Write the differences between MOSFET and BJT.	8 Marks	L2	CO3
	b)	Explain why BJT is called bipolar device and FET called as unipolar device, justify.	8 Marks	L1	CO3

MODULE-V

10.		Explain about Wein bridge oscillator and derive the frequency of oscillations	16 Marks	L1	CO4
		(OR)			
11.	a)	Explain concept of positive feedback and state Barkhusen criterion.	8 Marks	L1	CO4
	b)	For the RC Phase Oscillator, the feedback network uses R=6KΩ and C=1500pF. The transistorized amplifier used has a collector resistance Rc 18KΩ. Calculate the frequency of oscillations.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention the glance of Indian power scenario.	2 Marks	L2	CO1
	b)	What is the purpose of Electrostatic Precipitator?	2 Marks	L2	CO1
	c)	List any two major site selection factors for establishing nuclear power plants.	2 Marks	L3	CO2
	d)	What are the materials used as coolants in nuclear power plants.	2 Marks	L2	CO2
	e)	What is meant by distributed generation?	2 Marks	L2	CO3
	f)	List the applications of diesel power plants.	2 Marks	L3	CO3
	g)	Define power factor.	2 Marks	L2	CO4
	h)	What are some challenges in implementing cogeneration power generation systems?	2 Marks	L2	CO4
	i)	Define plant capacity factor.	2 Marks	L2	CO5
	j)	Differential base load and peak loads.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain site selection factors for establishing hydropower plant.	8 Marks	L2	CO1
	b)	Explain the function of the following: i) Boiler ii) Condenser	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the working of hydropower plant with neat diagram.	8 Marks	L2	CO1
	b)	What is the impact of greenhouse gasses on environment and what are the initiatives that Government taking to reduce it.	8 Marks	L2	CO1

MODULE-II

4.	a)	Draw the general layout of nuclear power plant and explain the function of major components.	8 Marks	L2	CO2
	b)	List the advantages and disadvantages of nuclear power plants.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the working of boiling water reactor with neat diagram.	8 Marks	L2	CO2
	b)	Explain various safety aspects of nuclear power plants.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain site selection for diesel power plants.	8 Marks	L2	CO3
	b)	What are the factors that impact the efficiency and performance of a diesel power plant? What are the safety considerations and measures associated with diesel power plants?	8 Marks	L2	CO3

(OR)

7.	a)	Explain the operation of gas turbine plant with suitable diagram.	8 Marks	L3	CO3
	b)	What are the environmental impacts and considerations associated with pumped storage power plants? What are the advantages and disadvantages of pumped storage power plants compared to other forms of energy storage?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain various Operating modes of cogeneration systems.	8 Marks	L3	CO4
	b)	How does power factor improvement impact energy consumption and utility billing? What are the different methods used for power factor improvement?	8 Marks	L2	CO4

(OR)

9.	a)	Explain the factors that affect the efficiency and performance of a cogeneration power plant?	8 Marks	L3	CO4
	b)	Explain the challenges and future trends in power factor improvement technology?	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the different types of tariffs.	8 Marks	L2	CO5
	b)	Derive the relation between loss factor and load factor.	8 Marks	L3	CO5

(OR)

11.		A generating station has the following daily load cycle. Draw the Load curve, load duration curve and determine Maximum Demand, Average Load, Load Factor and No. of units generated.	16 Marks	L3	CO5

Time (Hours)	0 - 6	6 - 10	10 - 12	12 - 16	16 - 20	20 - 24
Load (MW)	20	25	30	25	35	20

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

ELECTRICAL CIRCUITS

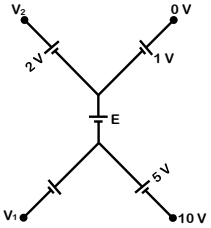
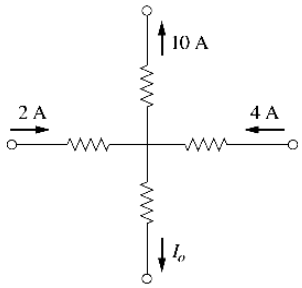
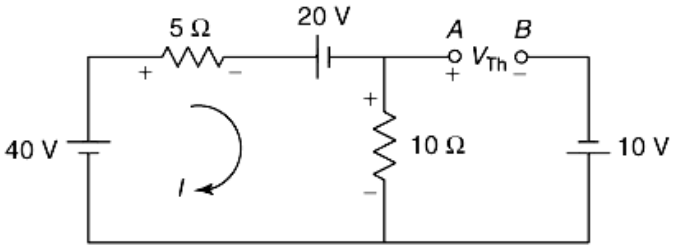
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

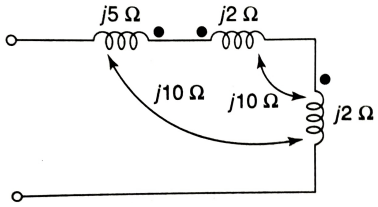
PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Find the value of the unknown voltage source 'E' in the network shown in Figure. 	2 Marks	L3	CO1
	b)	Find the current I_o 	2 Marks	L3	CO1
	c)	Comment on the phasor relationship between the voltage and current described by $V(\omega t) = 30\text{Sin}(4t\text{-}50^0)$ Volts and $I(\omega t) = -30\text{Cos}(4t\text{-}35^0)$ Amps.	2 Marks	L3	CO2
	d)	Find the current flowing through a series RLC circuit with R = 10 Ω, L = 0.01 H, C =100 μF excited by $20\text{Sin}(4t+0^0)$ Volts source under resonance condition.	2 Marks	L3	CO2
	e)	Find the V_{TH} value for the circuit shown in the figure. 	2 Marks	L3	CO3
	f)	State Reciprocity Theorem.	2 Marks	L1	CO3
	g)	For a three phase, three wire system, the reading of the two Wattmeters are 4000 Watts and 2000 Watts respectively. What is the power factor of the load?	2 Marks	L3	CO4
	h)	The currents in a 3-phase star connected across the phases RYB are $I_r = 6\angle 0$, $I_y = 2\angle 140$ and $I_b = 1\angle 200$. Find the neutral current.	2 Marks	L3	CO4

i) Obtain the effective impedance of the circuit shown in figure. 2 Marks L3 CO5



j) The combined inductances of two coils connected in series is 0.6H or 0.1H depending on relative directions of currents in the two coils. If one of the coils has a self-inductance of 0.2 H, find the mutual inductance. 2 Marks L3 CO5

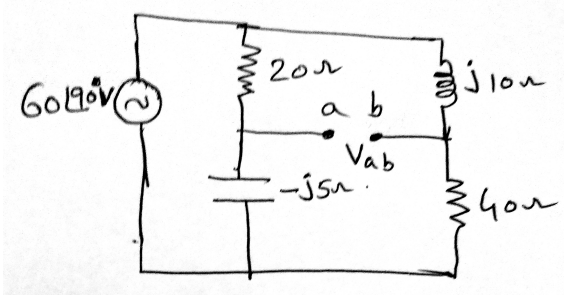
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

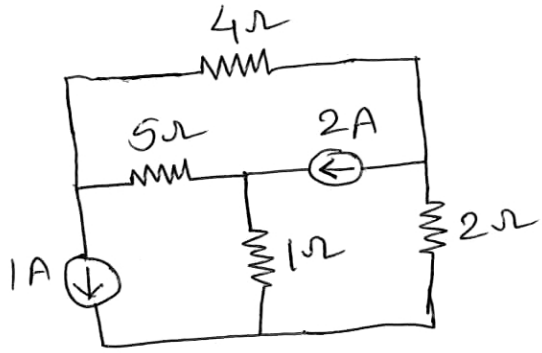
5 X 16 = 80 Marks

MODULE-I

2. a) For the circuit shown in Figure, find the impedance seen by the source and the voltage V_{ab} 8 Marks L3 CO1

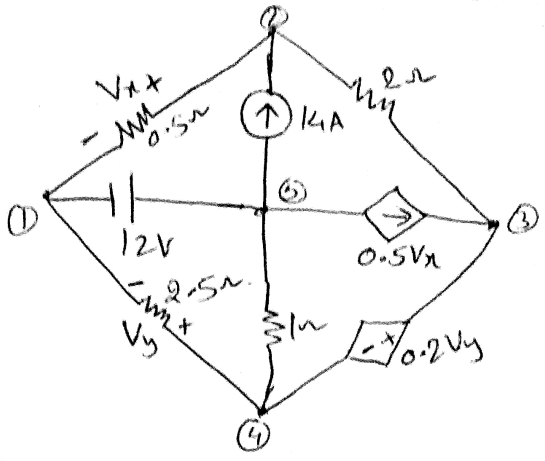


b) In the network configuration of Figure below, find the current and voltage drop in 5 Ω resistor using Mesh analysis. 8 Marks L3 CO1



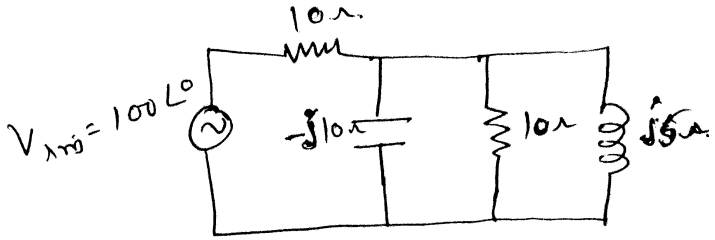
(OR)

3. Find the current through 2.5Ω resistor of Figure below using node analysis. Take node 1 as reference. 16 Marks L3 CO1



MODULE-II

4.	a)	Find the real and reactive power supplied by the source of Figure below	8 Marks	L3	CO2



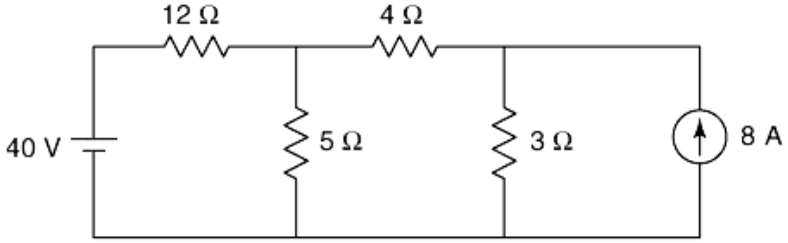
	b)	Derive the expression for Bandwidth of a RLC Series circuit. Also, discuss the significance of Bandwidth.	8 Marks	L2	CO2

(OR)

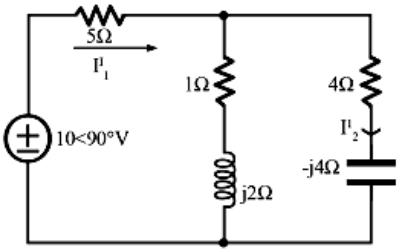
5.	a)	Illustrate the relationship between Real, Reactive and Apparent Powers. Write the expressions for these. Also, write the expression for power factor.	8 Marks	L2	CO3
	b)	Determine the Q factor, half power frequencies and bandwidth of a RLC series circuit with R=25Ω, L=100μH and C=1000pF if the circuit has to resonate at 500kHz. Also, find the value of capacitance for the circuit to resonate at the same frequency if the inductance is doubled. Find the quality factor and bandwidth of the circuit with the new value of inductance.	8 Marks	L3	CO3

MODULE-III

6.	a)	State superposition theorem and find the current through the 4 Ω resistor in the circuit by using Superposition Theorem.	8 Marks	L3	CO3

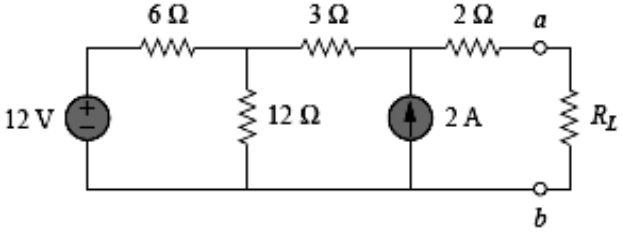


	b)	State and verify Reciprocity Theorem	8 Marks	L3	CO3

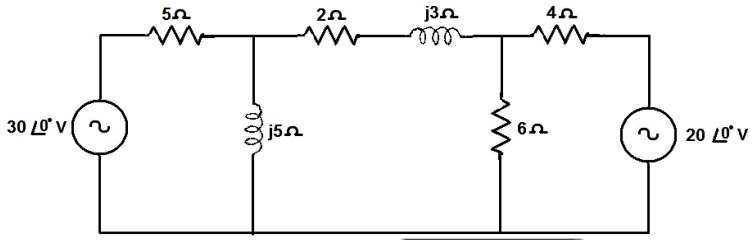


(OR)

7.	a)	State Maximum Power Transfer Theorem. Find the value of load resistance for maximum power transfer. Also, find the maximum power.	6 Marks	L3	CO3



	b)	Using superposition theorem calculate current through (2+j3) ohm impedance branch of the circuit shown.	10 Marks	L3	CO3

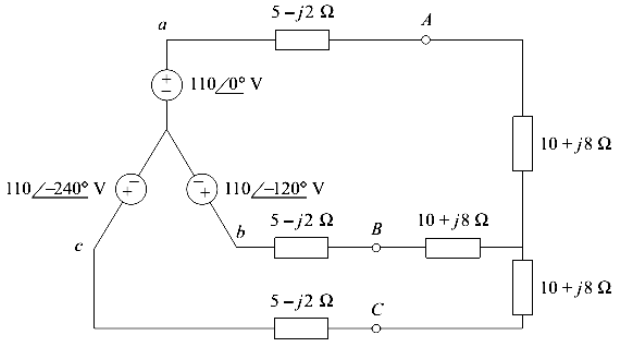


MODULE-IV

8.	a)	A balanced delta connected load having an impedance (20-j15)Ω is connected a balanced supply of $V_{ab} = 415\angle 0V$. Calculate the phase currents of the load and the line currents.	10 Marks	L3	CO4
	b)	Show that the reactive power consumed by a 3-phase balanced load can be measured using one wattmeter.	6 Marks	L3	CO4

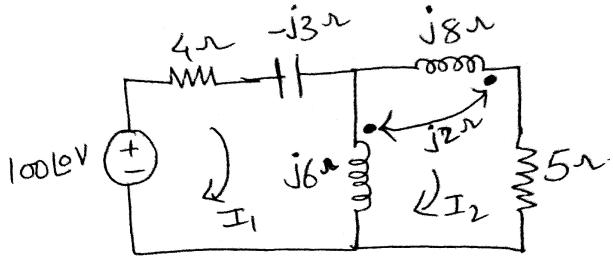
(OR)

9.		Calculate the line currents in the three wire Y-Y system of figure shown below.	16 Marks	L3	CO4



MODULE-V

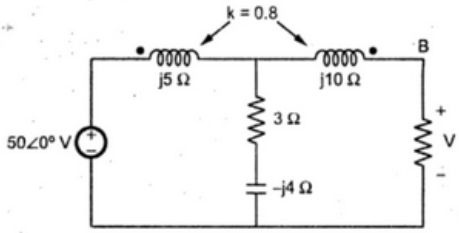
10.	a)	Calculate the mesh currents in the circuit of Figure	10 Marks	L3	CO5



	b)	Give the analogy between Magnetic and Electric Circuits.	6 Marks	L2	CO5

(OR)

11.	a)	Compute the voltage 'V' for the coupled circuit shown in figure.	10 Marks	L3	CO5



	b)	Derive the expression for co-efficient of coupling in coupled circuits.	6 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

[Civil Engineering, Mechanical Engineering,
Computer Science and Engineering (Artificial Intelligence and Machine Learning),
Computer Science and Engineering (Data Science),
Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Active and passive elements with examples.	2 Marks	L1	CO1
	b)	A lamp rated at 100 V, 75 W is to be connected across a 230 V supply. Find the value of resistance to be connected in series with the lamp. Also find the power loss occurring in the resistor.	2 Marks	L2	CO1
	c)	What are the functions of Field poles in DC motor?	2 Marks	L1	CO2
	d)	List the materials used in conduit wiring.	2 Marks	L1	CO2
	e)	Define Luminance and Lamp Efficiency.	2 Marks	L1	CO3
	f)	State Lambert's Cosine law.	2 Marks	L1	CO3
	g)	Compare accuracy and precision.	2 Marks	L2	CO1
	h)	List the factors responsible in selection of Transducer.	2 Marks	L1	CO1
	i)	Compare the inverting and non inverting amplifier.	2 Marks	L2	CO1
	j)	Sketch the V-I characteristics of Zener diode.	2 Marks	L1	CO1

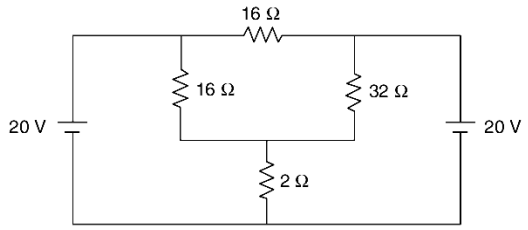
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

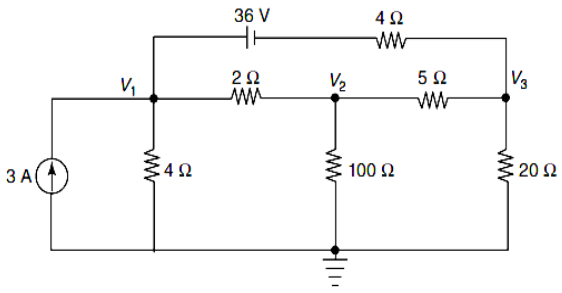
5 x 16 = 80 Marks

MODULE-I

2.	a)	Using mesh Analysis, find the current flowing through the 2 Ω resistor.	8 Marks	L3	CO1



	b)	Using Nodal Analysis, Determine the current through the 5 Ω resistor for the network shown in Fig.	8 Marks	L3	CO1



(OR)

3.	a)	How is the sinusoidal voltage produced by a single loop generator? Explain in detail with the relevant sketch.	8 Marks	L2	CO1
	b)	An instantaneous voltage of v(t)=450sin(wt-10°)V is applied to the system. The current flowing through the system is given by i(t)=200sin(wt+50°)A. Find the following parameters a) Active Power b) Reactive Power c) Apparent Power and d) Power factor of the system	8 Marks	L3	CO1

MODULE-II

4.	a)	Define Transformer. Explain the construction and working of single phase transformer.	8 Marks	L2	CO2
	b)	Recommend the suitable motor for robotics applications. Explain its construction and working with neat sketch.	8 Marks	L2	CO2

(OR)

5.	a)	Classify different types of Motor. Sketch the equivalent circuit for various types of motors.	8 Marks	L2	CO2
	b)	Suggest the suitable device which is working on tripping mechanism. Explain the principle of operation with neat sketch.	8 Marks	L1	CO2

MODULE-III

6.	a)	Find the total saving in electrical load and percentage increase in illumination if instead of using twelve 150W tungsten filament lamps. We use twelve 80w fluorescent tubes. It may assumed that i) There is a choke loss of 25% of rated lamp wattage. ii) Average luminous efficiency throughout life for each lamps is 15lumen/W and for each tube 40 lumen/W and iii) Co-efficient of utilization remains same in both cases.	8 Marks	L3	CO3
	b)	Discuss in detail the following i) Industrial Lighting ii) Flood Lighting	8 Marks	L1	CO3

(OR)

7.	a)	Define UPS. Explain the operation of different types of UPS with neat sketch.	8 Marks	L3	CO3
	b)	An area 30m x 40m is to be illuminated for 15 lux. Initially 35 lumen/m^2. Is required to maintain an average illumination of 15 lux considering wastage. Determine number of 70W high pressure sodium vapour lamp required having efficiency of 50 lumens / watt.	8 Marks	L2	CO3

MODULE-IV

8.	a)	With neat sketch, Explain the Working of Temperature and Humidity sensor. Mention its advantages and disadvantages.	8 Marks	L2	CO4
	b)	With neat sketch, Explain how the distance is measured using	8 Marks	L2	CO4

ultrasound sensor. Mention its advantages and disadvantages.

(OR)

9.	a)	Define Passive transducer. With neat sketch, explain the operation of LVDT.	8 Marks	L2	CO4
	b)	State Peizo Electric effect. Explain the operation of Peizo Electric Transducer with neat sketch. Mention its advantage and disadvantages.	8 Marks	L2	CO4

MODULE-V

10.	a)	Suggest the suitable device which converts AC supply to pulsating DC supply having efficiency of 40.6%. Explain the operation with neat circuit diagram and waveforms.	8 Marks	L2	CO4
	b)	Examine and derive an expression for V_0 of the differentiator circuit by using Op-Amp.	8 Marks	L2	CO4

(OR)

11.	a)	With neat sketch, explain the working of Flash type ADC with an example.	8 Marks	L2	CO4
	b)	In an inverting adder circuit, the input voltages ate 0.4 V, 0.6 V, 0.2 V while R1=R2=R3=1 KΩ, If Rf=10 KΩ. Calculate the output voltage.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	A voltage source has internal impedance (2+j6) ohm. Find the load impedance for maximum power transfer	2 Marks	L2	CO1
	b)	What is the condition for transfer of Maximum power transfer?	2 Marks	L1	CO1
	c)	Give the relation between apparent power, average power and reactive power	2 Marks	L1	CO2
	d)	An unbalanced star connected load carries the line currents as $I_R = 27.06\angle -8.65^O$, $I_Y = 19.7\angle -121.14^O$ and $I_B = 26.69\angle 128.36^O$. Determine the neutral current.	2 Marks	L2	CO2
	e)	State the condition of symmetry and reciprocity in terms of transmission parameters.	2 Marks	L2	CO3
	f)	What do you understand by a reciprocal network and symmetry of a two-port network?	2 Marks	L2	CO3
	g)	What is the transient response of series RL circuits with D.C excitation?	2 Marks	L1	CO4
	h)	What is steady state and the transient response of an electrical circuit.	2 Marks	L1	CO4
	i)	What are band pass and band rejection filters?	2 Marks	L1	CO5
	j)	How the filters are classified on the basis of frequency	2 Marks	L2	CO5

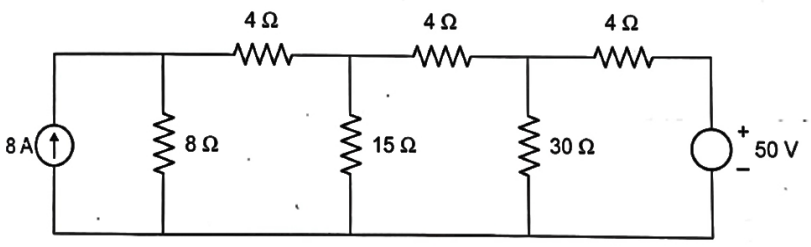
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

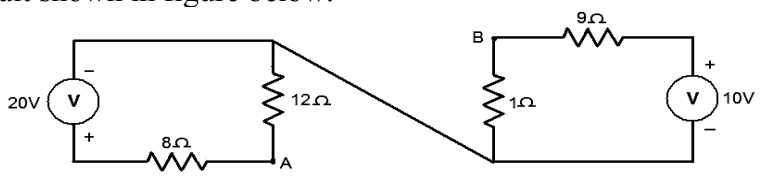
5 X 16 = 80 Marks

MODULE-I

2.	a)	For the circuit shown in figure find the current through the 15Ω resistor using Superposition theorem.	8 Marks	L4	CO1

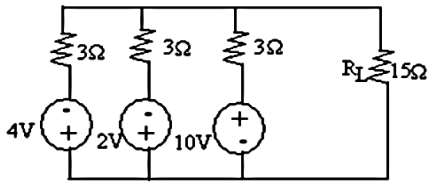


b) Determine Thevenin's equivalent across the terminals AB for the circuit shown in figure below. 8 Marks L3 CO1

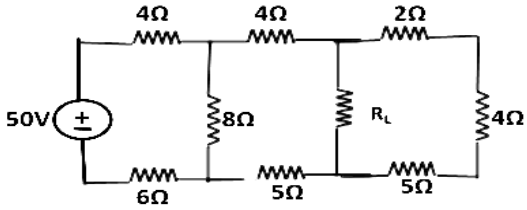


(OR)

3. a) Using Millman's theorem, find the current through 15 Ω resistor the circuit shown in figure. 8 Marks L3 CO1



b) Find the value of R**L** for receiving maximum power from the source. Also determine the maximum power and the power efficiency. 8 Marks L3 CO1



MODULE-II

4. a) Two wattmeters connected to measure the input to a balanced, three-phase circuit indicate 2000 W and 500 W respectively. Find the power factor of the circuit (a) when both readings are positive and (b) when the latter is obtained after reversing the connection to the current coil of one instrument. 8 Marks L3 CO2

b) A Y-connected load, with $Z_A = 10 \underline{/0^0}\ \Omega$, $Z_B = 10 \underline{/60^0}\ \Omega$, and $Z_C = 10 \underline{/-60^0}\ \Omega$ is connected to a three phase, three-wire, ABC system having effective line voltage 141.4 V. Find the load voltages V_{AO}, V_{BO}, V_{CO} and the displacement neutral voltage V_{ON}. Construct a phasor diagram. 8 Marks L2 CO2

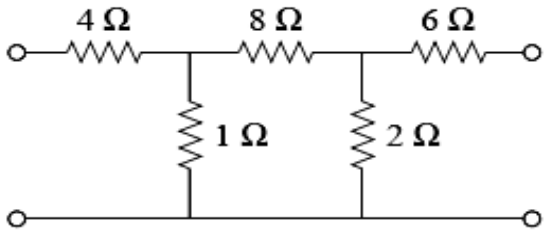
(OR)

5. a) A balanced star-connected load is supplied by a 415 V, 50 Hz three-phase system. Current in each phase is 20 A and lags 30° behind its phase voltage. Find the (a) phase voltage, (b) power, and (c) circuit parameters. Also, find power consumed when the same load is connected in delta across the same supply. 8 Marks L2 CO2

b) Obtain the readings of two watt meters in a three-phase, three-wire system having effective line voltage 320V and balanced, Δ connected load impedances $Z = 30 \underline{/60^0}\ \Omega$ 8 Marks L2 CO2

MODULE-III

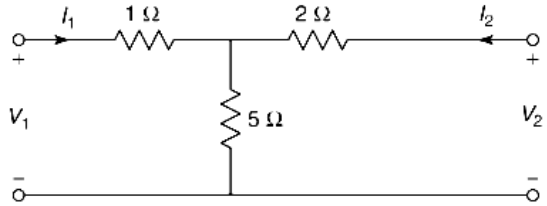
6.	a)	Find the transmission parameters for the circuit in Figure.	8 Marks	L3	CO3



	b)	Express *h* parameters in terms of admittance parameters for a generalized network.	8 Marks	L3	CO3

(OR)

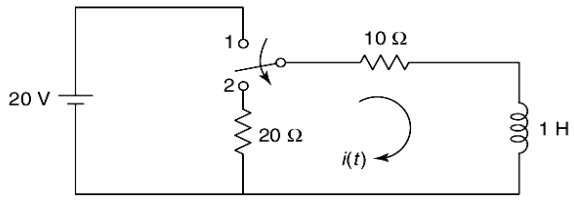
7.	a)	Find the transmission parameters for the network	8 Marks	L3	CO3



	b)	Z-parameters for a two port network are given as Z_{11}=25, Z_{12}=Z_{21}=20, Z_{22}=50 Ohms . Design an equivalent T and Pi networks.	8 Marks	L3	CO3

MODULE-IV

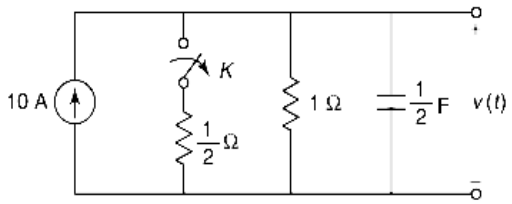
8.	a)	The switch in the circuit in figure has been closed for a long time. At t = 0, the switch is opened, find v0(t) and i0(t) for t > 0 using Laplace transformation method.	8 Marks	L4	CO4



	b)	Derive an expression for current response of RLC series circuit transient	8 Marks	L2	CO4

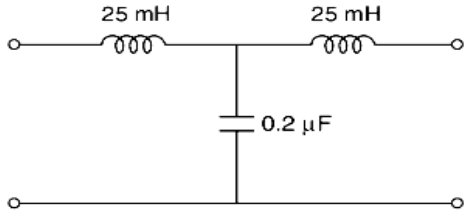
(OR)

9.	a)	Derive the Transient Response of series RLC-circuit with D.C excitation.	8 Marks	L2	CO4
	b)	For the network shown in Fig., the switch is opened at t = 0. Find v (t) for t > 0.	8 Marks	L3	CO4



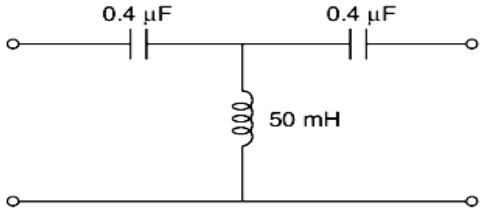
MODULE-V

10.	a)	Design the p-section of an m-derived high-pass filter having a design impedance of 300W, cut-off frequency of 2 kHz and an infinite attenuation at 2.8 kHz.	8 Marks	L3	CO5
	b)	Find the nominal impedance, cut-off frequency and pass band for the network shown.	8 Marks	L3	CO5



(OR)

11.	a)	Design an m-derived p-section low-pass filter having cut-off frequency of 1200 Hz, design impedance of 600 Ω and infinite attenuation frequency of 3000 Hz.	8 Marks	L3	CO5
	b)	Find the characteristic impedance, cut-off frequency and pass band for the constant-k high-pass filter network	8 Marks	L3	CO5



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B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

ENGLISH FOR PROFESSIONALS

[Civil Engineering, Mechanical Engineering,
Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	***Complete the statement using suitable question tag.*** Don't forget to deliver the message to the Head of the Department, _?	2 Marks	L2	CO1
	b)	***Fill in the blank using the correct article.*** Farmers used _ _ _ constellations in the night sky for predicting the seasons.	2 Marks	L1	CO1
	c)	***Write the meaning of the following idiomatic expression.*** Pay an arm and a leg	2 Marks	L3	CO2
	d)	***Write the meaning of the following idiomatic expression.*** Just beating around the bush	2 Marks	L1	CO2
	e)	***Write the meaning of the following idiomatic expression.*** To fight tooth and nail	2 Marks	L3	CO2
	f)	***Write one-word substitute for the description.*** Study of collection of coins, tokens, paper money, etc.	2 Marks	L1	CO2
	g)	***Write one-word substitute for the description.*** A speech to oneself, alone.	2 Marks	L2	CO1
	h)	***Fill in the blank using verbs in the correct tense.*** When we _ _ _ _ in Hyderabad, we would visit Charminar every weekend. (visit)	2 Marks	L3	CO1
	i)	***Read the sentence below and make the necessary changes.*** Our mathematics teacher is giving us too much tasks.	2 Marks	L2	CO1
	j)	***Read the sentence below and make the necessary changes.*** I prefer chocolate milkshake than vanilla ice cream.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	***Write the meaning of the following idiomatic expressions.***	8 Marks	L2	CO1

a) To turn a deaf ear
b) Bell the cat
c) Not your cup of tea
d) Like a cake walk
e) Pull someone's leg
f) Once in a blue moon
g) A piece of cake
h) To be in hot water

	b)	Write a review on your favourite gadget.	8 Marks	L3	CO1
		(OR)			
3.	a)	"Actions speak louder than words." Explain emphasing the significance of non-verbal communication.	8 Marks	L1	CO1
	b)	Science plays a significant part in the origin stories of superheroes. Illustrate with suitable examples.	8 Marks	L4	CO1
		MODULE-II			
4.	a)	***Write one-word substitutes for these descriptions.*** a) One who believes in the presence of God b) A backward look or a view into the past c) One who talks while sleeping d) Study of handwriting e) Study of languages f) One who is capable of using both hands g) One who takes part in dialogue or conversation h) Informal, less grammatically rigid language	8 Marks	L4	CO2
	b)	Write a description of your favourite restaurant in your own words. (200-250 words).	8 Marks	L3	CO2
		(OR)			
5.	a)	Illustrate various channels of communication.	8 Marks	L3	CO2
	b)	Illustrate how H. G. Wells describes the dominant mood of disgust and horror using the visual and auditory perceptions while introducing a Martian.	8 Marks	L1	CO2
		MODULE-III			
6.	a)	**Scanning** is basically skimming with a more tightly focused purpose - Explain	8 Marks	L2	CO3
	b)	***Fill in the blanks using verbs in the correct tense.*** a) My mother never _ _ _ _ _ (drink) tea. b) English _ _ _ _ _ (speak) all over the world. c) _ _ _ _ _ (read) the paper next week in the seminar. d) I _ _ _ _ _ (learn) Hindi in Hyderabad. e) By next June I _ _ _ _ _ (complete) 30 years of service. f) The child _ _ _ _ _ (sleep) here since 8^{o} clock. g) See, how the parrot _ _ _ _ _ (fly) in the sky. h) Ravi usually _ _ _ _ _ (get) up at 6^{o} clock in the morning.	8 Marks	L3	CO3
		(OR)			
7.	a)	Communication barriers can be detrimental to the normal functioning of the workplace. Illustrate with examples.	8 Marks	L1	CO3
	b)	According to Raman, why is the sea blue in colour?	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	***Complete the following sentences using an appropriate verb form. Choose your answers from the given options.*** 1) If they had been more careful, this _ _ _ _ _ . i) will not happen ii) would not happen iii) would not have happened 2) If you _ _ _ _ _ a little earlier, you could meet her. i) arrive ii) arrived iii) had arrived 3) If you _ _ _ _ _ faster, you could have overtaken him. i) run ii) ran iii) had run 4) If you call me names again, I _ _ _ _ _ you. i) will hit ii) would hit iii) would have hit 5) If she didn't mend her ways, she _ _ _ _ _ in trouble. i) will be ii) would be iii) would have been	8 Marks	L5	CO4

6) If you had practiced well, you _ _ _ _ _ better performance.
i) can deliver ii) could deliver iii) could have delivered
7) If you _ _ _ _ _ good care of your health, you will not fall ill often.
i) take ii) took iii) had taken
8) If she _ _ _ _ _ a foreign language, she can find a better job.
i) speaks ii) spoke iii) had spoken

	b)	We can't fathom living in a world without communication tools. We can't fathom living in a world without communication tools. Explain	8 Marks	L3	CO4

(OR)

9.	a)	Write a description explaining the steps involved in the unboxing and setting up of a new android Smartphone for use.	8 Marks	L2	CO4
	b)	With a fast pace of modern life more and more people are turning towards fast food for their main meals. Do you think the advantages outweigh the disadvantages?	8 Marks	L3	CO4

MODULE-V

10.	a)	***Fill in the blanks in the following sentences by using appropriate modals.***	8 Marks	L2	CO4

i) I _ _ _ _ _ go to see the movie. The reviews are good.
ii) I _ _ _ _ _ definitely be at the airport to receive you.
iii) She _ _ _ _ _ take her meals regularly.
iv) You _ _ _ _ _ reach home before eleven, she said.
v) _ _ _ _ _ we go for a walk?
vi) The soldiers in the Army _ _ _ _ _ wear a uniform.
vii) There is one more point I _ _ _ _ _ refer to.
viii) You have worked hard. You _ _ _ _ _ pass.

	b)	Chinese billionaire Zhou Qunfei is the world's richest self-made woman and she attributes her success to one thing: perseverance. Explain.	8 Marks	L4	CO4

(OR)

11.	a)	Present a proposal to carry out a social media campaign for an App that you have developed.	8 Marks	L1	CO4
	b)	Imagine that you are planning to sell your motor bike online. Write a short description in about 250-300 words.	8 Marks	L3	CO4

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Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

BASIC ENGINEERING MECHANICS

[Mechanical Engineering]

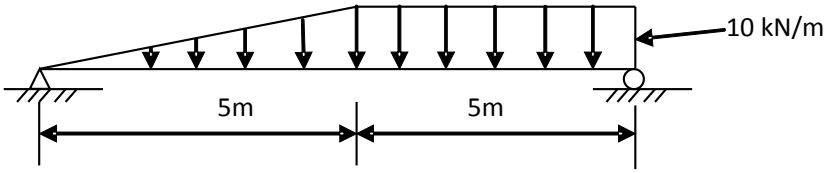
Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Find the angle between two equal forces P, when their resultant is equal to i) P and ii) P/2.	2 Marks	L1	CO1
	b)	State the meaning of a couple and explain its characteristics.	2 Marks	L1	CO1
	c)	Bring out the differences among perfect, deficient and redundant trusses.	2 Marks	L1	CO2
	d)	Compute the equivalent point load of the given loading on the beam and its point of application from left support of the beam shown in Figure.	2 Marks	L1	CO2



	e)	Define angle of friction and cone of friction.	2 Marks	L1	CO3
	f)	Briefly explain ‘ Angle of friction’ and ‘Angle of repose’.	2 Marks	L1	CO3
	g)	Briefly discuss the application of Area moment of Inertia and Mass moment of Inertia.	2 Marks	L1	CO4
	h)	State the theorems of Pappus – Guldinus.	2 Marks	L1	CO4
	i)	Briefly explain D’Alembert’s principle.	2 Marks	L1	CO5
	j)	What is cycle time and frequency in Simple Hamonic Motion?	2 Marks	L1	CO5

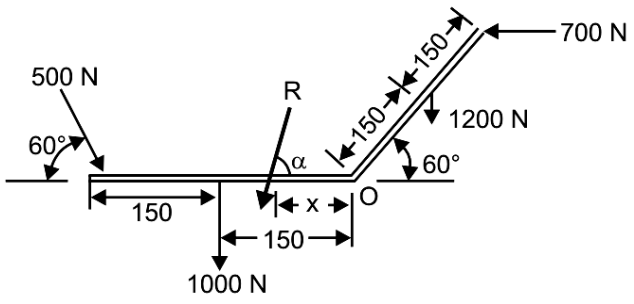
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

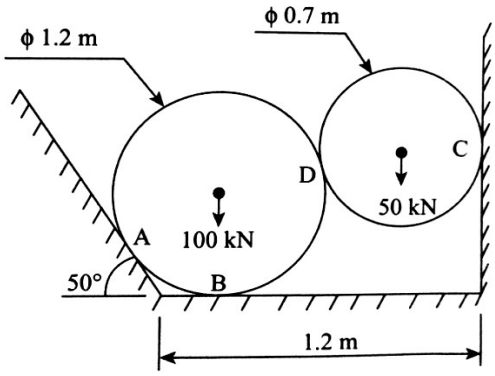
MODULE-I

2.		The system of forces acting on a bell crank is shown in following figure. Determine the magnitude, direction and the point of application of the resultant.	16 Marks	L2	CO1



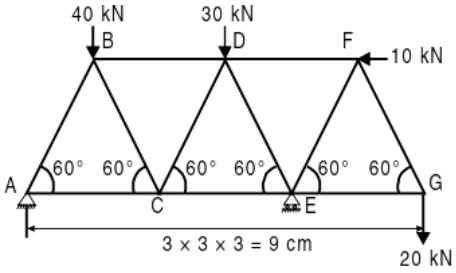
(OR)

3.	Two cylinders are kept in a channel as shown in figure. Determine the reactions at all the contact points A, B, C and D. Assume the contact Surfaces are smooth.	16 Marks	L2	CO1



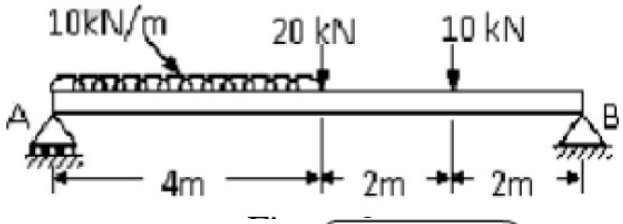
MODULE-II

4.	Analyze the truss shown in the figure. All the members are of 3 m length.	16 Marks	L2	CO2



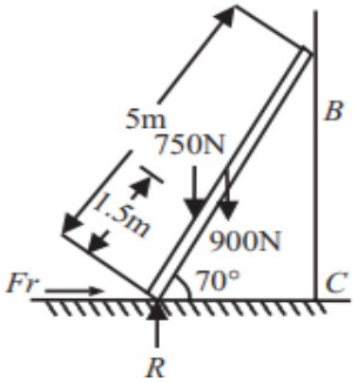
(OR)

5.	A beam AB is located supported and loaded as shown in Figure Find the reactions at the supports.	16 Marks	L3	CO2



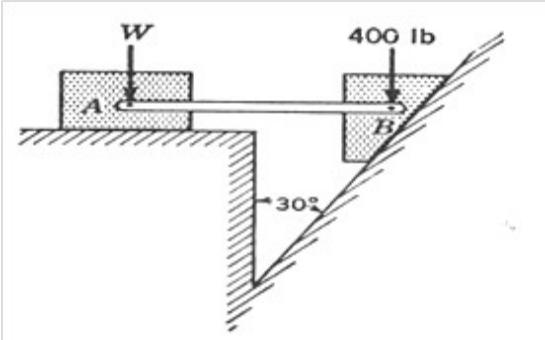
MODULE-III

6.	A ladder 5 meters long rests on a horizontal ground and leans against a smooth vertical wall at an angle 70° with the horizontal. The weight of the ladder is 900 N and acts at its middle. The ladder is at the point of sliding, when a man weighing 750N stands on a rung 1.5metre from the bottom of the ladder. Calculate the coefficient of friction between the ladder and the floor.	16 Marks	L3	CO3



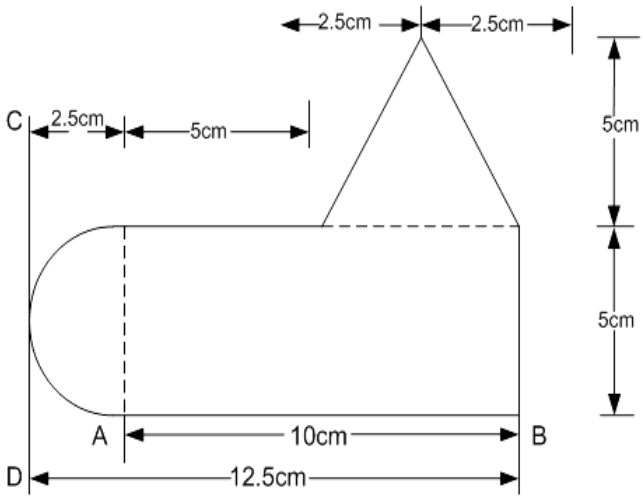
(OR)

7.		Two blocks, connected by a horizontal link AB are supported on two rough planes as shown in figure. The coefficient for friction of block A on the horizontal plane is μ = 0.4. The angle of friction for block B on the inclined plane is μ =0.15. What is the smallest weight W of block A for which equilibrium of the system can exist?	16 Marks	L2	CO3



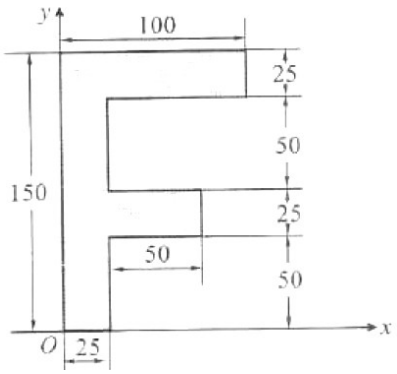
MODULE-IV

8.	a)	State and prove theorems of Pappus–Guldinus.	8 Marks	L1	CO4
	b)	Determine the centre of gravity of the plane uniform lamina shown in Fig.	8 Marks	L3	CO4



(OR)

9.	a)	Find the Moment of Inertia of the centroidal axis as shown in the figure.	8 Marks	L2	CO4



	b)	Derive an equation for moment of inertia of a Rectangle.	8 Marks	L1	CO4

MODULE-V

10.	a)	A flywheel rotates with a constant retardation due to braking. From t = 0 to t = 10 seconds, it made 300 revolutions. At time t = 7.5 sec, its angular velocity was 40 π rad/sec. Determine i) value of constant retardation ; ii) total time taken to come to rest and iii) total revolutions made till it comes to rest.	8 Marks	L2	CO5
	b)	The masses of two balls are in the ratio of 2: 1 and their velocities are in the ratio of 1 : 2, but in the opposite direction before impact. If the coefficient of restitution be 5/6, prove that after the impact, each ball will move back with 5/6th of its original velocity.	8 Marks	L2	CO5
		(OR)			
11.	a)	A simple pendulum consists of a 600 mm long cord and a bob of mass 2 kg. Find the no. of oscillations made by the bob per second. If the same pendulum is suspended inside a train, accelerating smoothly on a level track at the rate of 3 m/s^2, find the angle which the cord will make with the vertical. Also find the tension in the cord.	8 Marks	L2	CO5
	b)	Derive an expression for the period of oscillation of a mass when attached to a helical spring.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

BASIC ENGINEERING MECHANICS

[Mechanical Engineering]

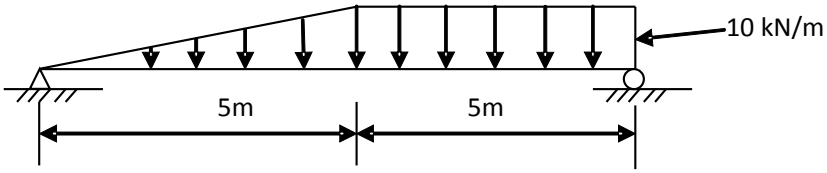
Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Find the angle between two equal forces P, when their resultant is equal to i) P and ii) P/2.	2 Marks	L1	CO1
	b)	State the meaning of a couple and explain its characteristics.	2 Marks	L1	CO1
	c)	Bring out the differences among perfect, deficient and redundant trusses.	2 Marks	L1	CO2
	d)	Compute the equivalent point load of the given loading on the beam and its point of application from left support of the beam shown in Figure.	2 Marks	L1	CO2



	e)	Define angle of friction and cone of friction.	2 Marks	L1	CO3
	f)	Briefly explain ‘ Angle of friction’ and ‘Angle of repose’.	2 Marks	L1	CO3
	g)	Briefly discuss the application of Area moment of Inertia and Mass moment of Inertia.	2 Marks	L1	CO4
	h)	State the theorems of Pappus – Guldinus.	2 Marks	L1	CO4
	i)	Briefly explain D’Alembert’s principle.	2 Marks	L1	CO5
	j)	What is cycle time and frequency in Simple Hamonic Motion?	2 Marks	L1	CO5

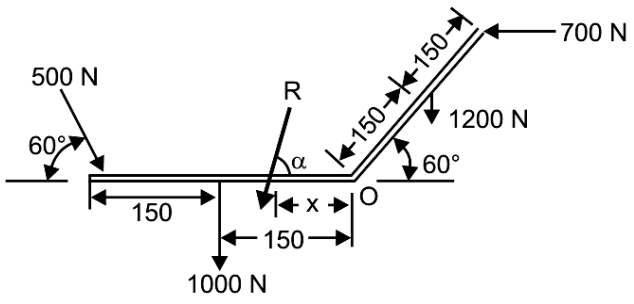
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.		The system of forces acting on a bell crank is shown in following figure. Determine the magnitude, direction and the point of application of the resultant.	16 Marks	L2	CO1



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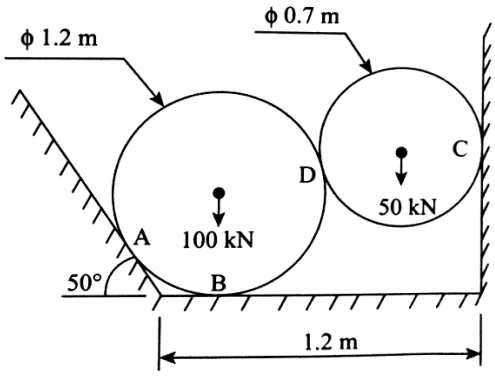
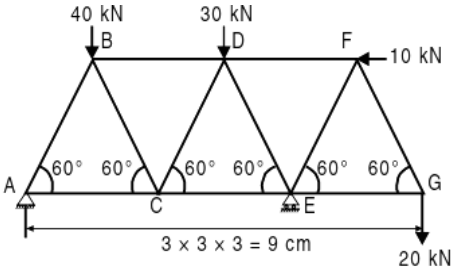
3.	Two cylinders are kept in a channel as shown in figure. Determine the reactions at all the contact points A, B, C and D. Assume the contact Surfaces are smooth.	16 Marks	L2	CO1



MODULE-II

4.	Analyze the truss shown in the figure. All the members are of 3 m length.	16 Marks	L2	CO2



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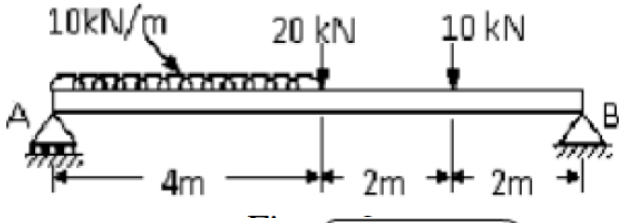
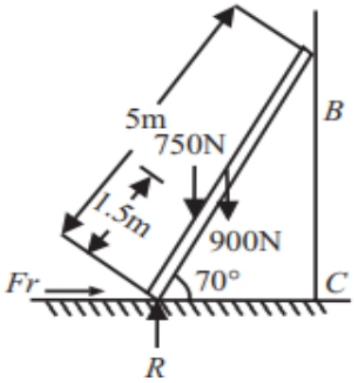
5.	A beam AB is located supported and loaded as shown in Figure Find the reactions at the supports.	16 Marks	L3	CO2



MODULE-III

6.	A ladder 5 meters long rests on a horizontal ground and leans against a smooth vertical wall at an angle 70° with the horizontal. The weight of the ladder is 900 N and acts at its middle. The ladder is at the point of sliding, when a man weighing 750N stands on a rung 1.5metre from the bottom of the ladder. Calculate the coefficient of friction between the ladder and the floor.	16 Marks	L3	CO3



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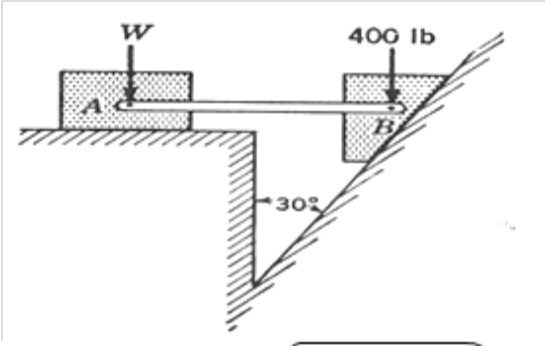
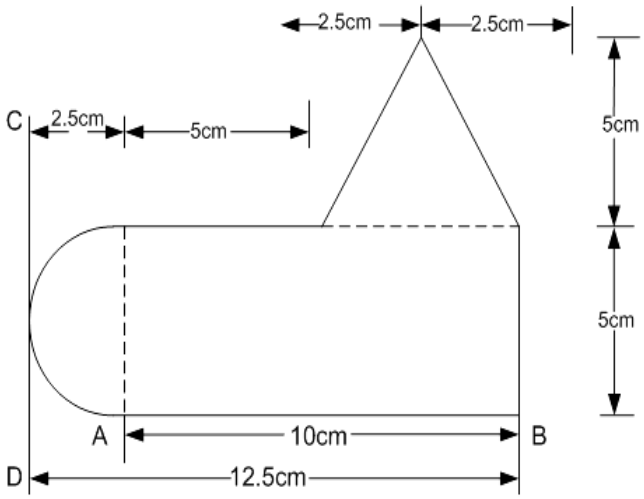
7. Two blocks, connected by a horizontal link AB are supported on two rough planes as shown in figure. The coefficient for friction of block A on the horizontal plane is $\mu = 0.4$. The angle of friction for block B on the inclined plane is $\mu = 0.15$. What is the smallest weight W of block A for which equilibrium of the system can exist? — 16 Marks L2 CO3



MODULE-IV

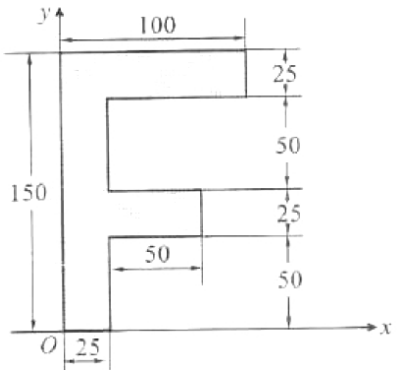
8. a) State and prove theorems of Pappus–Guldinus. — 8 Marks L1 CO4

b) Determine the centre of gravity of the plane uniform lamina shown in Fig. — 8 Marks L3 CO4



(OR)

9. a) Find the Moment of Inertia of the centroidal axis as shown in the figure. — 8 Marks L2 CO4



b) Derive an equation for moment of inertia of a Rectangle. — 8 Marks L1 CO4

MODULE-V

10.	a)	A flywheel rotates with a constant retardation due to braking. From t = 0 to t = 10 seconds, it made 300 revolutions. At time t = 7.5 sec, its angular velocity was 40 π rad/sec. Determine i) value of constant retardation ; ii) total time taken to come to rest and iii) total revolutions made till it comes to rest.	8 Marks	L2	CO5
	b)	The masses of two balls are in the ratio of 2: 1 and their velocities are in the ratio of 1 : 2, but in the opposite direction before impact. If the coefficient of restitution be 5/6, prove that after the impact, each ball will move back with 5/6th of its original velocity.	8 Marks	L2	CO5
		(OR)			
11.	a)	A simple pendulum consists of a 600 mm long cord and a bob of mass 2 kg. Find the no. of oscillations made by the bob per second. If the same pendulum is suspended inside a train, accelerating smoothly on a level track at the rate of 3 m/s^2, find the angle which the cord will make with the vertical. Also find the tension in the cord.	8 Marks	L2	CO5
	b)	Derive an expression for the period of oscillation of a mass when attached to a helical spring.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

BASIC CIVIL AND MECHANICAL ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the principles of surveying?	2 Marks	L1	CO1
	b)	List out the different materials used in construction.	2 Marks	L1	CO1
	c)	What is floor space index?	2 Marks	L1	CO2
	d)	Define landscaping.	2 Marks	L1	CO2
	e)	Define hydraulic efficiency.	2 Marks	L2	CO3
	f)	Mention main components of Centrifugal pump.	2 Marks	L2	CO3
	g)	Define addendum and dedendum.	2 Marks	L1	CO4
	h)	What is centrifugal tension in a belt? How does it affect thepower transmitted.	2 Marks	L1	CO4
	i)	List out the advantages and limitations of rapid 3D printing	2 Marks	L2	CO5
	j)	Classify rapid prototyping process.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	List out the survey instruments used in surveying and briefly discuss about their usage.	8 Marks	L2	CO1
	b)	The following observations were taken to a boundary from a chain line.	8 Marks	L2	CO1

Distance in m	0	5	10	15	20	25	30	35
Offset in m	1.4	3.6	4.2	4.8	4.4	3.8	2.8	2.2

Calculate the area enclosed between the chain line, the boundary line and the end offsets by i) Trapezoidal rule ii) Simpson's rule

(OR)

3.	a)	Briefly explain about different building materials used in construction.	8 Marks	L2	CO1
	b)	Define the following: i) Stress ii) Strain iii) Young's Modulus iv) Hooke's law	8 Marks	L2	CO1

MODULE-II

4.	a)	List out the different types of foundations and draw neatly line diagrams of any four types of foundations and mention all its components.	8 Marks	L2	CO2
	b)	Briefly discuss about the basics of interior design and landscaping.	8 Marks	L2	CO2

(OR)

5.	a)	Classify the dams based on their purpose and draw neatly line diagram of concrete gravity dam and mention all its components.	8 Marks	L2	CO2
	b)	Define wholesome water and explain importance of water treatment before supply and show the flow chart of water supply scheme.	8 Marks	L2	CO2

MODULE-III

6.	a)	Differentiate between Diesel and Petrol engine.	6 Marks	L2	CO3
	b)	Explain the working principle of 2 stroke petrol engine with neat sketch.	10 Marks	L2	CO3

(OR)

7.		Describe the working principle of single acting reciprocating pump with neat sketch.	16 Marks	L2	CO3

MODULE-IV

8.	a)	Differentiate open and cross belt drives.	8 Marks	L1	CO4
	b)	Explain the following with neat sketches: i) Gears ii) Transmission screw	8 Marks	L1	CO4

(OR)

9.	a)	Classify gear trains and explain power transmitted by simple gear train with suitable diagram.	8 Marks	L2	CO4
	b)	What is centrifugal tension in a belt? How does it affect the power transmitted?	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the principle of working of Stereo lithography system.	8 Marks	L2	CO5
	b)	"Establish a statement that rapid prototyping is limited to some application" Justify your statement.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss the evolution of RP systems indicating the history and their growth rate in the industrial sector	8 Marks	L2	CO5
	b)	Write the applications of 3DP, discuss the advantages and disadvantages of selective laser sintering.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State any four types of patterns.	2 Marks	L2	CO1
	b)	List the merits and demerits of the die casting	2 Marks	L1	CO1
	c)	List the major drawbacks of hot working	2 Marks	L2	CO2
	d)	What is impact extrusion?	2 Marks	L1	CO2
	e)	What is 'Brazing'	2 Marks	L2	CO3
	f)	Classify various ARC welding processes	2 Marks	L1	CO3
	g)	What is mean by powder metallurgy?	2 Marks	L2	CO4
	h)	What is mean by powder metallurgy?	2 Marks	L2	CO4
	i)	What are the characteristic of thermoplastics	2 Marks	L2	CO5
	j)	What is compression moulding	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are the pattern allowances? Explain briefly each.	8 Marks	L2	CO1
	b)	Explain the process of core making and state the applications of core in casting processes.	8 Marks	L3	CO1
		(OR)			
3.	a)	Write a short note on 'Green sand mould' and shell Moulding.	8 Marks	L3	CO1
	b)	Briefly explain about Investment ca sting.	8 Marks	L4	CO1

MODULE-II

4.	a)	Compare HOT working and Cold Working.	8 Marks	L4	CO2
	b)	Explain various defects in rolled parts.	8 Marks	L3	CO2
		(OR)			
5.	a)	Describe the advantage of press forging over drop forging	8 Marks	L3	CO2
	b)	What are the defects in forgings? Explain it with neat sketches.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the gas welding process with neat diagram	8 Marks	L4	CO3
	b)	Give the Difference between Gas Welding and Arc Welding.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the Gas Tungsten Arc Welding processes with neat sketches	8 Marks	L3	CO3
	b)	Give the Difference between Soldering and brazing.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What are Ceramics? List and briefly explain five important properties of Ceramics that make them useful engineering materials	8 Marks	L4	CO4
	b)	Illustrate the different mechanical methods of metal powder production	8 Marks	L3	CO4
		(OR)			
9.	a)	With suitable applications explain the following ceramic materials. i) Alumina, Silica, Silicon carbide, ii) Silicon nitride	8 Marks	L3	CO4
	b)	Paraphrase the application of powder metallurgy products in automobile and power generation industries	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the working principles and application of compression Moulding.	8 Marks	L4	CO5
	b)	Explain various types of Blow moulding process with a diagram	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the working principles and application of Rotational Moulding	8 Marks	L3	CO5
	b)	Describe thermoforming and transfer molding process.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January - 2024

MATRIX THEORY AND LINEAR ALGEBRA

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define rank of a matrix.	2 Marks	L1	CO1
	b)	Determine the matrix $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & -1 \end{bmatrix}$ is an elementary or not.	2 Marks	L1	CO1
	c)	Find the characteristic polynomial of the matrix $A = \begin{bmatrix} 8 & -4 \\ 2 & 2 \end{bmatrix}$.	2 Marks	L1	CO2
	d)	State Cayley-Hamilton theorem.	2 Marks	L1	CO2
	e)	Define vector space.	2 Marks	L1	CO3
	f)	Define dimension of a vector space.	2 Marks	L1	CO3
	g)	Write the properties of linear transformation.	2 Marks	L1	CO4
	h)	Define kernel of a linear transformation.	2 Marks	L1	CO4
	i)	Calculate the norm of the vector $(1,2,1)$.	2 Marks	L1	CO5
	j)	Define inner product space.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Find the rank of matrix $\begin{bmatrix} 1 & 1 & -1 & -1 \\ 1 & -1 & -2 & -4 \\ 3 & 1 & 3 & -2 \\ 1 & 3 & 0 & -1 \end{bmatrix}$ by reducing it to echelon form.	8 Marks	L1	CO1
	b)	Test for consistency and hence solve the system of equations $x + y + z = 9;\ 2x + 5y + 7z = 52;\ 2x + y - z = 0$.	8 Marks	L3	CO1
		(OR)			
3.	a)	Expressing a matrix $\begin{bmatrix} 1 & 2 & 0 \\ 0 & 1 & 3 \\ 3 & 8 & 7 \end{bmatrix}$ as a product of elementary matrices	8 Marks	L2	CO1

	b)	Find the LDU decomposition of the matrix $A = \begin{bmatrix} 1 & -1 & 3 \\ 1 & -1 & 0 \\ 0 & 1 & 0 \end{bmatrix}$.	8 Marks	L1	CO1

MODULE-II

4.	a)	Determine the Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$.	8 Marks	L3	CO2
	b)	Show that the matrix $A = \begin{bmatrix} -1 & 1 & 1 \\ 0 & -1 & 2 \\ 1 & 1 & 1 \end{bmatrix}$ satisfies Cayley-Hamilton theorem.	8 Marks	L2	CO2

(OR)

5.		Show that the matrix $A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$ is diagonalizable.	16 Marks	L3	CO2

MODULE-III

6.	a)	Show that the set of all $m \times n$ matrices forms a vector space with the usual operations matrix addition and matrix scalar multiplication.	8 Marks	L2	CO3
	b)	In vector space P_2, determine whether $r(x) = 1 - 4x + 6x^2$ is in span $(p(x), q(x))$, where $p(x) = 1 - x + x^2$ and $q(x) = 2 + x - 3x^2$.	8 Marks	L3	CO3

(OR)

7.	a)	In vector space P_2, determine whether the set of vectors $B = \{1 + x, 1 + x^2, 1 - x + x^2\}$ form a basis or not.	8 Marks	L3	CO3
	b)	Find the dimension of the vector space P_2 of the given set $B = \{x, 1 + x, x - x^2\}$ and give a basis for V.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Prove that the given transformation is a linear transformation $T : R^2 \to R^3$ defined by $T\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} x \\ 2x - y \\ 3x + 4y \end{bmatrix}$.	8 Marks	L5	CO3
	b)	Find the kernel and Range of the differential operator $D : P_3 \to P_2$ defined by $D(p(x)) = p'(x)$.	8 Marks	L3	CO3

(OR)

9.	a)	Let $T : R^2 \to R^3$ be a linear transformation for which $T\begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ -1 \end{bmatrix}$ and $T\begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 3 \\ 0 \\ 4 \end{bmatrix}$, then find $T\begin{bmatrix} 5 \\ 2 \end{bmatrix}$ and $T\begin{bmatrix} a \\ b \end{bmatrix}$.	8 Marks	L1	CO3

	b)	Determine the matrix of linear transformation $T: P_2 \to P_2$ defined by $T(p(x)) = p(x+1)$ with respect to the basis $B = \{1, x, x^2\}$, here P_2 is the vector space of all polynomials of degree at most 2.	8 Marks	L3	CO3

MODULE-V

10.	a)	Let $u = \begin{bmatrix} u_1 \\ u_2 \end{bmatrix}$ and $v = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix}$ be two vectors in R^2. Show that $\langle u, v \rangle = 2u_1v_1 + 3u_2v_2$ is inner product.	8 Marks	L2	CO4
	b)	Find the angle between 1 and x^2 in $C[-1,1]$.	8 Marks	L1	CO4

(OR)

11.		Apply Gram-Schmidt process, obtain an orthonormal basis of $R^3(R)$ from the basis $\{(1,0,1),(1,0,-1),(0,1,1)\}$.	16 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January - 2024

CALCULUS AND TRANSFORMATION TECHNIQUES

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State Lagrange's mean value theorem.	2 Marks	L1	CO1
	b)	State Maclaurin's theorem with Lagrange's form of reminder.	2 Marks	L1	CO1
	c)	Find $\frac{\partial f}{dx} + \frac{\partial f}{dy}$ for the function $f = x^2 + y^2$.	2 Marks	L1	CO2
	d)	Identify the stationary point of the function $f = x^2y + xy^2 - axy$.	2 Marks	L1	CO2
	e)	Write the condition for the existence of the Laplace transform.	2 Marks	L1	CO3
	f)	Find the Laplace transform of $\cos 2t - \sin 3t$.	2 Marks	L1	CO3
	g)	Define unit step function.	2 Marks	L1	CO4
	h)	Find the Inverse Laplace transform of $\frac{1}{(s+1)(s+2)}$.	2 Marks	L1	CO4
	i)	Find a_0 in Fourier series for the function $f(x) = x^2$ in the interval $[-\pi, \pi]$.	2 Marks	L1	CO5
	j)	Write the formulae for the half range Fourier cosine series and cosine series for $f(x)$ in the interval $0 < x < \pi$.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Verify Rolles' theorem for the function $f(x) = (x+2)^3(x-3)^4$ in the interval $(-2,3)$.	8 Marks	L4	CO1
	b)	State Lagrange's Mean value theorem and verify the theorem for the function $f(x) = \sin x$ in $[0, \pi]$.	8 Marks	L4	CO1
		(OR)			
3.	a)	Verify Cauchy's mean value theorem for $f(x) = e^x, g(x) = e^{-x}$ in $[a,b]$.	8 Marks	L4	CO1
	b)	Show that for any $x \geq 0, 1 + x < e^x < 1 + xe^x$.	8 Marks	L2	CO1

MODULE-II

4.	a)	If $u = x^2 - y^2, v = 2xy$ where $x = r\cos\theta, y = r\sin\theta$ then show that $\frac{\partial(u,v)}{\partial(r,\theta)} = 4r^3$.	8 Marks	L1	CO2

	b)	If $u = \log(x^3 + y^3 + z^3 - 3xyz)$ Prove that $\left(\frac{\partial}{\partial x} + \frac{\partial}{\partial y} + \frac{\partial}{\partial z}\right)^2 U = \frac{-9}{(x+y+z)^2}$.	8 Marks	L5	CO2
		(OR)			
5.	a)	By using the Lagrange's method of multipliers, find a point on the plane $3x + 2y + z - 12 = 0$ which is nearest to the origin.	10 Marks	L3	CO2
	b)	If $u = x^2 + y^2 + z^2, v = xy + yz + zx, w = x + y + z$, evaluate $\frac{\partial(u,v,w)}{\partial(x,y,z)}$.	6 Marks	L5	CO2
		MODULE-III			
6.	a)	Find the Laplace transform of $u = \frac{e^{-t}\sin 2t}{t}$	8 Marks	L1	CO3
	b)	Evaluate $L\{t^2 e^{-t}\sin 2t\}$.	8 Marks	L5	CO3
		(OR)			
7.	a)	Using Laplace transform, Show that $\int_0^\infty \left(\frac{\cos at - \cos bt}{t}\right) dt$.	8 Marks	L3	CO1
	b)	Find the Laplace transform of the full-wave rectifier $f(t) = E\sin\omega t$, $0 < t < \frac{\pi}{\omega}$ having period $\frac{\pi}{\omega}$.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Find the inverse Laplace transform of $\log\left(\frac{s+3}{s+5}\right)$.	8 Marks	L1	CO4
	b)	Evaluate $L^{-1}\left[\frac{1}{(s^2+a^2)^2}\right]$ using convolution theorem.	8 Marks	L5	CO4
		(OR)			
9.	a)	Determine the inverse Laplace transform of $\cot^{-1} s$.	8 Marks	L3	CO4
	b)	Find $L^{-1}\left[\frac{e^{-2s}}{s^2+4s+5}\right]$.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Examine the given function is even or odd and hence obtain Fourier series for the function $f(x) = \sin x$ in $-\pi < x < \pi$.	8 Marks	L4	CO5
	b)	Show that the Fourier sine transform of $f(x) = \begin{cases} x & 0 < x < 1 \\ 2 - x & 1 < x < 2 \\ 0 & x > 2 \end{cases}$ is $\frac{2\sin s(1-\cos s)}{s^2}$.	8 Marks	L2	CO5
		(OR)			
11.	a)	Find the half range cosine series $f(x) = x(\pi - x)$ in $0 < x < \pi$.	8 Marks	L1	CO5
	b)	Find the Fourier cosine transform of $f(x) = e^{-ax}, a > 0$ and hence deduce the integral $\int_0^\infty \frac{\cos px}{a^2+p^2} dp$.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

TRANSFORMATION TECHNIQUES AND LINEAR ALGEBRA

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Fourier series.	2 Marks	L1	CO1
	b)	Define Fourier sine transform.	2 Marks	L1	CO1
	c)	State change of scale property in Laplace transform.	2 Marks	L1	CO2
	d)	Define unit impulse function.	2 Marks	L1	CO2
	e)	Find the inverse Laplace transform of $\frac{1}{(s+3)(s+4)}$.	2 Marks	L1	CO2
	f)	Find the inverse Laplace transform of $\frac{e^{-3s}}{(s+1)}$.	2 Marks	L1	CO2
	g)	State Cayley-Hamilton theorem.	2 Marks	L1	CO3
	h)	Find the characteristic polynomial of the matrix $A = \begin{bmatrix} 5 & 4 \\ 2 & 1 \end{bmatrix}$.	2 Marks	L1	CO3
	i)	Define vector subspace.	2 Marks	L1	CO4
	j)	Define basis of a vector space.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Examine the given function is even or odd and hence obtain Fourier series for the function $f(x) = x^2$ in $(-\pi, \pi)$.	8 Marks	L4	CO1
	b)	Find the half range cosine series $f(x) = x(\pi - x)$ in $0 < x < \pi$.	8 Marks	L1	CO1

(OR)

3.	a)	Applying Fourier integral theorem, Show that $e^{-ax} = \frac{2a}{\pi}\int_0^\infty \frac{\cos\lambda x}{(\lambda^2 + a^2)} d\lambda$.	8 Marks	L3	CO1
	b)	Find the Fourier sine transform of $f(x) = xe^{-ax}, a > 0$.	8 Marks	L1	CO1

MODULE-II

4.	a)	Find the Laplace Transform of $f(t)$ defined as $f(t) = \begin{cases} 0, & 0 < t < 1 \\ 1, & 1 < t < 2 \\ 2, & t > 2 \end{cases}$.	8 Marks	L1	CO2
	b)	Determine the Laplace transform of $f(t)$ where $f(t) = e^{4t}\sin 2t \cos t$.	8 Marks	L3	CO2

(OR)

5.	a)	Find the Laplace transform of $e^{-4t}\int_0^t \frac{\sin 3t}{t}dt$.	8 Marks	L1	CO2
	b)	Find $L\{f(t)\}$, where $f(t)$ is a periodic function of period 2π and it is given by $f(t)=\begin{cases}\sin t, & if\ 0<t<\pi\\ 0, & if\ \pi<t<2\pi\end{cases}$.	8 Marks	L1	CO2

MODULE-III

6.	a)	Find the inverse Laplace transform of $\log\left(\frac{s^2+4}{s^2+9}\right)$.	8 Marks	L1	CO2
	b)	By using Convolution theorem, find $L^{-1}\left[\frac{s^2}{(s^2+a^2)(s^2+b^2)}\right]$.	8 Marks	L3	CO2

(OR)

7.		Using Laplace transform, solve the differential equation $y''+y=t$ given that $y(0)=1,\ y'(0)=-2$.	16 Marks	L3	CO2

MODULE-IV

8.	a)	Find the rank of matrix $A=\begin{bmatrix}1 & 2 & 1 & 0\\ -2 & 4 & 3 & 0\\ 1 & 0 & 2 & -8\end{bmatrix}$ by reducing it to echelon form.	8 Marks	L1	CO3
	b)	Determine whether the following equations will have a non-trivial solution, if so solve them $x+3y-2z=0; 2x-y+4z=0; x-11y+14z=0$.	8 Marks	L3	CO3

(OR)

9.	a)	Determine the Eigen values and Eigen vectors of the matrix $A=\begin{bmatrix}1 & 1 & 3\\ 1 & 5 & 1\\ 3 & 1 & 1\end{bmatrix}$.	8 Marks	L3	CO3
	b)	Show that the matrix $A=\begin{bmatrix}1 & 0 & 3\\ 2 & 1 & -1\\ 1 & -1 & 1\end{bmatrix}$ satisfies Cayley-Hamilton theorem.	8 Marks	L2	CO3

MODULE-V

10.	a)	In vector space P_2, determine whether $r(x)=1-4x+6x^2$ is in span $(p(x),q(x))$, where $p(x)=1-x+x^2$ and $q(x)=2+x-3x^2$.	8 Marks	L3	CO4
	b)	Find the dimension of the vector space P_2 of the given set $B=\{x,1+x,x-x^2\}$ and give a basis for V.	8 Marks	L1	CO4

(OR)

11.	a)	Find the kernel and Range of the differential operator $D:P_3\to P_2$ defined by $D(p(x))=p'(x)$.	8 Marks	L1	CO4
	b)	Let $T:P_2\to P_2$ be a linear transformation for which $T(1+x)=1+x^2, T(x+x^2)=x-x^2, T(1+x^2)=1+x+x^2$. Find $T(4-x+3x^2)$.	8 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Supplementary Examinations, January – 2024

PHYSICS FOR COMPUTING

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Recall the condition for the diffraction of light.	2 Marks	L1	CO1
	b)	Estimate Brewster's angle when un-polarized light incidents on the glass plate whose refractive index is 1.52.	2 Marks	L3	CO1
	c)	Calculate the wavelength associated with an electron raised to a potential of 100 V.	2 Marks	L3	CO2
	d)	Distinguish between matter waves and electromagnetic waves.	2 Marks	L4	CO2
	e)	Define degeneracy.	2 Marks	L1	CO3
	f)	Sketch the conductors, semiconductors, and insulators based on the origin of energy band formation in solids	2 Marks	L1	CO3
	g)	Classify the semiconductors.	2 Marks	L2	CO4
	h)	Why the intrinsic semiconductors are not suitable for device fabrication?	2 Marks	L1	CO4
	i)	Can we send current through the optical fiber? Why?	2 Marks	L1	CO5
	j)	Identify the applications of optical fiber in various fields.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Why do Newton's rings are in circular manner? Develop the expression for the wavelength of the light source by using Newton's rings experiment.	9 Marks	L3	CO1
	b)	With a ray diagram, discuss the theory of interference in a thin film by reflection.	7 Marks	L2	CO1
		(OR)			
3.	a)	Derive the intensity variations due to diffraction and interference effect in Fraunhofer diffraction due to double slit with neat sketch.	10 Marks	L3	CO1
	b)	Summarize the construction and working of the quarter-wave plate.	6 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the one-dimensional Schrödinger's time-independent wave equation for moving particles. State the physical significance of wave function.	10 Marks	L2	CO2
	b)	Explain the Fermi-Dirac distribution of electrons in a metal. Discuss its variation with temperature with a neat diagram.	6 Marks	L2	CO2
		(OR)			
5.	a)	Analyze de-Broglie's hypothesis of matter wavesand obtain the expression for de-Broglie's wavelength of an electron.	8 Marks	L4	CO2
	b)	Explain the existence of matter waves by using Davison and Germer's experiment.	8 Marks	L2	CO2

MODULE-III

6.	a)	Evaluate the formation of allowed and forbidden energy bands based on the Kronig-Penny model.	12 Marks	L5	CO3
	b)	Describe the tunneling effect of an electron.	4 Marks	L2	CO3
		(OR)			
7.	a)	Derive the wave equation for a particle confined to a one-dimensional rigid box of width 'L' and discuss its Eigen function and Eigenvalues of an electron.	12 Marks	L3	CO3
	b)	An electron is bound in the one-dimensional infinite well of width 2Å. Find the energy values in the ground state and second excited states.	4 Marks	L1	CO3

MODULE-IV

8.	a)	Determine the expression for drift and diffusion current in an intrinsic semiconductor.	8 Marks	L5	CO4
	b)	Build an expression for the density of electrons in intrinsic semiconductors	8 Marks	L3	CO4
		(OR)			
9.	a)	Distinguish between the direct and indirect band gap of semiconductors.	6 Marks	L4	CO4
	b)	Discuss in detail the construction and working mechanism of the semiconductor diode laser with help of an energy level diagram. Identify the various application of laser.	10 Marks	L2	CO4

MODULE-V

10.	a)	Define acceptance angle, acceptance cone, and numerical aperture. Derive an expression for acceptance angle and numerical aperture of an optical fiber.	12 Marks	L4	CO5
	b)	The refractive indices of the core and the cladding regions of fiber are 1.56 and 1.49 respectively. Predict the critical angle, and refractive index change of an optical fiber.	4 Marks	L3	CO5
		(OR)			
11.	a)	Categorize the optical fibers on the basis of refractive index profile and modes of propagation with a neat diagram.	12 Marks	L5	CO5
	b)	Summarize the construction and working of the temperature sensor.	4 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2024

PROFESSIONAL ETHICS AND HUMAN VALUES

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is consensus in ethics?	2 Marks	L1	CO1
	b)	What are moral dilemmas?	2 Marks	L1	CO1
	c)	How does a sense of responsibility influence professional conduct?	2 Marks	L1	CO2
	d)	What is the role of self-respect in professional ethics?	2 Marks	L1	CO2
	e)	Why is learning from the past important in engineering experimentation?	2 Marks	L1	CO3
	f)	What are the limitations of codes of ethics?	2 Marks	L1	CO3
	g)	What is confidentiality, and how is it important in the workplace?	2 Marks	L1	CO4
	h)	What is a conflict of interest?	2 Marks	L1	CO4
	i)	How can institutions and organizations be enriched through ethical practices?	2 Marks	L1	CO5
	j)	Why is competence in professional ethics important?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the controversy surrounding various ethical issues, such as abortion, euthanasia, and capital punishment.	8 Marks	L3	CO1
	b)	How do differing ethical perspectives contribute to controversies, and what is the role of ethical analysis in resolving them?	8 Marks	L2	CO1
		(OR)			
3.	a)	What is the role of controversy in ethical inquiry?	8 Marks	L1	CO1
	b)	Evaluate Gilligan's theory of moral development and explain how it differs from Kohlberg's theory.	8 Marks	L4	CO1

MODULE-II

4.	a)	Moral leadership is often seen as a key component of ethical organizations. Discuss.	8 Marks	L3	CO2
	b)	What are the qualities of a moral leader, and how can leaders effectively navigate moral dilemmas?	8 Marks	L1	CO2
		(OR)			
5.	a)	How do ethical relativism and ethical egoism differ in their approach to ethical decision-making?	8 Marks	L2	CO2
	b)	What is moral leadership, and why is it important in a professional context?	8 Marks	L1	CO2

MODULE-III

6.	a)	What are the limitations of codes of ethics in guiding the ethical conduct of experimentation?	8 Marks	L1	CO3
	b)	What can be done to address the code of ethics limitations and ensure ethical guidelines are followed in all experimental settings?	8 Marks	L3	CO3

(OR)

7.	a)	What are some of the problems with the law of engineering?	8 Marks	L1	CO3
	b)	How can businesses navigate the legal and ethical considerations of their work?	8 Marks	L3	CO3

MODULE-IV

8.	a)	What was the BART case, and what were the key issues involved?	8 Marks	L1	CO4
	b)	What are some examples of employee rights, and how are they protected from discrimination in the workplace?	8 Marks	L1	CO4

(OR)

9.	a)	What is an occupational crime, and how does it relate to engineering professions?	8 Marks	L1	CO4
	b)	Discuss the ethical implications of occupational crime in Business.	8 Marks	L4	CO4

MODULE-V

10.		What is the transition from the present state to the Universal Human Order, and how can socially and ecologically responsible engineers, technologists, and managers contribute to this transition?	16 Marks	L1	CO5

(OR)

11.	a)	According to the concept of Acceptance of Human Values in professional ethics, what is the basis for humanistic education?	8 Marks	L3	CO5
	b)	How does the Constitution and Universal Order concept play a role in professional ethics?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations May – 2024

FUNDAMENTALS OF STATISTICS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Statistics.	2 Marks	L1	CO1
	b)	What is descriptive statistics ?	2 Marks	L1	CO1
	c)	Define median.	2 Marks	L1	CO1
	d)	Explain Geometric mean.	2 Marks	L2	CO3
	e)	Define Kurtosis.	2 Marks	L1	CO1
	f)	What is Standard Deviation?	2 Marks	L2	CO2
	g)	What is Negative Correlation?	2 Marks	L1	CO1
	h)	Define Regression analysis.	2 Marks	L1	CO1
	i)	Define alternative hypothesis.	2 Marks	L2	CO3
	j)	Explain Test of significance for large and small sample tests.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define Secondary data. Explain various sources of collecting Secondary data.	8 Marks	L2	CO1
	b)	Explain qualitative and quantitative classification with examples.	8 Marks	L2	CO1

(OR)

3.	a)	Explain chronological classification and geographical classification of data with examples.	8 Marks	L2	CO2
	b)	Explain importance of application of statistics in business, Economics, and computer.	8 Marks	L1	CO3

MODULE-II

4.	a)	Calculate Median from the following data:	8 Marks	L2	CO2

Marks	0-4	5-9	10-14	15-19	20-24
No. of students	5	22	13	8	2

	b)	Find the Harmonic mean of the following data.	8 Marks	L1	CO3

Age	4	5	6	7
No. of students	10	6	8	12

(OR)

5.	a)	A study of 100 engineering companies gives the following information.	8 Marks	L2	CO3

Profit	10-15	15-20	20-25	25-30	30-35	35-40
No of companies	11	20	35	20	8	6

Calculate the Arithmetic mean the profit earned.

b) Find the Harmonic mean of the following data. 8 Marks L3 CO2

Weight of ear head	45	60	48	100	65
logx	1.653	1.778	1.681	2.000	1.813

MODULE-III

6. Calculate variance, standard deviation, and coefficient of standard deviation for the following data: 16 Marks L2 CO4

Marks	0-10	10-20	20-30	30-40	40-50	50-60
f_i	8	12	20	30	20	10

(OR)

7. Calculate quartile deviation and coefficient quartile deviation for the following data: 16 Marks L3 CO3

Class interval	Below 40	41-80	81-120	121-160	161-200	201-240	241 above
Frequency	394	461	391	334	169	113	148

MODULE-IV

8. a) Find Karl Pearson's coefficient of correlation between capital employed and profit obtained from the following data. 8 Marks L4 CO4

Capital	14	12	14	16	16	17	16	15
Profit	13	11	10	15	15	9	14	17

b) For certain x and y series which are correlated, the two lines of regression are: 8 Marks L4 CO4
$5x - 6y + 90 = 0$ and $15x - 8y - 130 = 0$. Find the means of the two series and the correlation

(OR)

9. Marks in Statistics and mathematics for 450 students at a certain examination is given below: 16 Marks L3 CO3

Mean marks in Statistics	40
Mean marks in Mathematics	48
Standard Deviation of marks in Statistics	12
The variance of marks in Mathematics	256
Sum of the product of deviations of marks from their respective means	42075

Obtain the two Regression equations and estimate the average marks in Mathematics of a candidate who obtained 50 marks in Statistics.

MODULE-V

10. a) Explain the procedure generally followed in the testing of the hypothesis. 8 Marks L2 CO3

b) Briefly explain the Chi – Square test. 8 Marks L1 CO2

(OR)

11. a) Write about one tailed and two tailed tests. 8 Marks L2 CO3

b) Write about null hypothesis and testing of null hypothesis. 8 Marks L1 CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations May – 2024

BASICS OF FINANCIAL MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define financial plan.	2 Marks	L1	CO1
	b)	Define operating leverage.	2 Marks	L1	CO2
	c)	What is meant by retained earnings?	2 Marks	L1	CO2
	d)	Explain EBIT-EPS analysis.	2 Marks	L1	CO2
	e)	What is NPV?	2 Marks	L1	CO4
	f)	What do you mean by dividend?	2 Marks	L1	CO5
	g)	Write a short note on gross working capital.	2 Marks	L1	CO4
	h)	What is meant by the term “leverage”?	2 Marks	L1	CO2
	i)	Explain the profitability index method.	2 Marks	L1	CO4
	j)	Explain the types of dividend policy.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the significance of financial management.	8 Marks	L2	CO1
	b)	Explain the reasons for time value of money.	8 Marks	L2	CO1
		(OR)			
3.	a)	What are the factors affecting financial planning?	8 Marks	L1	CO1
	b)	Briefly explain the different financial requirements of a company to carry on activities.	8 Marks	L1	CO1

MODULE-II

4.	a)	Define the cost of capital. How will you determine the cost of capital from different sources?	8 Marks	L1	CO2
	b)	The firms -tax cost of capital of specific source is as follows. Cost of debt = 8% Cost of preference shares =14% Cost of equity funds =17% The firm decided to raise Rs.5,00,000 for the expansion of its plant. It is estimated that Rs.1,00,000 will be available as retained earnings, and the balance of the additional funds will be raised as follows. a) Long term debt Rs.3,00,000 b) Preference shares Rs.1,00,000 Compute the weighted average cost of capital.	8 Marks	L4	CO2

(OR)

5.	a)	A Ltd. has the following capital structure : Rs. Equity share capital (of Rs. 100 each) 1,00,000 10% Preference share capital (of Rs. 100 each) 2,00,000 10% debentures (of Rs. 100 each) 2,00,000 If EBIT is i) Rs. 1,00,000 ii) Rs. 80,000 and iii) Rs. 1,20,000, Calculate financial leverage under three situations. Assume 50% tax rate.	8 Marks	L4	CO2
	b)	The following particulars are available : Sales Rs. 1,00,000 Variable Cost Rs. 70,000 Fixed Cost Rs. 20,000 Long-term loans Rs. 50,000 At 10 per cent Compute the combined leverage.	8 Marks	L4	CO2

MODULE-III

6.	a)	What is capital structure? Explain the importance of capital structure and planning.	8 Marks	L2	CO3
	b)	What is the net operating income (NOI) theory of capital structure? Explain the Assumption of the NOI theory.	8 Marks	L2	CO3

(OR)

7.		The capital structure of ABC Ltd consists of any ordinary share capital of Rs.20,00.000 (Rs.100 par value) and Rs.10,00,000 of 10% debentures. Sale increased by 20% from 100000 units to 120000 units. The selling price is Rs.10 per unit, variable cost amount to Rs.6 per unit. You are required to calculate the following: a) The degree of financial leverage and operating leverage at 100000 and 120000 units. b) Percentage of increase in EPS.	16 Marks	L4	CO3

MODULE-IV

8.	a)	Explain the difference between the future value and the present value.	8 Marks	L2	CO4
	b)	X Limited invested Rs.1,00,000 on some projects. The project generates profit before depreciation and tax @ Rs. 35,000 p.a. for 5 years. The scrap value of the project at the end of 5th year is zero. Determine the average rate of return for the project assuming 50% tax rate and a straight-line method of providing depreciation.	8 Marks	L4	CO4

(OR)

9.	a)	Determine the need and determinants of working capital in a business.	8 Marks	L2	CO4
	b)	Prepare an estimate of working capital requirement from the following information of a trading concern: 1. Project annual sales 1,00,000 units 2. Selling price Rs. 8 per unit 3. % age of net profit on sales 25% 4. Average credit period allowed to customers 8 weeks 5. Average credit period allowed by suppliers 4 weeks 6. Average stock holding in terms of sales requirement 12 weeks 7. Allow 10% for contingencies.	8 Marks	L4	CO4

(OR)

MODULE-V

10.	a)	"Investment, financing and dividend decisions are interrelated". Explain with suitable examples.	8 Marks	L2	CO5
	b)	Explain the various factors which influence the dividend decision.	8 Marks	L1	CO5
		(OR)			
11.		Explain Walter's dividend model in detail. What are the shortcomings of the Walters model?	16 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

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BBA II Semester (MBU-22) Regular Examinations May – 2024

OPERATIONS MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define operations management.	2 Marks	L1	CO1
	b)	What do you mean by competitive strategy?	2 Marks	L1	CO1
	c)	Explain about plant maintenance.	2 Marks	L1	CO2
	d)	Describe the merits of plant layout.	2 Marks	L1	CO2
	e)	Explain about sizing strategies.	2 Marks	L1	CO3
	f)	Discuss the concept of capacity timing.	2 Marks	L1	CO3
	g)	Define the concept of EOQ.	2 Marks	L1	CO4
	h)	Explain the KANBAN System.	2 Marks	L1	CO4
	i)	Write about CPM.	2 Marks	L1	CO5
	j)	What do you mean by cost analysis?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the nature and scope of production and operations management.	8 Marks	L1	CO1
	b)	Discus the various stages in the evolution of production and operation management discipline.	8 Marks	L3	CO1

(OR)

3.	a)	What are the various activities involved in production and operations management?	8 Marks	L1	CO1
	b)	How the Operation strategy is a competitive weapon?	8 Marks	L2	CO1

MODULE-II

4.	a)	What are the factors will influence the selection of location?	8 Marks	L1	CO2
	b)	Explain the Product and process layout advantages and disadvantages.	8 Marks	L1	CO2

(OR)

5.	a)	Examine the methods of plant maintenance.	8 Marks	L3	CO2
	b)	How do multinationals choose the location of their industry? Explain giving some examples from Indian context.	8 Marks	L2	CO2

MODULE-III

6.	a)	Why is it important for an organization to do capacity planning?	8 Marks	L2	CO3
	b)	What is purpose of master scheduling and how it is important for operation planning?	8 Marks	L1	CO3

(OR)

7.	a)	What is aggregate production planning? What is the purpose of doing it?	8 Marks	L1	CO3
	b)	Write in detail about long-term capacity planning and control.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the concept and methods of materials handling.	8 Marks	L3	CO4
	b)	Examine the role and functions of purchase department.	8 Marks	L4	CO4

(OR)

9.	a)	Define inventory management and explain its methods.	8 Marks	L1	CO4
	b)	Explain the concept and basic elements of JIT.	8 Marks	L1	CO4

MODULE-V

10.	a)	Compare and contrast between CPM and PERT.	8 Marks	L3	CO5
	b)	What are the basic concepts of project management?	8 Marks	L1	CO5

(OR)

11.	a)	Enumerate the role of crashing in project network. List the steps in crashing a project.	8 Marks	L3	CO5
	b)	What do you mean by cost analysis? Explain different techniques of cost analysis.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations May – 2024

ORGANIZATIONAL BEHAVIOUR

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Explain any two characteristics of OB.	2 Marks	L1	CO1
	b)	What is human behavior?	2 Marks	L2	CO1
	c)	Difference between attitudes and values.	2 Marks	L2	CO2
	d)	Explain any two components of learning.	2 Marks	L1	CO2
	e)	What is meant by collective bargaining?	2 Marks	L3	CO3
	f)	Discuss the qualities of a leader.	2 Marks	L2	CO3
	g)	What do you mean by Team Building?	2 Marks	L1	CO4
	h)	Describe any two factors of stress.	2 Marks	L2	CO4
	i)	Explain resistance to change.	2 Marks	L2	CO5
	j)	Explain OD interventions.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define organizational behavior. What are different models of OB?	8 Marks	L1	CO1
	b)	Briefly explain various theories of perception.	8 Marks	L2	CO1
		(OR)			
3.	a)	Defines the term 'perception' and explains 'perception process'.	8 Marks	L2	CO1
	b)	Explain the nature and scope of organizational behavior.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain the meaning of personality. What are the determinants of personality?	8 Marks	L2	CO2
	b)	What is learning? Briefly explain various theories of learning.	8 Marks	L1	CO1
		(OR)			
5.	a)	Define attitude. Explain various components of attitude.	8 Marks	L2	CO2
	b)	Discuss the determinants of effective learning.	8 Marks	L1	CO2

MODULE-III

6.	a)	Elaborate A.H. Maslow's need hierarchy theory of motivation.	8 Marks	L1	CO3
	b)	Define leadership. Explain the styles of leadership.	8 Marks	L2	CO3
		(OR)			
7.	a)	How do you understand groups? Explain the different phases of group development.	8 Marks	L2	CO3
	b)	Compare A.H. Maslow's theory with Herzberg's theory of Motivation.	8 Marks	L1	CO3

MODULE-IV

8.	a)	What is Conflict? What are its causes and how it can be managed effectively? Explain.	8 Marks	L1	CO4
	b)	What are the consequences of stress? Suggest effective measure to manage stress.	8 Marks	L2	CO4

(OR)

9.	a)	Define stress. Explain ill effects of stress on human beings. How do people manage stress?	8 Marks	L2	CO4
	b)	Describe the causes and consequences of organizational conflicts.	8 Marks	L1	CO4

MODULE-V

10.	a)	Enumerate various factors responsible for the organizational change.	8 Marks	L1	CO5
	b)	Briefly explain various types and process of organizational communication.	8 Marks	L1	CO5

(OR)

11.	a)	Define Organizational Development. Explain various objectives of organizational development.	8 Marks	L2	CO5
	b)	Explain importance and barriers of organizational communication.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2024

BASICS OF COMPUTERS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define system software.	2 Marks	L1	CO1
	b)	What are the basic operations of computer?	2 Marks	L1	CO1
	c)	How can you add columns to an existing table in MS Word?	2 Marks	L1	CO2
	d)	What are the uses of Header and Footer in MS Word?	2 Marks	L1	CO2
	e)	What do you mean by cell address?	2 Marks	L1	CO3
	f)	Differentiate workbook and worksheet?	2 Marks	L2	CO3
	g)	What are the uses of database?	2 Marks	L1	CO4
	h)	Define a Primary key.	2 Marks	L1	CO4
	i)	List out two usages of internet.	2 Marks	L1	CO5
	j)	List out various service providers of e-mail.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the various characteristics of Computer.	8 Marks	L2	CO1
	b)	What is storage media? Write the names of a few commonly used storage media.	8 Marks	L2	CO1
		(OR)			
3.	a)	What are the different kinds of input devices?	8 Marks	L2	CO1
	b)	List out the advantages and Limitations of a Computer.	8 Marks	L2	CO1

MODULE-II

4.	a)	List out the components in MS Word.	8 Marks	L2	CO2
	b)	List out the main features of MS Word.	8 Marks	L2	CO2
		(OR)			
5.	a)	How to draw a table in MS Word? Write the procedure to add more columns in created table.	8 Marks	L2	CO2
	b)	How Margins, Page Size & Orientation can be done in MS Word?	8 Marks	L2	CO2

MODULE-III

6.	a)	What is a Function in MS Excel? How can you display the maximum value within the range C4:C9?	8 Marks	L2	CO3
	b)	List out the various types of charts available in MS Excel.	8 Marks	L2	CO3
		(OR)			
7.	a)	List out the advantages of MS Excel.	8 Marks	L2	CO3
	b)	How cell formatting can be done in Excel?	8 Marks	L2	CO3

MODULE-IV

8.	a)	How many types of queries categorized? Explain.	8 Marks	L2	CO4
	b)	Define a form. Briefly explain its use.	8 Marks	L2	CO4
		(OR)			
9.	a)	Mention how you can create a simple query in Access.	8 Marks	L2	CO4
	b)	What are the major components of MS Access?	8 Marks	L2	CO4

MODULE-V

10.	a)	Is the impact of the internet on society rather positive or negative? Explain.	8 Marks	L2	CO5
	b)	Define a term e-mail. How to create e-mail account?	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the applications of internet in business.	8 Marks	L2	CO5
	b)	Explain the options available when you compose a mail.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Supplementary Examinations, January – 2024

PROFESSIONAL ETHICS AND HUMAN VALUES

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Discuss the aim of ethics.	2 Marks	L2	CO1
	b)	Define controversy.	2 Marks	L1	CO1
	c)	List the characteristics of virtuous person.	2 Marks	L1	CO2
	d)	Differentiate Self-respect and Self-responsibility.	2 Marks	L4	CO2
	e)	Define Code of Ethics.	2 Marks	L1	CO3
	f)	State two industrial problems with the law of engineering.	2 Marks	L1	CO3
	g)	Define the term conflict of interests.	2 Marks	L1	CO4
	h)	Explain the Employee discrimination.	2 Marks	L2	CO4
	i)	List the advantages of Ethical Human Conduct.	2 Marks	L1	CO5
	j)	What do you mean by case study.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are the qualities required to handle ethical dilemma?	8 Marks	L1	CO1
	b)	Describe about Gilligan's theory.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the different types of Inquiry.	8 Marks	L2	CO1
	b)	What are the qualities required to handle ethical dilemma?	8 Marks	L1	CO1

MODULE-II

4.	a)	Describe the theory of Virtue.	8 Marks	L2	CO2
	b)	Distinguish between Profession and Professionalism.	8 Marks	L4	CO2
		(OR)			
5.	a)	Discuss the uses of ethical theories	8 Marks	L2	CO2
	b)	Explain the steps to resolve moral dilemmas.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the importance of moral autonomy and accountability.	8 Marks	L2	CO3
	b)	Explain the similarities to standard experiments.	8 Marks	L2	CO3

(OR)

7.	a)	Discuss the characteristics of responsible experimenters.	8 Marks	L1	CO3
	b)	What do you mean by "Learning from the Past"?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe the process of Collective Bargaining.	8 Marks	L2	CO4
	b)	State the techniques for achieving collegiality.	8 Marks	L1	CO4

(OR)

9.	a)	Define whistle blowing. Suggest some measures to avoid whistle blowing.	8 Marks	L1	CO4
	b)	List the rights of Professionals.	8 Marks	L1	CO4

MODULE-V

10.		Discuss the basis for Humanistic Education.	16 Marks	L2	CO5

(OR)

11.	a)	Describe the concept ethical Human Conduct.	8 Marks	L2	CO5
	b)	What do you mean by Holistic technologies?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Supplementary Examinations, January – 2024

FUNDAMENTALS OF STATISTICS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Difference between primary and secondary data.	2 Marks	L1	CO1
	b)	Define statistics.	2 Marks	L1	CO1
	c)	Define Geometric mean	2 Marks	L1	CO1
	d)	What do you mean by harmonic mean?	2 Marks	L1	CO1
	e)	Explain about the geometric mean.	2 Marks	L1	CO2
	f)	What is meant by Angle of incidence?	2 Marks	L1	CO2
	g)	What steps to follow to solve Quartile Deviation?	2 Marks	L1	CO3
	h)	Which types of variables will we the regression?	2 Marks	L1	CO3
	i)	Explain about correlation.	2 Marks	L1	CO4
	j)	Define the term hypothesis.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the difference between qualitative and quantitative variables. Give an example of qualitative and quantitative.	8 Marks	L2	CO1
	b)	Distinguish between: i) Primary and secondary data ii) Sampling and census method.	8 Marks	L2	CO1

(OR)

3.	a)	In a survey of 35 families in a village, the number of children per family was recorded and the following data obtained: 1 0 2 3 4 5 6 7 2 3 4 0 2 5 8 4 5 12 6 3 2 7 6 5 3 3 7 8 9 7 9 4 5 4 3	8 Marks	L2	CO1
	b)	Form a frequency distribution from the following data by Inclusive Method, taking 4 as the magnitude of class-intervals : 10, 17, 15, 22, 11, 16, 19, 24, 29, 18, 25, 26, 32, 14, 17, 20, 23, 27, 30, 12, 15, 18, 24, 36, 18, 15, 21, 28, 33, 38, 34, 13, 10, 16, 20, 22, 29, 19, 23, 31.	8 Marks	L2	CO1

MODULE-II

4. a) From the following data compute arithmetic mean by direct method: — 8 Marks — L2 — CO1

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No of students	5	10	25	30	20	10

b) The following are the weekly wages in rupees of 30 workers of a firm: — 8 Marks — L2 — CO1

140, 139, 126, 114, 100, 88, 62, 77, 99, 103, 108, 129, 144, 148, 134, 63, 69, 148, 132, 118, 142, 116, 123, 104, 95, 80, 85, 106, 123, 133.

The firm gave bonus of RS 10 15 20 25 30 and 35 for individuals in the respective salary: exceeding 60 but not exceeding 75 exceeding but no exceeding 90 and so on up to exceeding 135 and not exceeding 150. Find the average bonus paid.

(OR)

5. Compute median from the following data: — 16 Marks — L2 — CO1

Mid-value	Frequency	Mid-value	Frequency
115	6	165	60
125	25	175	38
135	48	185	22
145	72	195	3
155	116		

MODULE-III

6. a) Explain Merits and Demerits of Quartile Deviation — 8 Marks — L2 — CO2

b) i) Evaluate an appropriate measure of dispersion for the following data : — 8 Marks — L2 — CO2

Income (in Rs.) : Less than 50, 50-70, 70-90, 90-110, 110-130, 130-150 Above 150

No. of persons : 54, 100, 140, 300, 230, 125, 51

ii) Comment on the following :

If the coefficient of quartile deviation (Q.D) is 0.6 and Q.D. = 15, then Q1 = 10 and Q3 = 40.

(OR)

7. a) Explain the merits and demerits of mean deviation. — 8 Marks — L2 — CO2

b) Calculate the mean deviation from mean for the following data. — 8 Marks — L2 — CO2

Class Interval : 2-4 4-6 6-8 8-10

Frequency : 3 4 2 1

MODULE-IV

8.	Calculate Karl Pearson's co-efficient of skewness from the following data : Size : 1 2 3 4 5 6 7 Frequency : 10 18 30 25 12 3 2	16 Marks	L2	CO3

(OR)

9.	The ranks of the same 15 students in two subjects A and B are given below ; the two numbers within the brackets denoting the ranks of the same student in A and B respectively. (1, 10), (2, 7), (3, 2), (4, 6), (5, 4), (6, 8), (7, 3), (8, 1), (9, 11), (10, 15), (11, 9), (12, 5), (13, 14), (14, 12), (15, 13). Use Spearman's formula to find the rank correlation coefficient.	16 Marks	L2	CO3

MODULE-V

10.	a)	Describe the various forms of hypothesis testing errors.	8 Marks	L2	CO4
	b)	How would you define hypothesis? How do you formulate a null hypothesis and a possible alternative hypothesis for a specific issue?	8 Marks	L2	CO4

(OR)

11.		Explain the differences between the null and alternative hypotheses using relevant examples.	16 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Supplementary Examinations, January - 2024

BASICS OF FINANCIAL MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Financial Management?	2 Marks	L1	CO1
	b)	What do you understand by Time value of money?	2 Marks	L1	CO1
	c)	What is Cost of capital?	2 Marks	L1	CO2
	d)	Define Leverage.	2 Marks	L1	CO2
	e)	What is optimal capital structure?	2 Marks	L1	CO3
	f)	What do you understand by Capital expenditure?	2 Marks	L1	CO4
	g)	What is Net working capital?	2 Marks	L1	CO4
	h)	What do you understand by Economic Order Quantity?	2 Marks	L1	CO4
	i)	Write a short note on types of dividends	2 Marks	L1	CO5
	j)	How do you calculate DPS?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	"The finance manager's primary task is to plan for the acquisition and use of funds so as to maximize the value of the firm." Do you agree with the statement? Comment	8 Marks	L3	CO1
	b)	What are the Basic Financial Decisions? How do they involve risk return trade-off?	8 Marks	L2	CO1

(OR)

3.	a)	Explain the relevance of time value of money in financing and investment decisions	8 Marks	L2	CO1
	b)	When can there arise a conflict between shareholders and managers' goals? How does wealth maximization goal take care of this conflict?	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the concept of Weighted Average Cost of Capital in detail.	8 Marks	L2	CO2
	b)	Discuss the importance of Financial and Operating leverages in detail.	8 Marks	L3	CO2

(OR)

5.	a)	A firm has the following capital structure as per the latest statement.	8 Marks	L4	CO2

Source of finance	Amount (Rs.)	After Tax cost (%)
Debt capital	30,00,000	8.0
Preference Share capital	10,00,000	8.5
Equity share capital	20,00,000	12.5
Retained earnings	40,00,000	8.0

Compute the weighted average cost of capital of the company.

	b)	The capital structure of ABC Limited consists of equity share capital of Rs. 1,00,000 (10,000 shares of Rs. 10 each) and 8% debentures of Rs. 50,000. You are required to calculate and verify the degree of financial leverage on earnings before interest and tax (EBIT) level of Rs. 20,000.	8 Marks	L4	CO2

MODULE-III

6.	a)	What do you understand by capital structure? What are the major determinants of capital Structure?	8 Marks	L2	CO3
	b)	Describe NI and NOI Approaches.	8 Marks	L3	CO3

(OR)

7.	a)	Why is it that the 'debt' is the cheapest source of finance for a profit-making company?	8 Marks	L3	CO3
	b)	Explain the "Modigliani-Miller Approach" of capital structure in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	A project requires an initial investment of Rs.1,00,000 and the expected life period of the project is 5 years and the expected Cash flow after Tax are as follows.	16 Marks	L4	CO4

Year	CFAT (Rs.)
1	15,000
2	20,000
3	30,000
4	40,000
5	50,000

Calculate the project's NPV using 10% discount rate and suggest whether to accept or reject the project

(OR)

9.	a)	What are the factors that influence the working capital requirement of a firm?	8 Marks	L2	CO4
	b)	"The payback period is more a method of liquidity rather than profitability." Examine.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss the factors that influence dividend decisions.	8 Marks	L2	CO5
	b)	Explain Walter's Approach to dividend policy.	8 Marks	L2	CO5

(OR)

11.	a)	What are the assumptions and arguments used by Modigliani and Miller in support of the irrelevance of dividends?	8 Marks	L2	CO5
	b)	From the following data determine price per share using Walter's dividend theory and comment on the dividend policies of the firms.	8 Marks	L4	CO5

Particulars	ABC co.	XYZ co.
EPS	15	20
Cost of capital (%)	12	12
Return on Investment	15	20
Dividends per share (Rs.)	9	6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Supplementary Examinations, January – 2024

OPERATIONS MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define productivity.	2 Marks	L1	CO1
	b)	State the scope of operations management.	2 Marks	L1	CO1
	c)	Write a short note on plant layout.	2 Marks	L1	CO2
	d)	Explain the benefits of preventive maintenance.	2 Marks	L1	CO2
	e)	Identify the problems of short-term capacity.	2 Marks	L1	CO3
	f)	Infer different types of capacity planning.	2 Marks	L1	CO3
	g)	What is material management?	2 Marks	L1	CO4
	h)	Describe the word ERP.	2 Marks	L1	CO4
	i)	Define project network.	2 Marks	L1	CO5
	j)	Define CPM.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the scope of operations management.	8 Marks	L2	CO1
	b)	How the product is different from services? Explain.	8 Marks	L2	CO1
		(OR)			
3.	a)	What do you understand by operations management? Explain its importance.	8 Marks	L1	CO1
	b)	Briefly explain the evaluation of operations management	8 Marks	L2	CO1

MODULE-II

4.	a)	Differentiate between the breakdown maintenance and preventive maintenance methods.	8 Marks	L2	CO2
	b)	Explain the Role of maintenance in productive and why it is important?	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the operation management development stages.	8 Marks	L2	CO2
	b)	State the significance of group layout method with Examples	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the factors influencing Effective Capacity.	8 Marks	L2	CO3
	b)	What are the factors affecting determination of plant capacity. Explain.	8 Marks	L1	CO3
		(OR)			
7.	a)	Explain in detail about the various types of capacity planning	8 Marks	L2	CO3
	b)	Write a short note on Long-term capacity plans.	8 Marks	L1	CO3

MODULE-IV

8.	a)	What is KANBAN? Discuss its merits, demerits.	8 Marks	L1	CO4
	b)	Explain the needs of inventory management.	8 Marks	L2	CO4
		(OR)			
9.	a)	What are the main objectives of materials handling? Explain	8 Marks	L2	CO4
	b)	Briefly explain the various materials handling equipment.	8 Marks	L2	CO4

MODULE-V

10.	a)	Briefly explain the tools of project management.	8 Marks	L2	CO5
	b)	Discuss the network analysis applications techniques.	8 Marks	L2	CO5
		(OR)			
11.	a)	Define project management and explain the concept of project management.	8 Marks	L2	CO5
	b)	Write a short note on CPM.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Supplementary Examinations, January – 2024

ORGANIZATIONAL BEHAVIOUR

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Summarize the Scope of OB.	2 Marks	L2	CO1
	b)	List any four functions of Behavioral Manager.	2 Marks	L1	CO1
	c)	Define Personality.	2 Marks	L1	CO2
	d)	Explain any two Techniques of Ivan Pavlov Learning Method.	2 Marks	L2	CO2
	e)	Write a short note on Group Dynamics.	2 Marks	L1	CO3
	f)	Recall different types of Personalities in Johari Window.	2 Marks	L2	CO3
	g)	Define Conflict and its Mechanism.	2 Marks	L1	CO4
	h)	Explain the differences between Group and Team.	2 Marks	L1	CO4
	i)	Define Organizational Change.	2 Marks	L1	CO5
	j)	State any three methods of Formal Communication.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define OB Describe the Significance of OB with examples.	8 Marks	L1	CO1
	b)	Explain the Perspectives of Human Behavior in Organizations and how it impacts Organizations.	8 Marks	L2	CO1
		(OR)			
3.	a)	Illustrate the Role of Behavioral Manager in business organizations with examples.	8 Marks	L2	CO1
	b)	Mention the Significance of Management and how it interconnected to OB in Organizations. Explain.	8 Marks	L2	CO1

MODULE-II

4.	a)	Mention the Significance of B.F. Skinner and Thorndike concepts of Learning.	8 Marks	L1	CO2
	b)	Explain various types of Personalities with examples.	8 Marks	L2	CO2
		(OR)			
5.		Describe the Internal and External Factors which will affect the personality with Individual and Group. Comment.	16 Marks	L2	CO2

MODULE-III

6.	a)	Explain in detail the concept of Motivation and its theories.	8 Marks	L2	CO3
	b)	Why the companies implemented different Styles of Leadership. Comment.	8 Marks	L1	CO3
		(OR)			
7.	a)	What are the Challenges for Leaders in Organizations and how it will make a difference. Explain.	8 Marks	L1	CO3
	b)	Elucidate various stages of group formation with examples.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Determine the cause of stress in Organizations. What may be the reasons for it. Comment.	8 Marks	L2	CO4
	b)	Elucidate the Significance of Conflict resolution mechanism in India and how it differs to other countries.	8 Marks	L4	CO4

(OR)

9.	a)	Infer various strategies followed in Other Countries to make stress free organizations.	8 Marks	L2	CO4
	b)	Illustrate team building and its advantages to make companies more productive. Explain.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define the concept of Employee Informal Communication and how it will impact the working conditions.	8 Marks	L1	CO5
	b)	What are the reasons for Employee miscommunication in organizations. Comment.	8 Marks	L1	CO5

(OR)

11.	a)	Elucidate the role of OD and its significance.	8 Marks	L2	CO5
	b)	The Resistance to Change Mechanism in Organization will affect employees. Comment.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Supplementary Examinations January – 2024

BASICS OF COMPUTERS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define COMPUTER.	2 Marks	L1	CO1
	b)	What are the Advantages and Limitations of the Computer.	2 Marks	L1	CO1
	c)	Explain about the tool bar?	2 Marks	L1	CO2
	d)	What do you understand by the MS word? How is it useful to us?	2 Marks	L2	CO2
	e)	Write about the components of the excel?	2 Marks	L1	CO3
	f)	What are the different types of chats used in the MS excel?	2 Marks	L1	CO3
	g)	What do you understand by the data base?	2 Marks	L2	CO4
	h)	How do you create tables using data sheets?	2 Marks	L2	CO4
	i)	What is the scope of the Internet?	2 Marks	L1	CO5
	j)	Explain about the online shopping	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Write about the Advantages and Dis-Advantages of the Computers.	8 Marks	L2	CO1
	b)	What are the input devices of the computer explain it in details?	8 Marks	L1	CO1
		(OR)			
3.		Define COMPUTER and write down the history of the computer?	16 Marks	L2	CO1

MODULE-II

4.		Explain the step-by-step process of the paragraph in the MS word and how do we Rename and resize it.?	16 Marks	L1	CO2
		(OR)			
5.	a)	How to create a Rows and Columns in the MS Word? Explain it in details?	8 Marks	L2	CO2
	b)	How does Headers and Footers helps in the MS Word?	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the different types of chats and their features?	8 Marks	L1	CO2
	b)	How to create the Chats in the excel sheet?	8 Marks	L2	CO2
		(OR)			
7.		Explain about the Function of Excel in charts and graphs? What are the different chats used in the excel sheet?	16 Marks	L1	CO3

MODULE-IV

8.	a)	Why do we create form in MS access? What are the steps involved to create a form?	8 Marks	L1	CO4
	b)	What are the features of Access forms and write different types of creating a form?	8 Marks	L1	CO4

(OR)

9.		How do you create a query and what is the process to complete a query?	16 Marks	L1	CO4

MODULE-V

10.	a)	What are the Applications of internet? And elaborate it?	8 Marks	L2	CO5
	b)	Define Email. What is the process to create an email account?	8 Marks	L1	CO5

(OR)

11.	a)	What is the process to purchase a product in online shopping. Explain it briefly?	8 Marks	L1	CO5
	b)	Internet is useful and also have deviations to a person, comment on it?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations April – 2024

BANKING AND INSURANCE

[Management]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out various schemes under Financial inclusion	2 Marks	L1	CO1
	b)	Define merger	2 Marks	L1	CO1
	c)	Define Gross NPA	2 Marks	L1	CO2
	d)	What is Asset reconstruction company?	2 Marks	L1	CO2
	e)	Define micro finance	2 Marks	L1	CO3
	f)	Expand RTGS	2 Marks	L1	CO3
	g)	Define merit raking	2 Marks	L1	CO4
	h)	What is Reciprocal insurance?	2 Marks	L1	CO4
	i)	Define micro insurance	2 Marks	L1	CO5
	j)	What is Money back insurance plan?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	Critically evaluate the objectives and limitations of banks nationalization.	16 Marks	L5	CO1
	(OR)			
3.	Financial inclusion is one of the most crucial pillars of India's economy. Discuss its challenges and suggest some measures for enhancing financial inclusion in India.	16 Marks	L2	CO1

MODULE-II

4.	Discuss various measures to control Non-Performing Assets.	16Marks	L2	CO2
	(OR)			
5.	What do you mean by NPA? Write in detail about the effects of NPAs on financial performance of banks .	16Marks	L3	CO2

MODULE-III

6.	Discuss in detail the benefits and limitation of mobile banking in Indian context.	16Marks	L2	CO3
	(OR)			
7.	What do you mean by electronic transfer? Explain the significance of NEFT & RTGS.	16Marks	L2	CO3

MODULE-IV

8.	Define insurance. Illustrate how insurance as a risk management tool.	16Marks	L3	CO4
	(OR)			
9.	What are the essential techniques of risk management? Explain how insurance as a risk management technique?	16Marks	L2	CO4

MODULE-V

10.	In your opinion what are the challenges of insurance industry?	16 Marks	L2	CO5
	(OR)			
11.	"The insurance sector of a country is composed of life insurance and general insurance for sustainable growth" what is your opinion about this statement? Give your comments.	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations April – 2024

ENTREPRENEURSHIP DEVELOPMENT

[Management]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out the promotional functional of entrepreneur.	2 Marks	L1	CO1
	b)	Define drone entrepreneur.	2 Marks	L1	CO1
	c)	Recall the term IRDBI.	2 Marks	L1	CO2
	d)	List out the activities of DIC	2 Marks	L1	CO2
	e)	Define Test Marketing.	2 Marks	L1	CO3
	f)	List out the steps in BPM.	2 Marks	L1	CO3
	g)	Explain the feasibility study.	2 Marks	L1	CO4
	h)	How do you do market Analysis?	2 Marks	L1	CO4
	i)	Give the name of successful women entrepreneurs in India.	2 Marks	L1	CO5
	j)	Define women entrepreneurship.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Write a short note on first generation entrepreneurship.	8 Marks	L1	CO1
	b)	Briefly explain the characteristics of entrepreneur.	8 Marks	L2	CO1
		(OR)			
3.	a)	Difference between Entrepreneur and Intrapreneur	8 Marks	L2	CO1
	b)	List out and explain the various types of business entrepreneurs.	8 Marks	L1	CO1

MODULE-II

4.	a)	Write a note on SISI	8 Marks	L1	CO2
	b)	Write a short note on DIC	8 Marks	L2	CO2
		(OR)			
5.	a)	Write a note on SIDBI	8 Marks	L2	CO2
	b)	Briefly explain about NABARD	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the factor to be considered by venture capitalist in selection of investment proposal	8 Marks	L2	CO3
	b)	List out the Characteristics of venture capital.	8 Marks	L2	CO3
		(OR)			
7.	a)	Write a short note on Equity finance.	8 Marks	L2	CO3
	b)	Explain briefly the self-help group mechanism.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Distinguish between business plan and marketing plan.	8 Marks	L2	CO4
	b)	What is executive summary of business plan?	8 Marks	L1	CO4
		(OR)			

9.	a)	List out and explain the factors to be considered location selection of business venture.	8 Marks	L2	CO4
	b)	What is meant by layout? Explain.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Briefly explain the concept of women entrepreneurship.	8 Marks	L1	CO5
	b)	Give the remedies to solve the women entrepreneurs' problems.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the various functions of women entrepreneurship.	8 Marks	L2	CO5
	b)	Discuss the problems faced by the women entrepreneurship.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations April – 2024

INTRODUCTION TO FINANCIAL TECHNOLOGY

[Management]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is M& A Model?	2 Marks	L1	CO1
	b)	Write about Data Analysis.	2 Marks	L1	CO1
	c)	Define linear regression.	2 Marks	L2	CO2
	d)	Tell about Multinominal regression.	2 Marks	L2	CO2
	e)	What is Block-chain Technology?	2 Marks	L2	CO3
	f)	What are various applications in Fintech?	2 Marks	L1	CO3
	g)	What are recent trends in FinTech?	2 Marks	L2	CO4
	h)	Recall the benefits of AI in Finance.	2 Marks	L1	CO4
	i)	Define Data in Financial Services.	2 Marks	L1	CO5
	j)	What is GDPR Compliance in Fintech?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define a business model in the context of financial analytics and explain its significance in the finance industry.	8 Marks	L2	CO1
	b)	Write a short note on recent trends in financial analytics.	8 Marks	L1	CO1
		(OR)			
3.	a)	Tell about Business intelligence and how it will useful in Data Analysis.	8 Marks	L2	CO1
	b)	How did you develop Spread Sheet Analysis using Financial Statement analysis?	8 Marks	L2	CO1

MODULE-II

4.	a)	Define crypto finance and explain its significance in modern financial systems.	8 Marks	L2	CO2
	b)	Demonstrate Regression Analysis Model and explain its types	8 Marks	L2	CO2
		(OR)			
5.	a)	Summarize the concept of Logistic Regression Analysis with suitable examples	8 Marks	L3	CO2
	b)	Tell about various Applications in Predictive analytics.	8 Marks	L3	CO2

MODULE-III

6.	a)	Define digital finance and explain its significance in modern financial systems.	8 Marks	L3	CO3
	b)	Discuss the key components of digital finance?	8 Marks	L1	CO3

(OR)

7.	a)	Explain the concept of cryptocurrencies and their impact on the financial prospective?	8 Marks	L2	CO3
	b)	Analyze the impact of crowd funding on traditional financing methods.	8 Marks	L3	CO3

MODULE-IV

8.	a)	What are various Applications in Block-chain Technology?	8 Marks	L3	CO4
	b)	Explain the functions of two major regulatory bodies in the finance.	8 Marks	L1	CO4

(OR)

9.	a)	Analyze the impact of regulatory sandboxes on the domestic markets?	8 Marks	L2	CO4
	b)	Discuss the potential benefits and risks of using AI algorithms in financial markets?	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the role of AI-powered chatbots and virtual assistants in enhancing customer experience?	8 Marks	L3	CO5
	b)	What are various Data visualization tools and techniques?	8 Marks	L2	CO5

(OR)

11.	a)	Describe the concept of data governance and its significance in organizations.	8 Marks	L2	CO5
	b)	Explain the concept of predictive analytics in financial services.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations April – 2024

BUSINESS LAW

[Management]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is a contract and explain its elements?	2 Marks	L1	CO1
	b)	Distinguish between void contract and voidable contract.	2 Marks	L1	CO1
	c)	What is a sale and agreement to sell with example?	2 Marks	L1	CO2
	d)	What are the conditions of the agreement to sell?	2 Marks	L1	CO2
	e)	What is a partnership deed?	2 Marks	L1	CO3
	f)	Distinguish between Partnerships from Co-ownership.	2 Marks	L1	CO3
	g)	What is a private company?	2 Marks	L1	CO4
	h)	What is one person company?	2 Marks	L1	CO4
	i)	Give the statutory definition of Manufacturer and Person.	2 Marks	L1	CO5
	j)	Give the statutory definition of Defect and Good.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	"An illegal agreements are void but all void agreements are not necessarily illegal" Comment. Bring out the differences between an illegal agreement and void agreement. Give examples	8 Marks	L2	CO1
	b)	Explain the capacity of parties and the various aspects of capacity of parties.	8 Marks	L2	CO1

(OR)

3.	a)	Consideration need not be adequate but it must be certain, real and unlawful'. Explain	8 Marks	L2	CO1
	b)	Explain the different types of discharge of contract with example.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is the conditions and types of conditions? Differentiate between condition and warranty.	8 Marks	L2	CO2
	b)	Explain the transfer of property doctrine of caveat emptor with an example.	8 Marks	L2	CO2

(OR)

5.	a)	Differentiate between contract of sale and agreement to sale.	8 Marks	L2	CO2
	b)	What is an auction of sale? Explain the different types of auction of sale.	8 Marks	L2	CO2

MODULE-III

6.	a)	"The sharing of profits is only a prima facie evidence of partnership". Comment.	8 Marks	L2	CO3
	b)	Define partnership. What are the essential features of a partnership?	8 Marks	L2	CO3
		(OR)			
7.	a)	Enumerate the various types of partners. Briefly explain the extent of their liabilities.	8 Marks	L2	CO3
	b)	Can a minor be admitted to a partnership? If so what are the rules governing his/her rights and liabilities during minority and after she/he has attained majority?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define a company and discuss the characteristic features of a company.	8 Marks	L2	CO4
	b)	Distinguish between a private company and a public company. State the exemptions and privileges available to a private company.	8 Marks	L2	CO4
		(OR)			
9.	a)	A joint stock company is a legal person with perceptual succession and a common seal.' Comment. Distinguish between a company and a partnership.	8 Marks	L2	CO4
	b)	Describe the stages involved in the formation of a proposed public company.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the salient features of the Consumer Protection Act, 1986. Enumerate the objectives of the Act.	8 Marks	L2	CO5
	b)	Explain 'Unfair trade Practice' under the Consumer Protection Act	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss briefly the composition, powers, and functions of the District Forum, State Commission, and National Commission.	8 Marks	L2	CO5
	b)	Discuss the objectives and significance of environmental legislation in force.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations April – 2024

STRATEGIC MANAGEMENT

[Management]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is External Macro Environment Analysis?	2 Marks	L1	CO1
	b)	Define the term Costly to imitate capabilities with example.	2 Marks	L1	CO1
	c)	What do you mean by Bargaining power of Suppliers in Porter's five force model?	2 Marks	L1	CO2
	d)	Define the BCG Matrix and its primary purpose in strategic analysis.	2 Marks	L1	CO2
	e)	Briefly describe stability strategy in the context of strategic management.	2 Marks	L1	CO3
	f)	Define growth strategy.	2 Marks	L1	CO3
	g)	Differentiate between defensive strategy and offensive strategy.	2 Marks	L1	CO4
	h)	What is the importance of defensive strategy in a competitive business environment?	2 Marks	L1	CO4
	i)	What do you mean by strategic surveillance?	2 Marks	L1	CO5
	j)	List the advantages of Strategic control.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		Explain the concept of environmental scanning in the context of strategic management.	16 Marks	L2	CO1
		(OR)			
3.		Explain the strategic management process and its stages in detail.	16 Marks	L2	CO1

MODULE-II

4.		Porter's five forces model is an effective tool for attaining competitive advantage. Justify this statement.	16 Marks	L2	CO2
		(OR)			
5.		Illustrate the concept of the Market Life Cycle Model and its relevance in strategic management.	16 Marks	L2	CO2

MODULE-III

6.	a)	Compare and contrast the corporate, business, and functional levels of strategy formulation.	8 Marks	L2	CO3
	b)	List the advantages of Growth strategy.	8 Marks	L2	CO3

(OR)

7.	a)	Illustrate how retrenchment strategy can be a viable option for organizations facing challenges.	8 Marks	L2	CO3
	b)	Explain the Strategic Alternatives with examples.	8 Marks	L2	CO3

MODULE-IV

8.		Explain the advantages and disadvantages of vertical integration as a strategic choice.	16 Marks	L2	CO4

(OR)

9.	a)	Explain how horizontal strategies can foster growth and competitiveness in the business landscape.	8 Marks	L2	CO4
	b)	Assess the impact of vertical integration on organizational efficiency and effectiveness.	8 Marks	L2	CO4

MODULE-V

10.		Explain how strategic information systems contribute to strategic evaluation and decision-making.	16 Marks	L2	CO5

(OR)

11.	a)	Explain the importance of strategic surveillance in monitoring the external environment.	8 Marks	L2	CO5
	b)	Describe the key elements involved in conducting a strategic audit for an organization.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations, April – 2024

CONSUMER BEHAVIOUR

[Management]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define consumer behaviour.	2 Marks	L1	CO1
	b)	What is target market selection?	2 Marks	L1	CO1
	c)	What is culture?	2 Marks	L1	CO2
	d)	Define Group.	2 Marks	L1	CO2
	e)	What is perception?	2 Marks	L1	CO3
	f)	Define motivation.	2 Marks	L1	CO3
	g)	Explain Market segmentation.	2 Marks	L1	CO4
	h)	Explain Positioning.	2 Marks	L1	CO4
	i)	Explain about Internet user profile.	2 Marks	L1	CO5
	j)	What is ethical purchasing?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	Explain the nature of Consumer Behaviour.	16 Marks	L2	CO1
	(OR)			
3.	Describe the Scope and applications of Consumer Behaviour.	16 Marks	L2	CO1

MODULE-II

4.	Discuss the factors influence the consumer behaviour.	16 Marks	L2	CO2
	(OR)			
5.	What is Group and classify its types with an example?	16 Marks	L3	CO2

MODULE-III

6.	Describe Maslow's need hierarchy theory and explain its application in marketing with suitable examples.	16 Marks	L2	CO3
	(OR)			
7.	Explain perception process and what are the factors influencing the consumer perception about a particular brand.	16 Marks	L2	CO3

MODULE-IV

8.	What is Media strategy and what are the types of media is used for delivering the message?	16 Marks	L3	CO4
	(OR)			
9.	Explain Segmenting, Targeting and positioning. How will you classify the types of positioning strategy?	16 Marks	L2	CO4

MODULE-V

10.	Discuss the recent global trends in consumer behaviour.	16 Marks	L2	CO5
	(OR)			
11	Classify the types of non store retailing and its significance?	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations April – 2024

PERFORMANCE MANAGEMENT

[Management]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the term Performance.	2 Marks	L1	CO1
	b)	Define Performance Appraisal.	2 Marks	L1	CO1
	c)	List out the approaches to Performance Management.	2 Marks	L2	CO2
	d)	Write any two differences between Mentoring and counseling.	2 Marks	L1	CO2
	e)	Define the term "360-degree feedback" in the context of performance appraisal.	2 Marks	L1	CO3
	f)	List out the disadvantages of paired comparison methods.	2 Marks	L1	CO3
	g)	Define Employee Development.	2 Marks	L1	CO4
	h)	Illustrate the relationship between HR Professionals with management.	2 Marks	L2	CO4
	i)	What is Reskilling?	2 Marks	L1	CO5
	j)	Justify the relationship with Annual Review and Performance Management.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe and explain the key features of an ideal performance management system.	8 Marks	L2	CO1
	b)	What is performance management? Explain the importance of performance management in the business.	8 Marks	L2	CO1
		(OR)			
3.		Explain the evolution of the performance management system.	16 Marks	L3	CO1

MODULE-II

4.		Briefly explain the types and pitfalls in monitoring the performance.	16 Marks	L3	CO2
		(OR)			
5.		Define counselling. Illustrate the functions of counselling in performance management.	16 Marks	L3	CO2

MODULE-III

6.		Explain the different performance appraisal methods used in organizations today.	16 Marks	L3	CO3
		(OR)			
7.		Explain the process of MBO in performance appraisal.	16 Marks	L3	CO3

MODULE-IV

8.		What do you mean by Skilled performance of employees? Discuss the purpose why it differs from one to another.	16 Marks	L3	CO4
		(OR)			
9.	a)	Illustrate the methods of performance assessment system.	8 Marks	L2	CO4
	b)	How does the employee assessment process contribute to performance improvement and overall organizational success?	8 Marks	L2	CO4

MODULE-V

10.		What metrics can be used to measure the effectiveness of reskilling programs?	16 Marks	L3	CO5
		(OR)			
11.		What initiatives can organizations implement to promote and support employee well-being in the workplace?	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations May – 2024

COMPUTER COMMUNICATIONS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Identify the fundamental characteristics of data communications.	2 Marks	L1	CO1
	b)	List different types of topologies.	2 Marks	L1	CO1
	c)	Mention any two responsibilities of data link layer in the OSI model.	2 Marks	L2	CO1
	d)	What is routing?	2 Marks	L1	CO1
	e)	Calculate the bandwidth if a composite periodic signal is decomposed into five sine waves with frequencies 100, 300, 500, 700, 900 Hz.	2 Marks	L2	CO3
	f)	What is decibel?	2 Marks	L1	CO3
	g)	State Nyquist theorem.	2 Marks	L1	CO2
	h)	What is baseline wandering?	2 Marks	L1	CO2
	i)	What is multiplexing?	2 Marks	L1	CO4
	j)	What is collision domain?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the function of components of a simplified data communications model with a neat sketch.	8 Marks	L2	CO1
	b)	Define network and explain network criteria.	8 Marks	L2	CO1
		(OR)			
3.	a)	Present the differences between LAN, MAN and WAN.	8 Marks	L3	CO1
	b)	Define protocol and explain the key features of a protocol.	8 Marks	L2	CO1

MODULE-II

4.		Illustrate the functions of various layers of the TCP/IP reference model with a neat diagram.	16 Marks	L3	CO1
		(OR)			
5.	a)	Explain the layered tasks involved in sending a letter.	8 Marks	L2	CO1
	b)	Explain logical addresses in TCP/IP suite.	8 Marks	L2	CO1

MODULE-III

6.	a)	Differentiate periodic and non-periodic signals.	8 Marks	L2	CO3
	b)	Explain about the transmission of digital signals.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain Phase and Wavelength.	8 Marks	L2	CO3
	b)	Explain distortion.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the components of Delta modulation.	8 Marks	L2	CO2
	b)	Describe serial transmission.	8 Marks	L2	CO2
		(OR)			
9.	a)	Describe binary amplitude shift keying with necessary diagrams.	8 Marks	L2	CO2
	b)	Explain the various types of analog to analog modulation.	8 Marks	L2	CO2

MODULE-V

10.	a)	Describe the characteristics of wavelength division multiplexing.	8 Marks	L2	CO4
	b)	Explain the block diagram for a Direct sequence spread spectrum system.	8 Marks	L2	CO4
		(OR)			
11.	a)	Explain the sub layers of data link layer in IEEE standard.	8 Marks	L2	CO4
	b)	Discuss briefly about Bridged Ethernet.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations May – 2024

DATA STRUCTURES

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is a Data Structure?	2 Marks	L1	CO1
	b)	What is a Bio O notation?	2 Marks	L1	CO1
	c)	What is a Stack?	2 Marks	L1	CO2
	d)	Write about Delimiter Matching.	2 Marks	L2	CO2
	e)	What is a double ended queue?	2 Marks	L1	CO3
	f)	Mention the operations that can be performed on a tree.	2 Marks	L2	CO3
	g)	Can a tree be balanced?	2 Marks	L2	CO4
	h)	What is an enumeration sort?	2 Marks	L2	CO4
	i)	What is open addressing?	2 Marks	L1	CO5
	j)	Brief the concepts of a graph.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Write an algorithm for inserting, and deleting an element on a circular linked list.	8 Marks	L1	CO1
	b)	How do we calculate the efficiency of a linked list? What are the Applications of a Linked List?	8 Marks	L2	CO1

(OR)

3.	a)	Write an algorithm for inserting, and deleting an element on a Single linked list.	8 Marks	L2	CO1
	b)	Differentiate the Linear and Non-Linear Linked Data Structure. Explain at least two examples for each.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write a program and explain the process of implementing a stack based on a linked list.	8 Marks	L3	CO2
	b)	What is a queue? Explain any two applications of queue with an example.	8 Marks	L1	CO2

(OR)

5.	a)	Write about parsing arithmetic expressions.	8 Marks	L1	CO2
	b)	Write a program and explain the process of implementing a queue based on an array.	8 Marks	L2	CO2

MODULE-III

6.	a)	What is a Tree? Explain about the Balanced and Unbalanced Trees.	8 Marks	L1	CO3
	b)	Explain the process of constructing a binary tree using its inorder and postorder traversal sequences. Provide a step-by-step illustration of the construction of the tree with the following sequences: Inorder: T E R A M L J O W X Y B C U S P Q Z N F H I K D G Postorder: T R E A J L M Y X O W C B U Z Q P S N K I H G D F	8 Marks	L4	CO3

(OR)

7.	a)	Explain the different methods for traversing a binary tree.	8 Marks	L1	CO3
	b)	Write a program to find the minimum and maximum values in a tree.	8 Marks	L3	CO3

MODULE-IV

8.		Name the Different Sorting Techniques and explain any four of them with an example.	16 Marks	L1	CO4

(OR)

9.	a)	What is the difference between Linear Search and Binary Search? Explain in detail.	8 Marks	L2	CO4
	b)	Write a program to sort an array of integers using heap sort algorithm.	8 Marks	L2	CO4

MODULE-V

10.	a)	What are the different ways to represent a graph and what are their advantages and disadvantages?	12 Marks	L1	CO5
	b)	Explain the characteristics of a good hash function?	4 Marks	L1	CO5

(OR)

11.	a)	What Operations can be performed on a graph? Explain them.	8 Marks	L3	CO5
	b)	Describe neatly about Folding and Hashing efficiency.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations May – 2024

PYTHON PROGRAMMING

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define identifiers in Python.	2 Marks	L1	CO1
	b)	Interpret why it is important to avoid using keywords as identifiers.	2 Marks	L3	CO1
	c)	Write the syntax of the break statement.	2 Marks	L1	CO2
	d)	Explain how the continue statement is helpful in Python.	2 Marks	L2	CO2
	e)	Write the Python code to concatenate two strings, "I know" and "Python." Print the concatenated string.	2 Marks	L4	CO4
	f)	Distinguish between tuples and lists.	2 Marks	L4	CO4
	g)	Write the need for functions in Python programming.	2 Marks	L2	CO5
	h)	What are variable-length arguments in Python functions?	2 Marks	L2	CO5
	i)	Define assert statement in Python.	2 Marks	L1	CO3
	j)	Write the importance of exception handling in Python.	2 Marks	L2	CO3

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	List various types of operators available in Python. Demonstrate the usage of each operator with an example.	8 Marks	L1	CO1
	b)	Describe different types of tokens and their significance in Python Programming.	8 Marks	L2	CO1

(OR)

3.	a)	Write about literals in Python with examples	8 Marks	L1	CO1
	b)	Discuss the concept of expressions in Python with suitable examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the concept of nested-if-statements. Illustrate with suitable examples to handle multiple conditions.	8 Marks	L2	CO2
	b)	Write a program that determines whether a given year is a leap year or not.	8 Marks	L3	CO2

(OR)

5.	a)	Explain various loop statements. Discuss how the else statement is used with loops in Python.	8 Marks	L2	CO2
	b)	Write a Python program to find the sum of odd numbers from 1 to 100 using for loop.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss how dictionaries store key-value pairs and provide efficient lookup and retrieval and describe any four-operation performed on a dictionary with a suitable program.	8 Marks	L2	CO4
	b)	Write a Python program to sort a given list in ascending order without using a built-in function and print the sorted list.	8 Marks	L4	CO4
		(OR)			
7.	a)	Describe the characteristics of tuples and their operations in Python.	8 Marks	L2	CO4
	b)	Write a Python program that sorts a dictionary based on its values in ascending order. Print the sorted dictionary.	8 Marks	L4	CO4

MODULE-IV

8.	a)	Explain the concept of recursive functions in Python with a suitable program.	8 Marks	L2	CO5
	b)	Write a Python program that opens a file named "data.txt" in read mode, reads its contents, and counts the number of words in the file. Print the word count.	8 Marks	L3	CO5
		(OR)			
9.	a)	Describe the syntax and usage of lambda functions and examples to illustrate their application.	8 Marks	L2	CO5
	b)	Write a Python program that opens a file named "data.txt" in read mode, reads its contents, and converts all lowercase letters to uppercase. Write the uppercase content to a file named "output.txt".	8 Marks	L3	CO5

MODULE-V

10.	a)	Discuss the concept of polymorphism in Python with a suitable program.	8 Marks	L2	CO3
	b)	Create a class called "Car" with attributes for make, model, and year. Include a method to display the car's details. Create objects of the class and display their details.	8 Marks	L4	CO3
		(OR)			
11.	a)	Describe the syntax and usage of the try-except block in Python. Provide an example demonstrating the use of try-except to catch and handle exceptions.	8 Marks	L2	CO3
	b)	Write a program that reads numbers from a file and calculates their sum. Use exception handling to catch and handle any IOError that may occur if the file cannot be opened.	8 Marks	L4	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations May – 2024

NUMERICAL ANALYSIS, PROBABILITY AND STATISTICS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State the iterative formula for Regula Falsi method to solve f(x)=0.	2 Marks	L1	CO1
	b)	Write Lagrange's interpolation formula.	2 Marks	L1	CO1
	c)	Construct a forward difference table from the following data	2 Marks	L1	CO1

x	0	1	2	3	4
y	1	1.5	2.2	3.1	4.6

	d)	Write Trapezoidal rule.	2 Marks	L1	CO1
	e)	Verify the following function is a density function or not? $f(x) = \begin{cases} e^{-x}, & x \geq 0 \\ 0, & x < 0 \end{cases}$	2 Marks	L1	CO2
	f)	Define probability mass function of a discrete random variable X.	2 Marks	L1	CO2
	g)	Define binomial distribution.	2 Marks	L1	CO3
	h)	Define Mathematical expectation of a random variable.	2 Marks	L1	CO3
	i)	Define Scatter diagram	2 Marks	L1	CO4
	j)	Write the lines of regression of y on x and x on y.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Compute the real root of the equation $x \log_{10} x - 1.2 = 0$, using the Newton-Raphson method.	8 Marks	L3	CO1
	b)	Apply Gaussian elimination method, solve the following system $2x-7y+4z=9$ $x+9y-6z=1$ $-3x+8y+5z=6$	8 Marks	L4	CO1

(OR)

3.	a)	Verify that the equation $x^2+4x-10=0$ has a root inside the interval (1, 2) and use the limits of the interval as starting values of the bisection method to approximate the root in five bisections.	8 Marks	L3	CO1
	b)	Using Gauss-Seidal method, solve the following system of equations $5x-y = 9$ $-x+5y-z = 4$ $-y+5z = -6$	8 Marks	L4	CO1

MODULE-II

4. a) Find the cubic polynomial which takes the following values — 8 Marks L3 CO1

x:	0	1	2	3
f(x):	1	2	1	10

b) Using Simpson's 3/8 rule, evaluate $\int_0^1 \frac{dx}{1+x^2}$ by dividing the range in to 6 equal parts. — 8 Marks L4 CO1

(OR)

5. a) By Lagrange's interpolation formula, find f(4) from the following data: — 8 Marks L3 CO1

x:	0	1	2	5
f(x):	2	5	7	8

b) Find the first and second derivatives of y at x=0 for the given data below: — 8 Marks L4 CO1

x	0	1	2	3	4	5
y	4	8	15	7	6	2

MODULE-III

6. a) Explain the following with examples: — 8 Marks L3 CO2
   i) Mutually exclusive events
   ii) Equally likely events
   iii) Independent events
   iv) Exhaustive events.

b) If the probability density of a random variable is given by $f(x) = \begin{cases} k(1-x^2), for 0 < x < 1 \\ 0 \qquad elsewhere \end{cases}$. Find the value of k and the probabilities that a random variable having this probability density will take on a value between 0.1 and 0.2. — 8 Marks L4 CO2

(OR)

7. a) A random variable X has the following probability function — 8 Marks L3 CO2

x	1	2	3	4	5	6
P(x)	k	3k	5k	7k	9k	11k

i) Find the value of k ii) Mean
iii) variance iv) P($X \geq 3$)

b) The diameter of an electric cable is assumed to be a continuous variant with probability density function f(x) = 6x(1-x), $0 \leq x \leq 1$ verify that the given f(x) is a probability density function. Also find the mean and variance. — 8 Marks L4 CO2

MODULE-IV

8. a) During one stage in the manufacture of integrated circuit chips, a coating must be applied. if 70% of chips receive a thick enough coating, find the probabilities that, among 15 chips: — 8 Marks L3 CO3
   At least 12 will have thick enough coating
   At most 6 will have thick enough coating
   iii) exactly 10 will have thick enough coating

b) Given random variable X having a normal distribution with μ=50 and σ =10, find the probability that X assumes a value — 8 Marks L4 CO3
   i) between 45 and 62
   ii) less than 20
   iii) more than 40

(OR)

9. a) If 3 % of the electric bulbs manufactured by a company are defective, find the probability that in a sample of 100 bulbs. — 8 Marks L3 CO3
   i) None is defective
   ii) one is defective
   iii) 4 are defective
   iv) Find mean and variance of the distribution

   b) An electrical firm manufactures light bulbs that have a life, before burn out, i.e normally distributed with mean of 800 hours and standard deviation of 40 hours. Find the probability that a bulb. — 8 Marks L4 CO3
   i) burns between 778 and 834 hours
   ii)burns out after 900 hours
   iii) burns out before 200 hours.

MODULE-V

10. a) Calculate the correlation coefficient for the heights of fathers and their sons. — 8 Marks L3 CO4

x	65	66	67	67	68	69	70	72
y	67	68	65	68	72	72	69	71

   b) The regression equations of two variables x and y are x=0.7y+5.2, y= 0.3x+2.8. Find the mean of the variables and the coefficient of correlation between them. — 8 Marks L4 CO4

(OR)

11. a) The two regression lines are having their means, standard deviations 31.6, 38 and 3.72 , 6.31 respectively and r= -3.6, estimate the two regression lines. — 8 Marks L3 CO4

   b) Obtain the rank correlation coefficient for the following data. — 8 Marks L4 CO4

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Supplementary Examinations, January - 2024

COMPUTER COMMUNICATIONS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define reliability	2 Marks	L1	CO1
	b)	List the two-networking metrics used to evaluate the performance of a data communication system.	2 Marks	L1	CO1
	c)	What is the function of interface between layers?	2 Marks	L1	CO1
	d)	List the protocols used in transport layer.	2 Marks	L1	CO1
	e)	Define periodic signal.	2 Marks	L1	CO2
	f)	What do you mean by self-synchronizing a digital signal?	2 Marks	L1	CO2
	g)	What is the advantage of serial transmission over parallel transmission?	2 Marks	L1	CO3
	h)	Give the types of digital to analog conversion techniques	2 Marks	L1	CO3
	i)	Define multiplexing and demultiplexing	2 Marks	L1	CO4
	j)	What are the two sub-layers in data link layer?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are the three types of modes used in Data flow? Explain in detail.	8 Marks	L2	CO1
	b)	Explain in detail how text is represented in data communications.	8 Marks	L2	CO1
		(OR)			
3.		List the categories of networks. Explain in detail about each network with diagrams.	16 Marks	L2	CO1

MODULE-II

4.	a)	Explain the concept of layered tasks in detail.	10 Marks	L2	CO1
	b)	Write short notes on encapsulation.	6 Marks	L2	CO1
		(OR)			
5.		Explain in detail about OSI model.	16 Marks	L2	CO1

MODULE-III

6.	a)	Write short notes on analog and digital data	8 Marks	L2	CO3
	b)	Compare analog and digital signals.	8 Marks	L2	CO3
		(OR)			
7.	a)	Differentiate periodic and non-periodic signals.	8 Marks	L2	CO3
	b)	Explain briefly about baseband transmission.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss briefly about line coding and decoding	10 Marks	L2	CO3
	b)	Write short notes on PSK.	6 Marks	L2	CO3
		(OR)			
9.		Discuss in detail various line coding schemes.	16 Marks	L2	CO3

MODULE-V

10.		Explain the process of multiplexing and demultiplexing about FDM.	16 Marks	L2	CO4
		(OR)			
11.	a)	Discuss about WDM.	8 Marks	L2	CO4
	b)	Explain about bridged ethernet.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Supplementary Examinations, January – 2024

DATA STRUCTURES

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define data structure. Mention any two applications of data structures?	2 Marks	L1	CO1
	b)	What is a double linked list? Name the three fields of double linked list?	2 Marks	L1	CO1
	c)	Define Queue? What are the types of Queues?	2 Marks	L1	CO1
	d)	State the basic operations that can be performed on queue.	2 Marks	L1	CO1
	e)	List the steps in pre order traversal.	2 Marks	L1	CO2
	f)	State the properties of a Binary Tree?	2 Marks	L1	CO2
	g)	What is linear searching?	2 Marks	L1	CO3
	h)	What is binary Searching?	2 Marks	L1	CO3
	i)	What is hashing? What do you mean by hash function?	2 Marks	L1	CO4
	j)	What is collision? List out the Collision Resolution Techniques.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the polynomial representation for $6x^3+9x^2+7x+1$ using linked list.	8 Marks	L3	CO1
	b)	Write an algorithm to add and multiply two polynomials and explain with suitable example.	8 Marks	L2	CO1

(OR)

3.	a)	Write about Linear and non-linear data structures.	8 Marks	L2	CO1
	b)	Explain Big O notation.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe about stack ADT in detail.	8 Marks	L2	CO1
	b)	Explain any one application of stack.	8 Marks	L2	CO1

(OR)

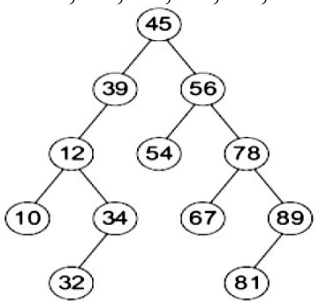
5.	a)	Write an algorithm that checks if expression is correctly parenthesized using stack and illustrate with an example.	8 Marks	L2	CO1
	b)	Write the function to examine whether the stack is full () or empty ().	8 Marks	L2	CO1

MODULE-III

6.	a)	Explain the following operations on a binary search tree with suitable algorithms. i) Find a node	8 Marks	L2	CO2
	b)	ii) Find the minimum and maximum elements of binary search tree.	8 Marks	L2	CO2

(OR)

7.	Consider the binary search tree given below. Find the result of in-order, pre-order and post-order traversals. Show the deletion of the root node. Insert 11, 22, 33, 44, 55, 66 and 77 in the tree.	16 Marks	L4	CO2



MODULE-IV

8.	What is searching? Explain Binary search algorithm with example and also find its time complexity.	16 Marks	L2	CO3

(OR)

9.	Write a procedure for sorting a given list of elements using Quick sort method. Show the division of the list in the quick sort for a list of 10 numbers.	16 Marks	L3	CO3

MODULE-V

10.	a)	Explain in detail about the operations on graph. i) Operations on Linked list Representation	8 Marks	L2	CO2
	b)	ii) Operations on Matrix Representation	8 Marks	L2	CO2

(OR)

11.	Explain Depth-first search algorithm with example.	16 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Supplementary Examinations, January – 2024

PYTHON PROGRAMMING

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define expressions with example.	2 Marks	L2	CO1
	b)	Which type is used to convert one to another data type in Python?	2 Marks	L2	CO1
	c)	Define Pass statement in Python	2 Marks	L1	CO1
	d)	Write a program for multiples of 9 tables.	2 Marks	L1	CO1
	e)	How to delete a tuple in Python?	2 Marks	L2	CO1
	f)	Name any three quantifiers in regular expressions?	2 Marks	L1	CO2
	g)	What is the use of function in Python?	2 Marks	L2	CO3
	h)	How to opening a file in Python?	2 Marks	L2	CO4
	i)	Define Interfaces.	2 Marks	L2	CO5
	j)	Write a program for divide by zero exception.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define Tokens and Describe Identifiers and Literals in tokens	8 Marks	L2	CO1
	b)	Explain in detail about Handling Input and output in Python?	8 Marks	L2	CO1
		(OR)			
3.		Define Operators in detail with operator precedence.	16 Marks	L2	CO1

MODULE-II

4.	a)	Explain in detail about if else and nested if statement.	8 Marks	L2	CO1
	b)	Write a Python program to find Grade system for students.	8 Marks	L3	CO1
		(OR)			
5.	a)	Explain the types of Iterative statements with suitable examples.	8 Marks	L3	CO1
	b)	Write a python program to print the following pattern: Enter the number of rows: 4 1 12 123 1234	8 Marks	L4	CO1

MODULE-III

6.	a)	Define strings. How to initialize strings and its methods in detail?	8 Marks	L3	C03
	b)	Define Sets and its operations in detail.	8 Marks	L3	C01
		(OR)			
7.	a)	Describe in detail about Tuples and its methods.	8 Marks	L4	CO1
	b)	Describe Quantifiers in Regular expressions with suitable example.	8 Marks	L3	CO2

MODULE-IV

8.	a)	Define Function. Discuss about **lambda** function.	8 Marks	L2	CO3
	b)	Write a python function to find maximum of three numbers.	8 Marks	L2	CO3
		(OR)			
9.	a)	Write a python program to write three lines in files.	8 Marks	L3	CO4
	b)	Write a python program to count number of lines and words in a text file.	8 Marks	L1	CO4

MODULE-V

10.	a)	Define oops and its features in detail.	8 Marks	L1	CO5
	b)	Write a program to read 3 subject marks and display pass or failed using class and object.	8 Marks	L2	CO5
		(OR)			
11.	a)	How do we achieve code reusability in python? Write a python code to Explain code reusability.	8 Marks	L2	CO5
	b)	How to create user defined exception in python with an example.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Supplementary Examinations January – 2024

NUMERICAL ANALYSIS, PROBABILITY AND STATISTICS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State Newton's forward interpolation formula.	2 Marks	L1	CO1
	b)	Define binomial distribution.	2 Marks	L1	CO3
	c)	State addition and multiplication theorems on mathematical expectation.	2 Marks	L1	CO2
	d)	Write forwarddifference table.	2 Marks	L1	CO1
	e)	Define distribution function of a random variable X.	2 Marks	L1	CO2
	f)	State Lagrange's Interpolation formula.	2 Marks	L1	CO1
	g)	Write probability distribution of random variable.	2 Marks	L1	CO2
	h)	What is the condition for Simpson's1/3rdruleandstatethe formula?	2 Marks	L1	CO1
	i)	Write two lines of regression.	2 Marks	L1	CO4
	j)	Define Karl Pearson's coefficient of correlation.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Find the root of the equation $e^x \sin x = 1$ using Regula False method.	8 Marks	L4	CO1
	b)	Find a real root of $X^3 - 5x + 1 = 0$,using bisection method in 5 stages.	8 Marks	L3	CO1

(OR)

3.	a)	Use Gauss- Seidel iteration method to solve the system $10x + 2y + z = 9; 2x + 20y - 2z = -44; -2x + 3y + 10z = 22.$	8 Marks	L4	CO1
	b)	Using Newton-Raphson method , find a positive toot of $x^4 - x - 9 = 0$.	8 Marks	L3	CO1

MODULE-II

4.	a)	Find f(2.5) using Newton's forward formula from the following table.	8 Marks	L3	CO1

X :	0	1	2	3	4	5	6
Y :	0	1	16	81	256	625	1296

	b)	Using divided difference table find the equation y = $f(x)$. which takes the values 1, 4, 40, 85 as X =0, 1, 3, 4.	8 Marks	L4	CO1

(OR)

5. a) The population of a certain town (as obtained from census data) is shown in the following table. — 8 Marks — L4 — CO1

Year(x)	1951	1961	1971	1981	1991
Population (in thousands)(Y)	19.96	39.65	58.81	77.21	94.61

Estimate the rate of growth of the population in the year 1981.

b) Evaluate $\int_{0.6}^{2.0} ydx$ using Trapezoidal rule. — 8 Marks — L4 — CO1

MODULE-III

6. a) A random variable X has the following probability distribution. — 8 Marks — L3 — CO2

X	1	2	3	4	5	6	7	8
P(X)	K	2K	3K	4K	5K	6K	7K	8K

Find the value of i) K ii) Mean iii) variance.

b) If X is a continuous random variable and K is a constant, then prove that — 8 Marks — L4 — CO2

i) Var(X + K) = Var (X)

ii) Var (KX) = K^2 Var (X).

(OR)

7. a) State — 8 Marks — L1 — CO2

i) Addition theorem of probability for three events A,B and C.

ii) Multiplication theorem of probability for three events A,B and C.

iii) Mathematical definition of probability

iv) Axiomatic definition of probability.

b) Find K such that by $f(x) = \begin{cases} kx^2, if\ 0 \le x \le 3 \\ 0, otherwise \end{cases}$ is a probability function. — 8 Marks — L4 — CO2

i) Find the distribution function F(X)

ii) $P(1 \le x \le 2)$.

MODULE-IV

8. a) Derive mean and variance of Poison distribution. — 8 Marks — L1 — CO3

b) The weekly wages of 1000 workers are normally distributed around a mean of Rs.70 and S.D. of Rs.5. Estimate the number of workers whose weekly wages will be — 8 Marks — L4 — CO3

i) between Rs. 70 and Rs.72

ii) between Rs. 69 and Rs.72.

(OR)

9. a) Derive mean and variance of Binomial distribution. — 8 Marks — L1 — CO3

b) In a sample of 1000 cases, the mean of certain test is 14 and standard deviation is 2.5. Assuming the distribution to be normal, find — 8 Marks — L4 — CO3

i) How many students score between 12 and 15?

ii) How many score above 18?

iii) How many score below 18?

MODULE-V

10. a) Calculate Karl Pearson's Coefficient of correlation the following data: — 8 Marks — L3 — CO4

X:	10	12	16	11	15	14	20	22
Y:	15	18	23	14	20	17	25	28

b) The equations of two regression lines obtained in a correlation analysis are $3x + 12y = 19$, $3y + 9x = 46$. Find i) Coefficient of correlation ii) Mean values of X and Y and iii) The Ratio of the coefficient of variability of X to that Y. — 8 Marks — L4 — CO4

(OR)

11. a) Find the rank correlation for the following data. — 8 Marks — L3 — CO4

X	65	63	67	64	68	62	70	66	68	67	69	71
Y	68	66	68	65	69	66	68	65	71	67	68	70

b) Obtain the equations of two lines of regression for the following data. Also obtain the estimate of X for Y = 70. — 8 Marks — L3 — CO4

X :	65	66	67	67	68	69	70	72
Y :	67	68	65	68	72	72	69	71

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Supplementary Examinations January – 2024

DISCRETE MATHEMATICS FOR COMPUTER SCIENCE

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define tautology give an example	2 Marks	L1	CO1
	b)	Write the truth tables for $p \wedge q$ and $p \rightarrow q$.	2 Marks	L1	CO1
	c)	Define partition of a set and give one example.	2 Marks	L1	CO2
	d)	List the subsets of the set $\{1, 2, 3\}$.	2 Marks	L1	CO2
	e)	State Mathematical induction.	2 Marks	L1	CO3
	f)	Explain Pigeonhole principle.	2 Marks	L2	CO3
	g)	Find the inverse of the function $f : R \rightarrow R$, $f(x) = 2x + 3$.	2 Marks	L1	CO4
	h)	List the properties of the functions.	2 Marks	L1	CO4
	i)	Define complete graph and give one example.	2 Marks	L1	CO5
	j)	Explain briefly about finite and infinite graphs.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Write the following statements in symbolic form as following i) All Natural numbers are not integers ii) Some Apples are sweets iii) Some computers students are studying discrete maths or computer science	8 Marks	L1	CO1
	b)	Show that $((P \rightarrow Q) \rightarrow Q) \Rightarrow P \vee Q$.	8 Marks	L3	CO1
		(OR)			
3.		Construct the truth tables for *i*) $[((\neg p \rightarrow q) \rightarrow \neg r) \rightarrow (p \vee q)]$ *ii*) $((p \vee q) \wedge (r)) \leftrightarrow q \wedge (p \vee r)$.	16 Marks	L3	CO1

MODULE-II

4.	a)	By using mathematical induction, prove that $1^2 + 2^2 + 3^2 + \ldots\ldots + n^2 = \frac{n(n+1)(2n+1)}{6}$,	8 Marks	L2	CO2
	b)	List the all the partitions of the set {1,2,3, 4}.	8 Marks	L3	CO2
		(OR)			
5.	a)	By using mathematical induction, prove that $1^3 + 2^3 + 3^3 + \ldots\ldots + n^3 = \frac{n^2(n+1)^2}{4}$.	8 Marks	L3	CO2
	b)	Enumerate proper and improper subsets of the set $\{1, 0, -1\}$.	8 Marks	L5	CO2

MODULE-III

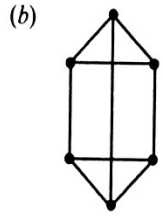
6.	a)	Describe all the special type functions.	8 Marks	L3	CO3
	b)	Explain partitions and equivalence classes.	8 Marks	L3	CO3
		(OR)			
7.	a)	Write a short note on one to one and onto functions.	8 Marks	L1	CO3
	b)	If R be a relation in the set of integers Z defined by $R = \{(x, y) : x - y \text{ is divisible by } 3\}$ .Then prove that R is an equivalence relation.	8 Marks	L2	CO3

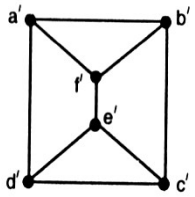
MODULE-IV

8.	a)	Describe counting principles of techniques of counting.	8 Marks	L1	CO4
	b)	Explain pigeonhole principle with suitable illustration.	8 Marks	L1	CO4
		(OR)			
9.	a)	State and prove principle of exclusion and inclusion.	8 Marks	L3	CO4
	b)	Using counting techniques, determine the number of primes less than 100.	8 Marks	L1	CO4

MODULE-V

10.	a)	Define the following with examples: i) Degree of a vertex ii) Complete Graph iii) Regular Graph.	8 Marks	L1	CO5
	b)	Explain the properties of the graphs shown below.	8 Marks	L1	CO5





(OR)

11.		Explain differences between paths and circuits, and regular and connected grapghs.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations April – 2024

FUNDAMENTALS OF DATA SCIENCE

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is unstructured data?	2 Marks	L1	CO1
	b)	Define Data Exploration	2 Marks	L1	CO1
	c)	What is the use of NumPy library?	2 Marks	L1	CO1
	d)	What is meant by Data frame?	2 Marks	L1	CO2
	e)	What do you mean by series?	2 Marks	L1	CO2
	f)	Define Covariance	2 Marks	L1	CO3
	g)	What is hierarchal indexing?	2 Marks	L1	CO3
	h)	Define Data Wrangling.	2 Marks	L1	CO3
	i)	Write the procedure for saving plots to a file.	2 Marks	L1	CO4
	j)	Define down sampling.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain about the five steps of Data Science.	8 Marks	L2	CO1
	b)	What are the differences between Quantitative versus qualitative data with an example	8 Marks	L1	CO1

(OR)

3.	a)	Discuss about the Python File input and output with an array.	8 Marks	L2	CO1
	b)	Write a Python code to perform arithmetic computations using NumPy.	8 Marks	L1	CO1

MODULE-II

4.	a)	Demonstrate the process of computing correlation and covariance with example.	8 Marks	L2	CO2
	b)	Explain about the importance of using pandas in data exploration process	8 Marks	L2	CO2

(OR)

5.	a)	How to load and store data using file formats? explain	8 Marks	L1	CO2
	b)	Write a python code to interact with data base with an example.	8 Marks	L1	CO2

MODULE-III

6.	a)	What are the steps for processing of Data cleaning using pandas?	8 Marks	L1	CO3
	b)	Write a Python code to fill the missing data using fillna() function.	8 Marks	L1	CO3

(OR)

7.	a)	Write syntaxes for performing operations with Basic Indexing with an example.	8 Marks	L1	CO3
	b)	Write a Python code to split a string with a variable number of white space characters (tabs, spaces, and new lines) and get a list of all patterns matching.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain about the Data visualization and its benefits.	8 Marks	L2	CO4
	b)	Explain the importance of using seaborn to perform data visualization.	8 Marks	L2	CO4

(OR)

9.	a)	Compare histogram and density plot with example.	8 Marks	L3	CO4
	b)	Write a Python code to create a Line Plot by setting the title, axis labels, annotations on subplots and save to a file.	8 Marks	L1	CO4

MODULE-V

10.	a)	What are timestamps? Given an example of converting timestamps into periods and vice versa.	8 Marks	L1	CO5
	b)	Explain about the periods and periods arithmetic with an example,	8 Marks	L2	CO5

(OR)

11.	a)	Discuss about the up and down sampling interpolation.	8 Marks	L2	CO5
	b)	Illustrate the various mechanisms of date and time conversion into string and vice versa with an example in Python code snippets.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations April – 2024

ARTIFICIAL INTELLIGENCE

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Agent Function.	2 Marks	L2	CO1
	b)	What is robotic agent?	2 Marks	L1	CO1
	c)	What is informed search?	2 Marks	L1	CO1
	d)	Define search tree.	2 Marks	L1	CO2
	e)	List some drawbacks of hill climbing process.	2 Marks	L3	CO2
	f)	Define simulated annealing	2 Marks	L2	CO2
	g)	What is Called as Decision Theory?	2 Marks	L2	CO2
	h)	Define conditional probability?	2 Marks	L3	CO3
	i)	What are the ethics of AI security?	2 Marks	L4	CO3
	j)	What are the applications of robotic perception?	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What components make up the structure of an intelligent agent?	8 Marks	L2	CO1
	b)	Explain how do agents interact to facilitate decision-making?	8 Marks	L2	CO1
		(OR)			
3.	a)	What are the fundamental principles and concepts that form the foundations of artificial intelligence?	8 Marks	L3	CO1
	b)	How have the goals and approaches in AI research changed over the decades, and what were the driving forces behind these shifts?	8 Marks	L2	CO1

MODULE-II

4.	a)	Define greedy best-first search and discuss how it selects nodes for expansion in a search tree.	8 Marks	L1	CO1
	b)	What is a search algorithm in the context of artificial intelligence, and why is it fundamental to problem-solving?	8 Marks	L2	CO1
		(OR)			
5.	a)	How do search algorithms contribute to finding optimal solutions in various domains?	8 Marks	L2	CO2
	b)	Explain the concept of informed search and how it differs from uninformed search.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss about the local beam search algorithm.	8 Marks	L2	CO2
	b)	Provide examples where local beam search is more effective than other local search techniques.	8 Marks	L3	CO2

(OR)

7.	a)	Discuss about minimax algorithm application in games like chess and tic-tac-toe.	8 Marks	L2	CO2
	b)	Describe the minimax algorithm's strengths and weaknesses.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Discuss hidden Markov models (HMMs) and their application in probabilistic modeling over time.	8 Marks	L2	CO3
	b)	Explain the structure of HMMs	8 Marks	L3	CO3

(OR)

9.	a)	Describe the structure and semantics of Bayesian networks in detail.	8 Marks	L2	CO3
	b)	Explain the process of inference in temporal models.	8 Marks	L3	CO3

MODULE-V

10.	a)	Define the importance of transparency in AI systems in fostering user trust.	8 Marks	L2	CO4
	b)	Mention the limitations of current artificial intelligence technologies.	8 Marks	L3	CO4

(OR)

11.	a)	Discuss the importance of ensuring the safety of AI systems.	8 Marks	L3	CO4
	b)	Discuss how robots are utilized in industries like manufacturing, healthcare.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations April – 2024

DATA WAREHOUSING AND DATA MINING

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the concept of a Multidimensional Data Model for a data warehouse.	2 Marks	L1	CO1
	b)	Define the role of Concept Hierarchies in a data warehouse.	2 Marks	L1	CO1
	c)	Define the process of Mining Frequent Patterns	2 Marks	L1	CO2
	d)	Define Data Transformation	2 Marks	L1	CO2
	e)	What is Classifier?	2 Marks	L1	CO3
	f)	List the advantage of Bayesian classification?	2 Marks	L1	CO3
	g)	Write short notes on density based outlier detection?	2 Marks	L1	CO4
	h)	List the weaknesses of k-means?	2 Marks	L1	CO4
	i)	Define multimedia data in the context of data mining.	2 Marks	L1	CO5
	j)	What is the primary objective of mining web data?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe 3-tier Architecture of Data Warehouse with a neat sketch.	8 Marks	L2	CO1
	b)	Discuss about multi dimensional data models?	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe various OLAP operations performed on Multidimensional Data Model.	8 Marks	L2	CO1
	b)	Explain the Fact constellation schema with suitable example.	8 Marks	L2	CO1

MODULE-II

4.	a)	"Data preprocessing is necessary before data mining process". Justify your answer.	8 Marks	L2	CO2
	b)	Describe the process of data cleaning.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain about various Data Mining Functionalities.	8 Marks	L2	CO2
	b)	Write about the following normalization techniques with examples: i) Min-Max Normalization ii) Z-score Normalization.	8 Marks	L2	CO2

MODULE-III

6.	a)	Illustrate FP-growth algorithm with a suitable example.	8 Marks	L3	CO3
	b)	Write about Rule Based Classification.	8 Marks	L2	CO3

(OR)

7.	a)	Define information gain and Gain Ratio. Explain its importance in decision tree induction.	8 Marks	L2	CO3
	b)	How a Naive Bays classifier works? Explain with an example.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What is the main objective of clustering? Give the categorization of clustering approaches.	8 Marks	L2	CO4
	b)	Compare k-means with k-medoids algorithms for clustering.	8 Marks	L2	CO4

(OR)

9.	a)	What are key issues in hierarchical clustering? Explain.	8 Marks	L2	CO4
	b)	Explain about the basic Agglomerative Hierarchical clustering algorithm.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the process of mining sequence data.	8 Marks	L2	CO5
	b)	Discuss the various applications of data mining.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the concept of mining complex data types.	8 Marks	L2	CO5
	b)	Explain the challenges involved in mining spatial data.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations April – 2024

UNIX SHELL PROGRAMMING

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define kernel mode.	2 Marks	L1	CO1
	b)	List the properties of UNIX OS.	2 Marks	L2	CO1
	c)	Write the use of the fork System call.	2 Marks	L1	CO2
	d)	Mention the use of command “Passwd”.	2 Marks	L1	CO2
	e)	Define various fields in disk inode.	2 Marks	L1	CO3
	f)	Define Inode Cache.	2 Marks	L1	CO3
	g)	Write syntax for saving command.	2 Marks	L1	CO4
	h)	Mention the syntax for Undoing Last Editing Instructions	2 Marks	L1	CO4
	i)	Shell programs are stored in which file.	2 Marks	L2	CO5
	j)	What is Shell Scripting?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Briefly discuss logging in and logging out in UNIX OS?	8 Marks	L2	CO1
	b)	Discuss about man documentation?	8 Marks	L2	CO1
		(OR)			
3.	a)	List out different Unix flavored operating systems? How is Unix different from windows operating System?	8 Marks	L3	CO1
	b)	Describe briefly the UNIX architecture explaining the role played by KERNEL and SHELL in sharing the work load.	8 Marks	L2	CO1

MODULE-II

4.	a)	Summarize the differences between internal command and external command?	8 Marks	L2	CO2
	b)	What is the difference between foreground process and background process? Explain with an example?	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the actions performed by following commands. i) date ii) cal iii) who iv) ps v) ls vi) clear vii) tty	8 Marks	L2	CO2
	b)	What information is presented when the following commands are entered? i) cp ii) whoami iii) passwd iv) bc v) script	8 Marks	L3	CO2

MODULE-III

6.	a)	With the help of examples, write down the usage of touch, cat, and chmod commands.	8 Marks	L2	CO3
	b)	Write about the operations that can be performed on both directories and file.	8 Marks	L4	CO3
		(OR)			
7.	a)	Explain the different types of permissions that can be set for a file in Unix.	8 Marks	L2	CO3
	b)	Write down the command used to set all the permissions to other users.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define editing. How does vi editor work?	8 Marks	L1	CO4
	b)	Explain input modes commands of vi editor.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain the three different modes in which vi editor works.	8 Marks	L2	CO4
	b)	Briefly discuss Navigation Command mode.	8 Marks	L2	CO4

MODULE-V

10.	a)	Write a shell script to accept student name register number and marks of four subjects of 10 students. Find the total mark and grade of each student.	8 Marks	L3	CO5
	b)	With the help of examples, explain the different comparison operators available in awk.	8 Marks	L2	CO5
		(OR)			
11.	a)	What are the functions of shell in Unix? Name any 4 types of shells.	8 Marks	L1	CO5
	b)	What is the difference between sleep and wait commands in shell? Explain with examples.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations April – 2024

CLOUD PRACTITIONER

[Augmented Reality and Virtual Reality]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define scalability in cloud computing service	2 Marks	L1	CO1
	b)	Describe the horizontal scalability	2 Marks	L1	CO1
	c)	Explain the cloud Service with any two Examples	2 Marks	L1	CO1
	d)	Describe the public loud	2 Marks	L1	CO1
	e)	Define the AWS management console	2 Marks	L2	CO2
	f)	Illustrate the health check status services	2 Marks	L1	CO2
	g)	What are the benefits of EBS?	2 Marks	L2	CO3
	h)	Identify the use of S3.	2 Marks	L6	CO3
	i)	Why do we need cloud storage?	2 Marks	L4	CO3
	j)	Analyze the storage as a service.	2 Marks	L4	CO3

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Summarize about the NIST Cloud Computing Reference Architecture.	8 Marks	L2	CO2
	b)	Explain the software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet.	8 Marks	L3	CO1

(OR)

3.	a)	Illustrate in detail about The Conceptual Reference Model of cloud	8 Marks	L3	CO1
	b)	Illustrate in detail about Shared -Responsibility model.	8 Marks	L1	CO1

MODULE-II

4.		Describe AWS Service model with neat diagram.	16 Marks	L4	CO2

(OR)

5.	a)	Illustrate the Benefits of Amazon web services with Examples.	8 Marks	L2	CO2
	b)	Explain the Amazon web services cloud Formation Stack.	8 Marks	L1	CO2

MODULE-III

6.	a)	Write the producer of Deployment resources in AWS.	10 Marks	L2	CO3
	b)	Describe the using quick start Amazon machine image.	6 Marks	L3	CO4

(OR)

7.		Creating Amazon Machine Image (AMI) for provides the information required to launch an instance, which is a virtual server in the cloud.	16 Marks	L4	CO3

MODULE-IV

8.	a)	Create AWS S3 Bucket – (Object Storage) Amazon Simple Storage Service (Amazon S3) which is storage for the Internet.	8 Marks	L6	CO3
	b)	Illustrate the importance of Object Life Cycle Configurations,	8 Marks	L1	CO3
		(OR)			
9.	a)	Describe the Types of storage classes.	8 Marks	L1	CO3
	b)	Illustrate the services of s3 one zone -infrequent access.	8 Marks	L3	CO3

MODULE-V

10.	a)	Describe the services of Amazon DynamoDB.	8 Marks	L1	CO3
	b)	Give the importance of Amazon Elastic cache.	8 Marks	L3	CO3
		(OR)			
11.	a)	Briefly explain each of the Amazon Relational Database service.	8 Marks	L6	CO3
	b)	Generalize the ideas of Amazon RDS for Dd2.	8 Marks	L6	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations April – 2024

SOFTWARE TESTING AND AUTOMATION

[Augmented Reality and Virtual Reality]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define 'software reliability'?	2 Marks	L1	CO1
	b)	How does integration testing differ from system testing?	2 Marks	L2	CO1
	c)	How does a test strategy differ from a test plan?	2 Marks	L1	CO2
	d)	List two types of metrics that are important in test planning?	2 Marks	L1	CO2
	e)	What is the goal of Path Testing?	2 Marks	L1	CO3
	f)	What is the purpose of requirement identification in test design?	2 Marks	L1	CO3
	g)	What is the purpose of configuration testing?	2 Marks	L1	CO4
	h)	Define Compatibility Testing?	2 Marks	L1	CO4
	i)	How are Web Elements located in a web page for testing?	2 Marks	L2	CO5
	j)	What distinguishes automated testing from manual testing?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	List and explain the main principles of software testing. Why are they important?	8 Marks	L2	CO1
	b)	Elaborate on the differences and connections between failures, errors, and defects in the context of software testing?	8 Marks	L2	CO1

(OR)

3.		Elaborate on the roles of Black-Box and White-Box Testing in enhancing software quality. Include their methodologies, advantages, and limitations?	16 Marks	L3	CO1

MODULE-II

4.		Create a test plan from scratch for an inventory control system?	16 Marks	L2	CO2

(OR)

5.	a)	1. Describe the process of creating test cases and their importance in test planning?	8 Marks	L2	CO2
	b)	Analyze the importance of inter-group responsibilities in ensuring successful test execution?	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss the importance of path testing in uncovering logical errors within the software code?	8 Marks	L2	CO3
	b)	Explain the significance of data flow testing in identifying software anomalies?	8 Marks	L1	CO3

(OR)

7.	a)	Analyze the role of boundary value testing in identifying software defects?	8 Marks	L3	CO3
	b)	Describe how equivalence class testing is used to reduce the number of test cases while maintaining test coverage?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the importance of testing the documentation from the end-user's perspective?	8 Marks	L1	CO4
	b)	Discuss the process and significance of stress testing in a cloud computing environment?	8 Marks	L2	CO4

(OR)

9.	a)	Compare and contrast configuration testing and compatibility testing?	8 Marks	L3	CO4
	b)	Describe the process of testing web and mobile applications for performance issues?	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the process of automating test cases for web applications using Selenium?	8 Marks	L1	CO5
	b)	Describe the steps to locate Web Elements using XPath or CSS Selectors?	8 Marks	L1	CO5

(OR)

11.	a)	Evaluate the challenges of handling dynamic web elements during automated testing with Selenium?	8 Marks	L2	CO5
	b)	Analyze the benefits and challenges of using Selenium for automated testing?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations April – 2024

INNOVATION, INCUBATION AND ENTREPRENEURSHIP

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define entrepreneur.	2 Marks	L1	CO1
	b)	Write any three reasons for become an entrepreneur.	2 Marks	L1	CO1
	c)	Define incremental innovation.	2 Marks	L1	CO2
	d)	Define innovation.	2 Marks	L1	CO2
	e)	Define Industry 4.0.	2 Marks	L1	CO3
	f)	What is mean by digital technologies?	2 Marks	L1	CO3
	g)	Define start –up.	2 Marks	L1	CO4
	h)	List out any five types of start-up.	2 Marks	L1	CO4
	i)	Define 5 M'S.	2 Marks	L1	CO5
	j)	Differentiate Innovation and incubation.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	What are the types of the Entrepreneurship and how one will differ to another.	16 Marks	L2	CO1

(OR)

3.	What do you understand by 7I's of Intrapreneurship? Explain its importance.	16 Marks	L2	CO1

MODULE-II

4.	Explain the Frugal Engineering process and why each company follow different strategies in Frugal Engineering.	16 Marks	L2	CO2

(OR)

5.	What are the challenges faced by Entrepreneur in Contemporary Business world. Comment.	16 Marks	L2	CO2

MODULE-III

6.	Explain the AI process and why each company follow different strategies in AI. Comment.	16 Marks	L2	CO3

(OR)

7.	Describe the what are the Factors affecting Technology in Small Scale Industries.	16 Marks	L2	CO3

MODULE-IV

8.	What are the Economic considerations for Startup a new business Entrepreneurs? Explain it.	16 Marks	L2	CO4
	(OR)			
9.	Explain the concept and types of feasibility analysis.	16 Marks	L2	CO4

MODULE-V

10.	Explain the concept of continuous improvement in business process management (BPM). How does it help organizations achieve operational excellence?	16 Marks	L2	CO5
	(OR)			
11.	How can a sustainable competitive advantage be maintained in an industry characterized by rapid technological advancements and intense competition?	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations May – 2024

ENVIRONMENTAL STUDIES

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Tidal Energy.	2 Marks	L1	CO1
	b)	What is the main advantage of geothermal energy as a renewable energy source?	2 Marks	L1	CO1
	c)	Write about wastewater Management.	2 Marks	L1	CO2
	d)	Which industry is a significant contributor to industrial water pollution?	2 Marks	L1	CO2
	e)	Recall the effects of overgrazing.	2 Marks	L1	CO3
	f)	Which type of pollution is caused by the excessive accumulation of waste materials in the environment?	2 Marks	L1	CO3
	g)	What is the primary source of air pollution in urban areas?	2 Marks	L1	CO4
	h)	Write about acid rains.	2 Marks	L1	CO4
	i)	What are the potential economic benefits of adopting green technology.	2 Marks	L1	CO5
	j)	Which solvent is non-toxic and environmentally friendly**?**	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain in detail about wind energy and solar energy.	8 Marks	L2	CO1
	b)	Explain the role of individuals in sustainable use of natural resources.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define energy resources. Explain about different types of energy resources.	8 Marks	L2	CO1
	b)	List the merits and demerits of wind energy.	8 Marks	L2	CO1

MODULE-II

4.	a)	What are the biotic and abiotic components of an ecosystem?	8 Marks	L2	CO2
	b)	Summarize in detail about effect of water pollution.	8 Marks	L2	CO2
		(OR)			
5.		Describe the process of wastewater management and current and projected urban wastewater management issues.	16 Marks	L2	CO2

MODULE-III

6.	a)	Summarize about thermal and marine pollution.	8 Marks	L2	CO3
	b)	Explain the techniques used to control the water pollution.	8 Marks	L2	CO3

(OR)

7.	a)	Discuss about control measures of various pollutions.	8 Marks	L2	CO3
	b)	With the help of a case study, discuss nuclear pollution.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss about global warming.	8 Marks	L2	CO4
	b)	Discuss about the reasons of causing the ozone layer Depletion.	8 Marks	L6	CO4

(OR)

9.	a)	State, how does acid rain is formed and what are the adverse effects on environment.	8 Marks	L2	CO4
	b)	Summarize in detail about urban problems to rain water Harvesting.	8 Marks	L6	CO4

MODULE-V

10.	a)	Explain in detail about the Principles of green chemistry.	8 Marks	L2	CO4
	b)	Discuss about the impact of green chemistry.	8 Marks	L6	CO5

(OR)

11.	a)	Explain the statement, "Green Chemistry is Sustainable Chemistry.	8 Marks	L2	CO5
	b)	Write a detailed note on green revolution.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations May – 2024

PRINCIPLES OF BANKING AND INSURANCE

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the objectives of commercial banks?	2 Marks	L1	CO1
	b)	Define about the central bank.	2 Marks	L2	CO1
	c)	Discuss about the unsecured advances.	2 Marks	L3	CO2
	d)	Write about the Non-Performing Assets.	2 Marks	L4	CO2
	e)	Define Smart Cards.	2 Marks	L2	CO3
	f)	What is mean by Tele Banking?	2 Marks	L1	CO3
	g)	Write about the IRDA.	2 Marks	L2	CO4
	h)	What is meant by Nominee?	2 Marks	L1	CO4
	i)	What is Motor vehicle Insurance?	2 Marks	L1	CO5
	j)	Explain about the Marine Insurance.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	State the principles of Investment policy of Commercial Banks.	8 Marks	L2	CO1
	b)	What are the functions of commercial banks?	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss the factors influencing cash reserves of commerce banks.	8 Marks	L3	CO1
	b)	Explain about the constituents of banking system in India.	8 Marks	L1	CO1

MODULE-II

4.	a)	Define lending. What are the considerations for sound lending?	8 Marks	L3	CO2
	b)	Explain about the different forms of lending Advances in NPAs.	8 Marks	L1	CO2
		(OR)			
5.	a)	Discuss about the management of NPAs in banking.	8 Marks	L2	CO2
	b)	Illustrate the Recent Measures in NPAs.	8 Marks	L2	CO2

MODULE-III

6.	a)	What is meant by E-banking? Describe its advantages.	8 Marks	L1	CO3
	b)	State the significance of credit cards	8 Marks	L4	CO3
		(OR)			
7.	a)	Define E-banking. Explain about the facets of E-banking.	8 Marks	L2	CO3
	b)	Justify the Risks of E-banking in the current banking scenario.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Define IRDA. Briefly discuss about the duties of IRDA.	8 Marks	L3	CO4
	b)	What is meant by life insurance? Outline the various types of life insurance.	8 Marks	L1	CO4

(OR)

9.	a)	Elucidated the growth of the insurance sector in India.	8 Marks	L4	CO4
	b)	Assess the procedure of taking life insurance polices.	8 Marks	L4	CO4

MODULE-V

10.	a)	Define General Insurance. Discuss about the type of General Insurances policies.	8 Marks	L2	CO5
	b)	How do you define Theft and Burglary insurance?	8 Marks	L2	CO5

(OR)

11.	a)	What are the procedures for health insurance policy?	8 Marks	L1	CO5
	b)	Insurance meets the social obligation of every member of the society"- How? Elucidate.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations May – 2024

FINANCIAL ACCOUNTING-I

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write about the Over-riding Commission.	2 Marks	L1	CO1
	b)	Describe Proforma Invoice.	2 Marks	L1	CO1
	c)	State four business activities for which joint ventures are formed.	2 Marks	L1	CO1
	d)	Write any two ways of maintaining books of account for the joint venture business.	2 Marks	L1	CO1
	e)	Mention three main importance of creating provision.	2 Marks	L1	CO2
	f)	Explain Specific reserve.	2 Marks	L1	CO2
	g)	Define partnership.	2 Marks	L1	CO3
	h)	Write any two reasons in favour of having a partnership deed.	2 Marks	L2	CO3
	i)	Describe fixed capital of partners.	2 Marks	L2	CO4
	j)	Write two criticisms of the decision of Garner vs Murray.	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Point out the differences between sales and consignment.	4 Marks	L2	CO1
	b)	5,000 shoes were consigned by Gupta & Co. of Delhi to Yang of Tokyo at a cost of Rs.375 each. Gupta & Co. paid freight Rs.50,000 and Insurance Rs.7,500. During the transit, 500 shoes were totally damaged by fire. Yang took delivery of the remaining shoes and paid Rs.72,000 on customs duty. Yang had sent a bank draft to Gupta & Co. for Rs.2,50,000 as advance payment. 4,000 shoes sold by him at Rs.500 each. Expenses incurred by Yang on godown rent and advertisement etc. amounted to Rs. 10,000. He is entitled to a commission of 5% One of the customers to whom the goods were sold on credit could not pay the cost of 25 shoes. Prepare the Consignment Account and the Account of Yang in the books of Gupta & Co. Yang settled his account immediately. Nothing was recovered from the insurer for the damaged goods.	12 Marks	L3	CO1
		(OR)			
3.	a)	Briefly explain the types of losses on consignment.	4 Marks	L2	CO1
	b)	Krishna Ltd. of Andhra Pradesh purchased 5,000 shirts @ Rs. 100 per shirt. Out of these 3,000 shirts were sent on consignment to Kaveri Ltd. of Telangana at the selling price of Rs.150 per	12 Marks	L3	CO1

shirt. The consignors paid Rs. 5,000 for packing and freight.
Kaveri Ltd. sold 2,500 shirts @ Rs. 160 per shirt and incurred Rs. 500 for selling expenses and remitted Rs.2,50,000 to Andhra Pradesh on account. They are entitled to a commission of 5% on total sales plus a further 25% commission on any surplus price realized over Rs. 150 per shirt.
1,500 shirts were sold at Andhra Pradesh @ Rs. 110 per shirt.
Owing to the fall in market price, the value of the stock of the shirt in hand is to be reduced by 5%. You are required to prepare i) Consignment Account, and ii) Kaveri Ltd. Account.

MODULE-II

4.	a)	Discuss the basic features of a Joint Venture business	4 Marks	L2	CO1
	b)	Ajay and Vinay entered a joint venture to buy and sell garments. They opened a Joint Bank A/c. Ajay deposited Rs.2,00,000 and Vinay Rs.1,50,000. Ajay supplied garments worth Rs.25,000 and Vinay supplied garments worth Rs.15,000. The following payments were made by the venture: a) Cost of Garments purchased Rs.2,50,000 b) Transportation charges Rs.12,000 c) Advertising Rs. 7,500 and Sundry Expenses Rs. 2,500 They sold garments for Rs. 4,00,000 in cash. Ajay took over some garments for Rs. 30,000 and Vinay took over the remaining for Rs. 10,000. The profit or losses were to be shared equally between co-venturers. Prepare Joint Venture A/c and Joint Bank A/c	12 Marks	L3	CO1

(OR)

5.	a)	Briefly discuss, when separate books are maintained in Joint Venture Business.	4 Marks	L2	CO1
	b)	Sharma and Gupta entered into a joint venture business to buy and sale garments to share profits or losses in the ratio of 5:3. Sharma supplied 400 bales of shirting at Rs. 500 each and also paid Rs. 18,000 as carriage & insurance. Gupta supplied 500 bales of suiting at Rs. 480 each and paid Rs. 22,000 as advertisement & carriage. Sharma paid Rs. 50,000 as an advance to Gupta. Sharma sold 500 bales of suiting at Rs. 600 each for cash and also all 400 bales of shirting at Rs. 650 each for cash. Sharma is entitled for the commission of 2.5% on total sales plus an allowance of Rs. 2,000 for looking after business. The joint venture was closed and the claims were settled. Prepare Joint Venture A/c and Gupta's A/c in the books of Sharma and Sharma's A/c in the books of Gupta.	12 Marks	L3	CO1

MODULE-III

6.	a)	Explain the reserves in accounting?	4 Marks	L2	CO2
	b)	The following information is extracted from the Trial Balance of Manish Traders on 31st March 2023.	12 Marks	L3	CO2

Accounts Receivables	Rs. 245000
Bad debts	Rs. 12000
Provision for bad debts	Rs. 8000

Additional Information:
Bad debts - Rs.1000
Provisions are to be maintained at 3% on accounts receivable.
Prepare Bad debts account and provisions for bad debt account.

(OR)

7. a) Write the definition of provision and state the reason for creation of provision. — 4 Marks — L2 — CO2

b) On 31.03.2022, X Ltd. Had the following balances: — 12 Marks — L3 — CO2

Sundry Debtors Rs.1,20,000 and Provision for doubtful debts Rs. 6000.

During the year ending 31.03.2023, X Ltd. Sold goods on credit amounting to Rs. 15,00,000. During the year customers return the goods of Rs. 5000. While the firm collected in cash from debtors Rs. 12,00,000, allowed discounts of Rs. 2,000 and received acceptance (B/R) amounting to Rs. 2,00,000. The firm could not collect Rs. 5000 from debtors and had to write off the amount. It was decided to maintain provision for doubtful debts @ 5% on debtors as on 31.03.2023.

You are required to show sundry debtors and provision for doubtful debts accounts.

MODULE-IV

8. a) Briefly discuss 'Partnership Deed' — 4 Marks — L2 — CO3

b) From the following information, calculate the value of goodwill by the super profit method. — 12 Marks — L3 — CO3

i) Average Capital employed in the business Rs. 8,00,000.

ii) Net trading profit of the firm for the past three years Rs. 1,50,500; Rs. 1,52,200 and Rs. 1,58,300.

iii) Rate of Interest expected from capital having regard to the risk involved —18%.

iv) Fair remuneration to the partners for their services Rs. 12,000 per annum.

v) Sundry Assets (excluding goodwill) of the firm Rs. 7,54,762.

vi) Sundry Liabilities Rs. 31,329.

vii) Goodwill valued at 2 years' purchase

(OR)

9. Ram and Shyam are partners in a firm sharing profit and losses in the ratio of 4 : 1. Their Balance Sheet as on 31st March 2023 stood as follows : — 16 Marks — L3 — CO3

Liabilities	Rs.	**Assets**	Rs.
Capital A/c		Furniture	20,000.00
Ram - Rs. 25000		Stock	40,000.00
Shyam - Rs. 65000	90,000.00	Bill Receivable	10,000.00
Reserve	20,000.00	Debtors	30,000.00
Creditors	25,000.00	Cash at Bank	40,000.00
Bills Payable	5,000.00		
	1,40,000.00		**1,40,000.00**

They agreed to take Hari as a partner with effect from 1st April 2023 on the following terms:

a) Ram, Shyam, and Hari will share profit and losses in the ratio of 5 : 3 : 2.

b) Hari will bring Rs. 20,000 as a premium for goodwill and Rs. 30,000 as capital.

c) Half of the Reserve is to be withdrawn by the partners.
d) The asset will be revalued as follows: Furniture Rs. 30,000; Stock Rs. 39,500; Debtors Rs. 28,500.
e) A creditor of Rs. 12,000 has agreed to forgo his claim by Rs. 2,000.
f) After making the above adjustments, the capital accounts of Ram and Shyam should be adjusted on the basis of Hari's capital, by bringing cash or withdrawing cash as the case may be.

Show the Revaluation Account, Partners' Capital Account, and the Balance Sheet of the new firm.

MODULE-V

10. The following is the Balance Sheet of X and Y as on 31.12.2022: 16 Marks L3 CO4

Liabilities	₹	Assets	₹
Capital A/c		Plant	56,000.00
X - ₹ 20000		Furniture	8,000.00
Y - ₹ 16000	36,000.00	Investment	20,000.00
General Reserve	10,000.00	Stock	12,000.00
Term Loan	20,000.00	Debtors ₹ 40000	
Loan from Y	30,000.00	Less: Provisions ₹ 2000	38,000.00
Sundry Creditors	76,000.00	Profit and Loss A/c	15,000.00
		Cash at Bank	23,000.00
	1,72,000.00		**1,72,000.00**

The firm was dissolve on 31.12.2022 and the following was the result:

i) X took over investment at an agreed value of Rs. 16,000 and agreed to pay off the Term loan.
ii) The assets realised as under: Stock Rs. 10,000; debtors Rs. 37,000; Furniture Rs. 9,000 and plant Rs. 50,000. The expenses of realization was Rs. 2,200.
iii) The Sundry Creditors were paid off less 2½% discount. X and Y shared profits and losses in the ratio of 3:2. Show Realisation Account, Bank Account and the Capital Accounts of the partners.

(OR)

11. a) A, B and C are in partnership sharing profit and losses equally and agreed to dissolve the firm on 30.06.2022. On that date their Balance Sheet stood as follows: 16 Marks L3 CO4

Balance Sheet as at 30th June, 2022

Liabilities	Rs.	**Assets**	Rs.
Capital A/c		Sundry Asset	60,000.00
A - Rs. 42000		Profit and Loss A/c	16,000.00
B - Rs. 30000	72,000.00	Capital A/c of C	8,000.00
Sundry Creditors	12,000.00		
	84,000.00		**84,000.00**

The assets are realised at 50% of the book value. Realization expenses amounted to Rs. 5,000. C became insolvent and received Rs. 2,000 from his estates.

Close the book of the firm under Fluctuating Capital Method applying Garner Vs. Murray principles.

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May– 2024

LEGAL ASPECTS OF BUSINESS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Explain Proposal.	2 Marks	L1	CO1
	b)	Define Breach of contract.	2 Marks	L1	CO1
	c)	Explain agreement.	2 Marks	L1	CO1
	d)	Explain creation of agency.	2 Marks	L1	CO2
	e)	Explain powers of agents.	2 Marks	L1	CO2
	f)	Explain shipment of goods.	2 Marks	L1	CO3
	g)	Define agreement to sale of goods.	2 Marks	L1	CO3
	h)	Define Share capital.	2 Marks	L1	CO4
	i)	Define dividend.	2 Marks	L1	CO4
	j)	Explain consumer protection.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Identify components of capacity to contract.	8 Marks	L1	CO1
	b)	Discuss remedies to breach of contract.	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss the conditions of discharge of contract.	8 Marks	L2	CO1
	b)	Discuss important features of Indian Contract Act.	8 Marks	L1	CO1

MODULE-II

4.	a)	Identify essentials of contract of indemnity.	8 Marks	L1	CO2
	b)	Discuss the liabilities of promisor.	8 Marks	L1	CO2
		(OR)			
5.	a)	Identify the parties to the contract of guarantee.	8 Marks	L2	CO2
	b)	Discuss the nature and extent of surety's liability.	8 Marks	L1	CO2

MODULE-III

6.	a)	Differentiate between sale and agreement to sale.	8 Marks	L2	CO3
	b)	Describe important features of a good product.	8 Marks	L1	CO3
		(OR)			
7.	a)	Describe the duties of a buyer in sale of goods.	8 Marks	L2	CO3
	b)	Write a short note on conditions and warranty.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Give a brief composition of board of directors.	8 Marks	L1	CO3
	b)	Write a brief note on resignation of directors.	8 Marks	L2	CO3

(OR)

9.	a)	Discuss governance duties of board of directors.	8 Marks	L2	CO3
	b)	Discuss duties of an external auditor.	8 Marks	L1	CO3

MODULE-V

10.	a)	Define consumer protection. Discuss types of consumer protection.	8 Marks	L1	CO4
	b)	Identify the duties of state consumer protection commission.	8 Marks	L2	CO4

(OR)

11.	a)	Identify the types of cyber prevention.	8 Marks	L1	CO4
	b)	Write a short note on cyber law in India.	8 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May – 2024

DATA ANALYSIS USING SPREAD SHEET

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is auto sum feature in Excel? Give example.	2 Marks	L2	CO1
	b)	What is count()? Give example.	2 Marks	L2	CO5
	c)	What is a pivot chart?	2 Marks	L2	CO2
	d)	List out the four quadrants of a pivot table.	2 Marks	L1	CO2
	e)	Give the syntax of if() in Excel.	2 Marks	L1	CO3
	f)	What is a range in Excel?	2 Marks	L1	CO1
	g)	Give the syntax of vlookup().	2 Marks	L1	CO4
	h)	What is the usage of Len() function? Give example.	2 Marks	L2	CO5
	i)	Differentiate between min() and max() with help of example.	2 Marks	L2	CO5
	j)	Give the syntax of NPV() in Excel.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.		What is sorting? Explain different ways to sort data in Excel by taking suitable examples.	16 Marks	L2	CO1

(OR)

3.	a)	How to create a sub total for list of data in excel? Explain with an example?	8 Marks	L1	CO1
	b)	What is data validation in Excel how to use it?	8 Marks	L1	CO1

MODULE-II

4.		Explain the concept of Pivot table in Excel. Explain how it is used in data analysis.	16 Marks	L2	CO2

(OR)

5.		Explain the differences between Pivot table and regular table.	16 Marks	L2	CO2

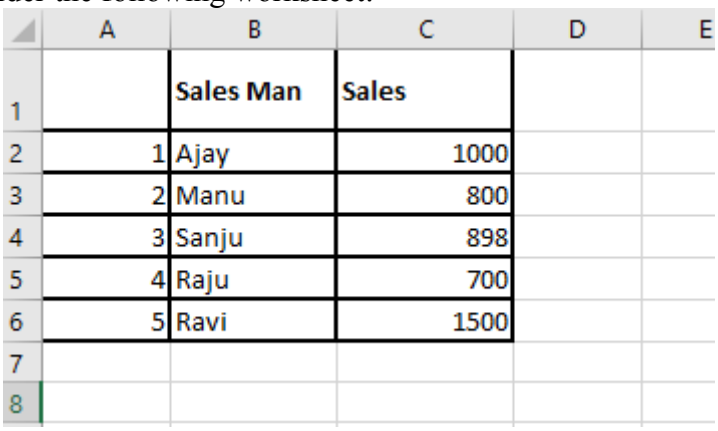
MODULE-III

6.		Taking a suitable example, show the syntax for the following functions: i) If ii) CountIf iii) SumIf iv) Iferror	16 Marks	L2	CO3

(OR)

7.		What is meant by range name? Show the steps in excel to calculate simple interest by giving range names to principle, time and rate.	16 Marks	L3	CO3

MODULE-IV

8.	Differentiate between Match and Index function with suitable examples.	16 Marks	L2	CO4
	(OR)			
9.	Consider the following worksheet:  Write the steps to find the salesperson name that made maximum sales by using Vlookup function.	16 Marks	L3	CO4

	A	B	C	D	E
1		Sales Man	Sales		
2	1	Ajay	1000		
3	2	Manu	800		
4	3	Sanju	898		
5	4	Raju	700		
6	5	Ravi	1500		
7					
8					

MODULE-V

10.	Explain any four financial functions in Excel by taking suitable examples.	16 Marks	L2	CO5
	(OR)			
11.	A company has taken a loan for Rs. 15000000 from a bank at an annual rate of interest of 8.5% to be repaid in 20 years. Show the steps to calculate the monthly rate of interest in Excel.	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations May – 2024

BUSINESS COMMUNICATION

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention the components of Business communication.	2 Marks	L1	CO1
	b)	List out the different types of communication barriers.	2 Marks	L1	C01
	c)	Define the business correspondence.	2 Marks	L1	CO2
	d)	Mention the importance of putting orders.	2 Marks	L1	CO2
	e)	List out different business reports.	2 Marks	L1	CO3
	f)	Define minutes of the business.	2 Marks	L1	CO3
	g)	What is presentation write the purpose of presentation?	2 Marks	L1	CO4
	h)	Mention the common errors in business communication.	2 Marks	L1	CO4
	i)	Mention the brief significance of messages.	2 Marks	L1	CO5
	j)	Define social networking.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define and discuss different types of communication barriers.	8 Marks	L1	CO1
	b)	Explain the role and significance of communication in Business.	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss physical barriers in detail.	8 Marks	L2	CO1
	b)	Summarize the Organizational barriers with example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define tender. Explain the tender quote.	8 Marks	L1	CO2
	b)	Describe the purpose and merits of MOU.	8 Marks	L2	CO2
		(OR)			
5.	a)	Distinguish the role of notice and office memo.	8 Marks	L2	CO2
	b)	Elaborate job application letter.	8 Marks	L2	CO2

MODULE-III

6.	a)	Define report. Explain the format of report.	8 Marks	L1	CO3
	b)	Summarize the report along with its steps.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the pre requirements of a report writing.	8 Marks	L1	CO3
	b)	Determine the process of report in business.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain how language plays vital role in business correspondence.	8 Marks	L1	CO4
	b)	List out the words of commonly confused.	8 Marks	L1	CO4

(OR)

9.	a)	Mention commonly misspelled words in English? Explain.	8 Marks	L1	CO4
	b)	Describe the usage of Visual aids.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the e-mail protocols in business communication.	8 Marks	L1	CO5
	b)	Mention the need and significance of instant messaging.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss the Strategic importance of e-communication.	8 Marks	L2	CO5
	b)	Explicate the technology need and compatibility in business communication.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Supplementary Examinations, January - 2024

ENVIRONMENTAL STUDIES

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Solar Energy.	2 Marks	L1	CO1
	b)	Importance of Biogas.	2 Marks	L1	CO1
	c)	What is DDT?	2 Marks	L1	CO2
	d)	Write about wastewater Management.	2 Marks	L1	CO2
	e)	Effects of fertilizers.	2 Marks	L1	CO3
	f)	Effects of overgrazing.	2 Marks	L1	CO3
	g)	Write about nuclear accidents.	2 Marks	L1	CO4
	h)	What is global warming?	2 Marks	L1	CO4
	i)	Define green technology.	2 Marks	L1	CO5
	j)	Which solvent is non-toxic and environmentally friendly**?**	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain in detail about solar energy and wind energy.	8 Marks	L2	CO1
	b)	Summarize about the importance of Renewable energy resources in the present scenario.	8 Marks	L2	CO1

(OR)

3.	a)	Explain in detail about Non Renewable energy resources.	8 Marks	L2	CO1
	b)	Briefly discuss about coal gas and natural gas.	8 Marks	L2	CO1

MODULE-II

4.	a)	Summarize about surface water and Groundwater.	8 Marks	L2	CO2
	b)	Summarize detail about wastewater management.	8 Marks	L2	CO2

(OR)

5.		Discuss about causes and effects of hardness of water.	16 Marks	L2	CO2

MODULE-III

6.	a)	Summarize detail about thermal and marine pollution.	8 Marks	L2	CO3
	b)	Identify the causes and effects of Land pollution.	8 Marks	L2	CO3

(OR)

7.	a)	Explain about various disease caused polluted water.	8 Marks	L2	CO3
	b)	Summarize about the effects of uses of fertilizers and pesticides.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Summarize detail about urban problems to water conservation.	8 Marks	L2	CO4
	b)	Discuss about the reasons of causing the ozone layer depletion.	8 Marks	L2	CO4

(OR)

9.	a)	Summarize about the effects of radiation and nuclear hazard.	8 Marks	L2	CO4
	b)	Describe different social issues on human development.	8 Marks	L2	CO4

MODULE-V

10.	a)	Identify how green manufacturing system helps to control pollution.	8 Marks	L2	CO5
	b)	Describe the importance of green chemistry and synthetic chemistry.	8 Marks	L2	CO5

(OR)

11.		Explain the statement, "Green Chemistry is Sustainable Chemistry.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Supplementary Examinations, January – 2024

PRINCIPLES OF BANKING AND INSURANCE

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Banking System?	2 Marks	L2	CO1
	b)	Distinguish Central Bank Vs. Commercial Bank.	2 Marks	L4	CO1
	c)	What are new developments in Banking	2 Marks	L2	CO1
	d)	What are NPAs?	2 Marks	L1	CO2
	e)	Distinguish Secured and Unsecured Advances.	2 Marks	L4	CO2
	f)	Define Electronic Funds Transfer.	2 Marks	L1	CO3
	g)	What is Smart Card?	2 Marks	L1	CO3
	h)	Interpret ECS and EFT.	2 Marks	L2	CO3
	i)	Write about IRDA.	2 Marks	L2	CO4
	j)	What is Fire Insurance Policy?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks.

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the Functions of Commercial Banks.	8 Marks	L1	CO1
	b)	Summarize the Role of Commercial Banks in Economic Development.	8 Marks	L2	CO1

(OR)

3.	a)	Tell the reasons behind the Merging of commercial banks in India.	8 Marks	L2	CO1
	b)	Simplify the Functions of the Central Bank.	8 Marks	L4	CO1

MODULE-II

4.	a)	What are the different Principles of Sound Lending	8 Marks	L1	CO2
	b)	Examine the Factors Contributing to NPAs	8 Marks	L4	CO2

(OR)

5.	a)	Distinguish Secured and Unsecured Advances	8 Marks	L2	CO2
	b)	Discuss the Recent Measures in NPAs	8 Marks	L2	CO2

MODULE-III

6.	a)	Define E-Banking and State about Advantages of Internet Banking	8 Marks	L1	CO3
	b)	Classify the different advantages of Debit Cards and Credit Cards.	8 Marks	L4	CO3

(OR)

7.	a)	Write about Electronic Clearing Services in E-banking.	8 Marks	L2	CO3
	b)	Justify the Risks of E-Banking in the current banking Scenario.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Determine the Functions of IRDA.	8 Marks	L2	CO4
	b)	Interpret the Advantages of Life Insurance.	8 Marks	L2	CO4

(OR)

9.	a)	Evaluate the Procedure of Taking Life Insurance Policies.	8 Marks	L4	CO4
	b)	Explain the Nomination and Assignment of Life Insurance Policies.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is General Insurance? Discuss its Advantages.	8 Marks	L1	CO5
	b)	Classify various types of General Insurance Policies.	8 Marks	L2	CO5

(OR)

11.	a)	Determine the Procedure for taking Fire Insurance Policy.	8 Marks	L3	CO5
	b)	Write a Notes on Motor Vehicle Insurance.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Supplementary Examinations, January – 2024

FINANCIAL ACCOUNTING-I

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State the Del-credere commission.	2 Marks	L1	CO1
	b)	Write about abnormal loss of goods.	2 Marks	L1	CO1
	c)	What is Joint Venture.	2 Marks	L1	CO1
	d)	Discuss about the features of Joint Venture.	2 Marks	L1	CO1
	e)	Write about types of reserves.	2 Marks	L1	CO2
	f)	Explain the Provision for Bad and Doubtful Debts account.	2 Marks	L2	CO2
	g)	Explain about Partnership deed.	2 Marks	L2	CO3
	h)	Explain about Retirement of a Partner.	2 Marks	L2	CO3
	i)	Write about Realisation Account.	2 Marks	L1	CO4
	j)	Explain Garner Vs Murray case rule.	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss about Consignment and Sale in differentiating manner.	4 Marks	L2	CO1
	b)	Subash of Visakhapatnam consigned to Krishna of Hyderabad, 60 boxes of medicines at Rs.400 per box. The consignor paid freight charges and insurance of Rs.2,000. Krishna sent Rs.10,000 as advance payment. Subash received account sales from Krishna containing the following particulars:	12 Marks	L3	CO1

Particulars	Amount (Rs.)
Gross proceeds	34,000
Transportation and ware housing charges	1,500
Commission on gross proceeds	15%

Subash received bank remittance for the balance due from Krishna on the consignment. Give journal entries and necessary ledger accounts in the books of Subhash.

(OR)

3.	a)	Discuss about: i) Consignment A/c ii) Consignee A/c	4 Marks	L2	CO1
	b)	Shyam & Co of Kolkata consigned 50 cases of goods of Rs 200 each to Chandra of Chennai. The consignor has paid Rs.200 for insurance and Rs. 300 for freight, Chandra sent an account sales showing the following details. i) 45 cases sold for Rs. 24000 ii) The expenses paid : Dock charges Rs. 20, Carriage Rs.50, ware house rent Rs. 130 iii) Amount due to Shyam & co sent after 4% commission deduction. Give journal entries and necessary ledger accounts in the books of both the parties.	12 Marks	L3	CO1

MODULE-II

4.	a)	Discuss about meaning and nature of Joint Venture.	4 Marks	L2	CO1
	b)	R and P are carrying on a business as contractors. They jointly take up the work of constructing a building of Bose & Co at an agreed price of 5,00,000 payable as 3,00,000 in cash and 2,00,000 in fully paid shares of a company. A bank account is opened in which R and P paid 3,00,000 and 75,000 respectively. The following costs were incurred in completing the construction: i) Salary paid – 1,00,000; ii) Materials purchased – 2,00,000; iii) Materials supplied by R from the stock of his own business – 50,000; iv) Engineer's fees paid by P – 10,000. The contract price was duly received. The accounts of the venture were closed; R taking up all the shares at an agreed valuation of 1,70,000 and P taking up the unused stock of materials at 15,000. Prepare necessary ledgers of the Venture assuming that a separate set of books are maintained for this purpose and that the net result of the same is shared by R and P in the ratio of 3:2.	12 Marks	L3	CO1
		(OR)			
5.		Praveen and Shyam entered in to joint venture sharing profit in 3:2. Praveen has to purchase Timber and forward to Shyam for Rs. 150000 and paid expenses Rs. 4000. Shyam received the consignment and immediately accepted Praveen's draft Rs. 60000. Praveen discounted the draft for Rs. 58500. Q sold the timber for Rs. 260000 and spent selling expenses Rs. 3000, insurance Rs. 3500. Shyam is entitled for 5% commission on sales. Give journal entries and ledgers in the books of Praveen.	16 Marks	L3	CO1

MODULE-III

6.	a)	Discuss about need for maintaining provisions and reserves.	4 Marks	L2	CO2
	b)	On 1.1.2015 the reserve for bad debts accounts shows a credit balance of Rs.25,000. The bad debts during the year amounted to Rs.18,500. On 31.12.2015 the debtors Rs.3,80,000 and 5% reserve for bad debts is required to be maintained. In 2016 the bad debts Rs.17500. On 31.12.2016 the debtors amounted to Rs.3,50,000 and 5% reserve for bad debts is required. The bad debts in the year 2017 is Rs.5,000. The debtors on 31.12.2017 is Rs.1,50,000 and it is required to be maintained at 5% for reserve for bad debts. Show Bad Debts Account and Reserve for Bad and Doubtful Debts Account.	12 Marks	L3	CO2
		(OR)			
7.	a)	Explain the differences between Provision and Reserve.	4 Marks	L2	CO2
	b)	On December 2012 Mr. Ram closes his books when his debtors as amounted to Rs.55,000. On January 2012 the provision for doubtful debts account shows a credit balance of Rs.2,000. During the year he incurred a baddebts of Rs.1,500. He maintains 5% provision on debtors. Pass Journal Entries and show the necessary Ledger Accounts and Balance Sheet.	12 Marks	L3	CO2

MODULE-IV

8. A & B are partners in a business sharing profits and losses equally, their Balance sheet on 31-12-2019 as follows — 16 Marks L3 CO3

Liabilities	Rs.	Assets	Rs.
Creditors	20000	Bank	10000
Capital Accounts:	400000	Sundry Debtors	50000
A	280000	Stock	100000
B		Machinery	180000
		Furniture	50000
		Buildings	310000
	700000		**700000**

They decided to admit 'C' into the firm on 1-1-2020 on the following terms

i)C has to pay Rs. 250000 for 1/4th share in future profits, and Rs. 80000 for goodwill.

ii) Machinery be depreciated by 10% and Stock is revalued at Rs. 120000.

iii) 5% reserve for doubtful debts to created on debtors.

iv) Building are appreciated by 10%.

Pass necessary journal entries and balance sheet of the new firm.

(OR)

9. The Balance Sheet of A, B and C who were sharing profits in proportion to their capitals stood as follows on 31st December, 2002: — 16 Marks L3 CO3

Liabilities	(Rs.)	Assets	(Rs.)
Sundry Creditors	2,400	Cash at Bank	5,500
General Reserve	4,500	Sundry Debtors	5,000
Capital Accounts:		Stock	18,000
A	20,000		23,400
B	15,000		
C	10,000		
	51,900		51,900

B retired on the above date on the following terms and conditions:

i) A provision for doubtful debts be made @ 5% on Sundry Debtors. Machinery be depreciated by Rs.650.

ii) Goodwill of the entire firm be fixed at Rs.10,800 and without raising a goodwill account, B's share of it be adjusted in to the accounts of A and C who are going to share profits in the ratio of 5:3 respectively.

Journalese the above transactions; show the Ledger Accounts and Balance Sheet of the new firm.

MODULE-V

10. Krishna and Kishore are equal partners. They agreed to dissolve the partnership on 31.12.2015. On which date their Balance Sheet was as follows: 16 Marks L3 CO4

Liabilities	(Rs.)	Assets	(Rs.)
Sundry Creditors	2,850	Bank	1,500
Capital Accounts:		Debtors Stock	2,775
Krishna Kishore	7,500	Furniture	7,575
	6,000	Premises	1,500
			3,000
	16,350		16,350

The assets realized as follows: Premises Rs.3,180; Furniture Rs.1,650 and Stock Rs.6,900. The Debtors realized Rs.2,700. The Creditors were paid Rs.2,800 in full settlement. The realization expenses amounted to Rs.300. Show Realisation Account, Bank Account and Partners Capital Accounts.

(OR)

11. X, Y, Z share Profits and Losses in 4:3:2 ratio and their Balance Sheet as on 31.12.2002 was as follows: 16 Marks L3 CO4

Liabilities	(Rs.)	Assets	(Rs.)
Creditors	90,000	Cash	2,250
Capitals:		Debtors	1,00,000
X	2,00,000	Stock	74,000
Y	1,00,000	Plant &	
Z	5,000	Machinery	1,80,000
P & L A/c	11,250	Goodwill	50,000
	4,06,250		**4,06,250**

Z became insolvent. Cash realized on debtors Rs.70,000; Stock Rs.51,750; Machinery Rs.1,00,000. Rs.1,390 is realized from the estate of Z. Realisation expenses Rs.2,250. Prepare necessary Ledger Accounts as per Garner Vs Murray decision showing final settlement.

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Supplementary Examinations, January – 2024

LEGAL ASPECTS OF BUSINESS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the objectives of the contract? Explain.	2 Marks	L1	CO1
	b)	Which essentials are applicable to an offer	2 Marks	L1	CO1
	c)	Label the capacity of contract.	2 Marks	L1	CO1
	d)	List out the rights of agent.	2 Marks	L1	CO2
	e)	What are duties of the principal? Explain.	2 Marks	L1	CO2
	f)	Define Agreement to sell	2 Marks	L1	CO3
	g)	What is the process for formation of a company? Explain.	2 Marks	L1	CO3
	h)	Name the Limitations of article.	2 Marks	L1	CO3
	i)	Define Redressal machinery	2 Marks	L1	CO4
	j)	Explain the district forum.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Who are competent to enter into a contract? Explain.	8 Marks	L1	CO1
	b)	Explain the Section 4: communication an offer and acceptance.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define breach of contract? Explain the essentials of breach of contract.	8 Marks	L1	CO1
	b)	How do you define contracts by a minor is not acceptable? Explain.	8 Marks	L1	CO1

MODULE-II

4.	a)	Outline the rights and duties of the principal.	8 Marks	L2	CO2
	b)	Summarize the delegation of authority by an agent.	8 Marks	L2	CO2
		(OR)			
5.	a)	Which circumstances are in undisclosed principal? Explain	8 Marks	L1	CO2
	b)	What is the processor for termination of an agency? Explain	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the transfer of property in goods under sale of goods act 1930.	8 Marks	L1	CO3
	b)	Define unpaid seller and explain the characteristics of an unpaid seller.	8 Marks	L1	CO3
		(OR)			
7.	a)	What are the rules applicable to the transfer of property? Explain.	8 Marks	L1	CO3
	b)	Explain the sale and agreement to sell under sale of goods act 1930.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define memorandum? Explain the feature of memorandum.	8 Marks	L1	CO3
	b)	Classify the various contents of memorandum.	8 Marks	L2	CO3
		(OR)			
9.	a)	What are the necessary steps for winding up of a company? Explain	8 Marks	L1	CO3
	b)	Define director? Explain the powers and duties of a director.	8 Marks	L1	CO3

MODULE-V

10.	a)	Outline the consumer protection council under this 1986 act.	8 Marks	L2	CO4
	b)	Who file a consumer complaint in India? Explain.	8 Marks	L1	CO4
		(OR)			
11.	a)	Explain the schemes of information technology.	8 Marks	L2	CO4
	b)	Define cyber crime? Explain the features of cyber crime.	8 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Supplementary Examinations, January – 2024

DATA ANALYSIS USING SPREADSHEET

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What steps have to follow to create a SUM in Excel?	2 Marks	L1	CO1
	b)	Define multi-level Sorts.	2 Marks	L1	CO1
	c)	What is the Procedure for creating an Excel Pivot table?	2 Marks	L1	CO1
	d)	What do you understand about Formatting PivotTable Data?	2 Marks	L1	CO1
	e)	Why are data analysts using conditional functions?	2 Marks	L1	CO2
	f)	How do you create a count if () function in Excel?	2 Marks	L1	CO2
	g)	Explain the usage of the Excel VLOOKUP() Function.	2 Marks	L1	CO3
	h)	Define MATCH() Functions	2 Marks	L1	CO3
	i)	What is meant by Net Present Value?	2 Marks	L1	CO4
	j)	Explain the usage of statistical functions in Excel.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is the purpose of utilising the Sort option in Excel? Write down the steps to utilise custom Sorts and Multi-level Sorts options.	8 Marks	L2	CO1
	b)	Briefly explain data validation. What process to follow to create a data validation list in Ms-excel?	8 Marks	L2	CO1

(OR)

3.	a)	Discuss about data validation. How do you validate your data using a validation list and how do you create custom validation errors in Excel?	8 Marks	L2	CO1
	b)	What are your thoughts on data validation? Choose your own example, and explain how you use validation approaches to generate dynamic formulae.	8 Marks	L2	CO1

MODULE-II

4.	a)	Briefly discuss how you create grouping PivotTable data in Excel.	8 Marks	L2	CO1
	b)	Illustrate with your own example the grouping Pivot table data.	8 Marks	L2	CO1

(OR)

5.		Develop a procedure for your own example of creating a pivot table.	16 Marks	L2	CO1

MODULE-III

6.		Briefly explain conditional functions. What process to follow to create a Excel's IF () Function, Nesting Functions, Excel's COUNTIF () Functions?	16 Marks	L2	CO2

(OR)

7.		How do you feel about Freeze Panes Tool? Choose your own example and explain how you create a Grouping Data (Columns and/or Rows)?	16 Marks	L2	CO2

MODULE-IV

8.	a)	What do you feel about Excel's VLOOKUP() Function? Take your own example for VLOOKUP() in a list and write a step-wise procedure for VLOOKUP().	8 Marks	L2	CO3
	b)	Discuss the significance of Excel's Text Based Functions, Using your own example to illustrate Excel's functions of LEFT(), RIGHT() and MID(), LEN().	8 Marks	L2	CO3

(OR)

9.		Illustrate the INDEX() and MATCH() Functions with your own example.	16 Marks	L2	CO3

MODULE-V

10.		Briefly explain financial functions. What process to follow to create financial functions (PV, NPV, FV)?	16 Marks	L2	CO4

(OR)

11.		Explain various statistical functions of AVG(), MIN(), MAX(), COUNT(), COVAR(), FREQUENCY(), MEDIAN(), STDEV() .	16 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Supplementary Examinations January – 2024

BUSINESS COMMUNICATION

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define communication	2 Marks	L1	CO1
	b)	List out the importance of communications	2 Marks	L1	CO1
	c)	Write a short note on letter writing	2 Marks	L1	CO2
	d)	Explicate the objectives of sales letters	2 Marks	L1	CO2
	e)	Discuss the importance of business report writing	2 Marks	L1	CO3
	f)	Recall different types of reports	2 Marks	L1	CO3
	g)	What is visual aids? Explain.	2 Marks	L1	CO4
	h)	Elaborate the term PPT.	2 Marks	L1	CO4
	i)	Define social networking	2 Marks	L1	CO5
	j)	Write a short note on email.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the components of communications.	8 Marks	L1	CO1
	b)	Explain the importance of communication.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss the types of communication with example.	8 Marks	L1	CO1
	b)	What do you understand by cultural barriers? Explain its importance.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the following terms: i) Agenda ii) Minutes	8Marks	L2	CO2
	b)	What is sales letter? What is the necessity to write an effective sales letter.	8Marks	L1	CO2
		(OR)			
5.	a)	What are the main objects of Inviting quotations? Explain.	8Marks	L2	CO2
	b)	What is the purpose of inviting quotations? Explain.	8 Marks	L2	CO2

MODULE-III

6.	a)	What is business report writing? Discuss various forms of report writing.	8 Marks	L2	CO3
	b)	Outline the process of the report writing.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the basic format of a report.	8 Marks	L2	CO3
	b)	Write a short note on report meeting.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the importance of language in business.	8 Marks	L2	CO4
	b)	Briefly discuss the various visual aids with examples.	8 Marks	L2	CO4
		(OR)			
9.	a)	List out the significance of written communication.	8 Marks	L2	CO4
	b)	What are the benefits of Power point presentations? Explain.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the merits of instant messaging.	8 Marks	L2	CO5
	b)	Outline the importance of e-communication.	8 Marks	L2	CO5
		(OR)			
11.	a)	Define technology and explain the use of technology in business communication.	8 Marks	L2	CO5
	b)	Write a short note on video conferencing.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations April – 2024

CORPORATE ACCOUNTING

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write the formula of net assets method	2 Marks	L1	CO1
	b)	What is yield basis method?	2 Marks	L1	CO1
	c)	List out the methods of prior to incorporation.	2 Marks	L1	CO2
	d)	Write about weighted ratio.	2 Marks	L1	CO2
	e)	What is purchase consideration?	2 Marks	L1	CO3
	f)	What is purchase?	2 Marks	L1	CO3
	g)	What are the accounting entries for reconstructions?	2 Marks	L1	CO4
	h)	Write the proforma of internal reconstruction.	2 Marks	L1	CO4
	i)	What is the role of liquidator in winding up of a company?	2 Marks	L1	CO5
	j)	Name the responsibilities of liquidator	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2. The following the balance sheet of Raju co ltd as on 31st march 2022. 16 Marks L4 CO1

Liabilites	Rs	Assets	Rs
5000 equity shares of Rs.100 each fully paid	5,00,000	Good will	60,000
1000 8% preference shares of Rs.100 Each	1,00,000	Land and buildings	2,00,000
General reserve	40,000	Machinery	1,50,000
Profit and loss account	20,000	Furniture	30,000
Bank loan	40,000	Stock	1,20,000
Sundry creditors	20,000	sundry debtors	90,000
		Cash at bank	60,000
		Priliminary expenses	10,000
	7,20,000		**7,20,000**

The value of assets is assesed as follows. Good will Rs.70,000, Marchinery Rs.1,76,000, Land and buildings Rs.2,25,000, stock Rs.1,30,000.furniture to depreciated at 10% and debtors are expected to realise 80% of book value.find out the value of share under net assets method.

(OR)

3. on 31st march 2020 vijaya ltd balance sheet disclosed as follows on 31st march 2023 — 16 Marks — L4 — CO1

Liabilites	Rs	Assets	Rs
Issued capital at Rs.10 each	4,00,000	Fixed assets	5,00,000
Profit and loss account	20,000	Current assets	2,00,000
reserve	90,000	Good will	40,000
5% debentures	1,00,000		
Current liabilities	1,30,000		
	7,40,000		**7,40,000**

the fixed assets were valued at Rs.3,50,000 and the good will at Rs.50,000. the net profits for the three years were:2020: 51,600,2021:52,000, 2022: 51,650 of which 20% was placed to reserve this proportion being considered reasonable in the industry. the fair investment return may be taken at 10% compute the value under net assets method and yield method

MODULE-II

4. X ltd company incorporated on 1st april 2022 took over running business from1st january 2022. the company prepares its first final accounts on 31st december 2022 from the following information, you are required to calculate the sales ratio of pre incorporation and post incorporation periods. (a) sales for janaury 2022 to december 2022 Rs. 5,00,000(b) the sales for the month of january twice of the average sales for the month of february equal to average sales, sales for four months may to august- 1/4 of the average of each month and sales for october and november three times the average sales. — 16 Marks — L4 — CO2

(OR)

5. Anitha ltd company incorporated on 1st april 2024 took over running business from1st january 2024. the company prepares its first final accounts on 31st december 2024 from the following information, you are required to calculate the sales ratio of pre incorporation and post incorporation periods. (a) sales for janaury 2024 to december 2024 Rs. 1,50,000(b) the sales for the month of january twice of the average sales for the month of february equal to average sales, sales for four months may to august- 1/4 of the average of each month and sales for october and november three times the average sales. — 16 Marks — L4 — CO2

MODULE-III

6. the following is the balance sheet of x ltd as on 31-12-2023. — 16 Marks — L4 — CO3

Liabilites	Rs	Assets	Rs
12000 share @Rs.10	1,20,000	land and buildings	90,000
sundry creditors	30,000	machinery	50,000
bank overdraft	28,000	stock	17,000
		sundry debtors	20,000
		profit and loss ac	1,000
	1,78,000		**1,78,000**

the company went into voluntary liquidation and the assets were sold toY ltd for Rs.1,50,000/- payable as to Rs. 60,000 in cash which suffix

discharge12000 share of Rs.10 each of Y ltd. Rs.750 per share paid up to the shareholders of X co ltd. creditors,and bank overdraft and pay the winding up expenses Rs.2000 and as to Rs.90,000 by the allotment,Draw up journal entries in the books of X ltd and Y Ltd on the basis of nature of purchase.

(OR)

7. the following is the balance sheet of Kavitha ltd as on 31-12-2020. 16 Marks L4 CO3

Liabilites	**Rs**	**Assets**	**Rs**
10000 share @Rs.10	1,00,000	land and buildings	1,90,000
sundry creditors	1,60,000	machinery	50,000
bank overdraft	40,000	stock	27,000
		sundry debtors	32,000
		profit and loss ac	1,000
	3,00,000		**3,00,000**

the company went into voluntary liquidation and the assets were sold toY ltd for Rs.2,00,000/- payable as to Rs. 80,000 in cash which suffix discharge creditorsand bank overdraft and pay the winding up expenses Rs.2000 and as to Rs.1,20,000 by the allotment 10000 share of Rs.10 each of Y ltd. Rs.750 per share paid up to the shareholders of X co ltd. Draw up journal entries in the books of X ltd and Y Ltd on the basis of nature of purchase.

MODULE-IV

8. The paid up capital of Toy ltd amounted to Rs.2,50,000 consisting of 25,000 equity shares of Rs.10 each Due to losses incurred by the company continously the directors of the company prepared a scheme for reconstruction which was duly approved by the court.the terms of reconstruction were as follows;1) in lieu of their present holdings the shareholders are to receive fully paid equity shares equal to 2/5th of their holding.2) 5% preference shares fully paid up to the extent of 20% of the above new equity shares.3) 3000 , 6% second debunters of Rs.10 each4) An issue of 2500,5% first debentrues of Rs.10 each was made and fully subscribed in cash. 5) the assets were reduced to Good will from Rs.1,50,000 to Rs.75,000, machinery from Rs.50,000 to Rs.37,5000 and Leashold premises from Rs.75,000 to Rs.62,500.Show the journal entries to give effect to the above scheme of reconstruction. 16 Marks L4 CO4

(OR)

9. The paid up capital of Paramesh & Co ltd amounted to Rs.2,00,000 consisting of 20,000 equity shares of Rs.10 each Due to losses incurred by the company continously the directors of the company prepared a scheme for reconstruction which was duly approved by the court.the terms of reconstruction were as follows;1) in lieu of their present holdings the shareholders are to receive fully paid equity shares equal to 2/5th of their holding.2) 5% preference shares fully paid up to the extent of 20% of the above new equity shares.3) 1000 , 6% second debunters of Rs.10 each4) An issue of 2500,5% first debentrues of Rs.10 each was made and fully subscribed in cash. 5) the assets were reduced to Good will from Rs.1,00,000 to Rs.75,000, machinery from Rs.60,000 to Rs.37,500 and Leashold premises from Rs.65,000 to Rs.62,500.Show the journal entries to give effect to the above scheme of reconstruction. 16 Marks L4 CO4

MODULE-V

10.	Explain briefly deficiency account and write the list of deficiency account list.	16 Marks	L2	CO5

(OR)

11.	The usha optimist ltd went into voluntary liquidation. Its assets realized Rs.3,50,000 excluding amountrealized by sales of securities held by the secured creditors. The following was the position.	16 Marks	L4	CO5

Particulars	**Rs**
Share capital (1000 shares of Rs.100 each)	1,00,000
Secured creditors (securities realized Rs.40,000)	35,000
Preferential creditors	6,000
Unsecured creditors	1,40,000
Debentures having floating charges on the assets	2,50,000
Liquidation expenses	5,000
Liquidation remuneration	7,500

Prepare the liquidators final statement account in the manner prescribed by law.

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations April – 2024

MANAGEMENT ACCOUNTING

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Give any Two objectives of Management Accounting.	2 Marks	L1	CO1
	b)	What is Financial Accounting?	2 Marks	L1	CO1
	c)	List out the Outsiders funds.	2 Marks	L1	CO2
	d)	Give any two Turnover ratios.	2 Marks	L1	CO2
	e)	Give any two examples of long-term funds.	2 Marks	L1	CO3
	f)	What is fund?	2 Marks	L1	CO3
	g)	List out the Cash inflow from operating activities.	2 Marks	L1	CO4
	h)	Give two advantages of cash flow statement.	2 Marks	L1	CO4
	i)	What is cash budget?	2 Marks	L1	CO5
	j)	What is budgetary control?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	Distinguish between management accounting and financial accounting.	16 Marks	L3	CO1

(OR)

3.	What is management accounting? Explain the characteristics of management accounting.	16 Marks	L2	CO1

MODULE-II

4.	From the following information, you are required to calculate 1. Debt Equity Ratio, 2. Proprietary Ratio, 3. Fixed Assets Ratio, 4. Fixed assets to proprietary funds ratio, 5. Current assets to proprietary funds ratio. 1. Equity and Liabilities: Shareholders' funds: Equity share capital-3,00,000 9% preference share capital-Rs.1,00,000 Reserves and surpluses- Rs 50,000 Non-current liabilities: 10% debentures- Rs 2,00,000 Long term loan- Rs 25,000 Current liabilities- Rs 2,25,000 Total- Rs 9,00,000 2.Assets: Non-current assets: Fixed assets- Rs 6,00,000 Investments- Rs 50,000 Current assets- Rs 2,50,000 Total- Rs 9,00,000	16 Marks	L4	CO2

(OR)

5. Discuss about various types of financial ratios. 16 Marks L2 CO2

MODULE-III

6. From the following particulars, prepare funds flow statement: 16 Marks L4 CO3

particulars	Jan.1 (Rs.)	Dec.31 (Rs.)
Cash	2,000	1,800
Debtors	17,500	19,200
Stock	12,500	11,000
Land	10,000	15,000
Buildings	25,000	27,000
Machinery	40,000	43,000
	1,07,000	**1,17,500**
Creditors	18,000	20,500
Bank loan (long term)	15,000	22,500
Capital	74,000	74,500
	1,07,000	**1,17,500**

(OR)

7. B.M traders presents the following information and you are required to calculate funds from operations: 16 Marks L4 CO3

Profit and loss account

Particulars	Rs	Particulars	Rs.
To expenses:		By gross profit	2,00,00
Operations	1,00,00	By gain on sale of	0
Depreciation	0	plant	20,00
To loss on sale of building	40,00		0
To advertisement suspense	0		
a/c	10,00		
To discount to customers)	0		
To discount on issue of	5,000		
shares written off	500		
To goodwill			
To net profit	500		
	12,00		
	0		**2,20,00**
	52,00		**0**
	0		
	2,20,00		
	0		

MODULE-IV

8. X ltd., made a profit of rs.18,00,000 for the year ended 31st march 2021 after considering the following: 16 Marks L4 CO4

Particulars	Rs.
Depreciation on building	52,000
Depreciation on plant and machinery	35,000
Transfer to general reserve	10,000
Goodwill written off	8,000
Plan and machinery having book value of rs.14,000 was sold for	10,000
Profit on sale of investments	7,000

(OR)

9. Discuss about the classification of cash flows. 16 Marks L2 CO4

MODULE-V

10.	What is Budget? Explain the essentials of Budgetary Control.	16 Marks	L2	CO5

(OR)

11.	The expenses for the production of 5,000 units in a factory:	16 Marks	L4	CO5

Particulars	Rs. Per unit
Materials	50
Labour	20
Variable overheads	15
Fixed overheads (Rs. 50,000)	10
Administrative expenses (5% variable)	10
Selling expenses (20% fixed)	6
Distribution expenses (10% fixed)	5
Total cost of sales per unit	116

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations April – 2024

MANAGEMENT ACCOUNTING

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Management Accounting. Management Accounting is the presentation of accounting information in such a way as to assist management in the creation of policy and the day-to-day operation of an undertaking	2 Marks	L1	CO1
	b)	State any two techniques of Management Accounting. i) Financial policy and accounting ii) Analysis of financial statements	2 Marks	L1	CO1
	c)	Give formula of the Net Profit ratio. = Net Profit/sales X100	2 Marks	L1	CO2
	d)	What is expense ratio? The expense ratio measures how much of a fund's assets are used for administrative and other operating expenses. For investors, the expense ratio is deducted from the fund's gross return and paid to the fund manager	2 Marks	L1	CO2
	e)	Define a fund flow statement. A fund flow refers to the inflow and outflow of funds or assets for a company and is often measured monthly or quarterly. A fund flow statement reveals the reasons for these changes or anomalies in a company's financial position between two balance sheets.	2 Marks	L1	CO3
	f)	List out the current assets. i) Cash ii) Bank balance iii) Inventory iv) Debtors	2 Marks	L1	CO3
	g)	Give two examples of cash equivalents. Bank balance Bonds and commercial papers	2 Marks	L1	CO4
	h)	Define cash flow statement. The cash flow statement (CFS), is a financial statement that summarizes the movement of cash and cash equivalents (CCE) that come in and go out of a company	2 Marks	L1	CO4
	i)	Define Budget. A budget is a spending plan based on income and expenses. In other words, it's an estimate of how much money you'll make and spend over a certain period, such as a month or year.	2 Marks	L1	CO5
	j)	What is flexible budget?	2 Marks	L1	CO5

A flexible budget is a budget that adjusts for changes in the level of activity or output. Unlike a static budget, which is based on a fixed level of activity or output, a flexible budget is designed to be adaptable to changes in sales volume, production volume, or other measures of business activity.

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	What is Management Accounting? State the objectives of Management Accounting.	16 Marks	L3	CO1

Sol:
Planning and formulation
Helpful in controlling performance
Helpful in organizing
Helpful in interpreting financial statements
Motivating employees
Helpful in making decisions
Reporting to management
Helpful in coordination

(OR)

3.	Discuss the Advantages and Limitations of Management Accounting.	16 Marks	L2	CO1

Sol:
Advantages:
Increase efficiency
Proper planning
Measurement of performance
Maximizing profitability
Improve service to customers
Effective management control
Limitations:

i) Based on accounting information
ii) Lack of knowledge
iii) Not an alternative to administration
iv) Personal bias

MODULE-II

4.	What is Ratio Analysis? Explain the different types of Ratio analysis.	16 Marks	L2	CO2

Sol:

i) Liquidity ratios
ii) Solvency ratios
iii) Activity ratios
iv) Profitability ratios

(OR)

5.	From the following, you are required to calculate the	16 Marks	L4	CO2

Sol:
Gross Profit Ratio = 20%
Operating Ratio = 90%
Operating Profit Ratio = 10%

MODULE-III

6. Draw a neat proforma of Statement of Changes in Working capital. 16 Marks L2 CO3

Sol:

Particulars	Previous	current	Effects of changes in working capital	
			Increase	Decrease
Current assets: (A) Current Liabilities (B) Working capital (A-B)				

(OR)

7. From the following balance sheet of Mr. A, prepare a schedule of changes in working capital and a funds flow statement: 16 Marks L4 CO3

Sol:

Working capital = Rs. 18,000 and Rs. 50,000

Net increase in working capital = Rs. 32,000

Funds from operations = Rs. 37,000

MODULE-IV

8. Calculate cash flow from operating activities from the following balance sheet and additional information of Kitty Ltd. 16 Marks L4 CO4

Sol:

Net profit before tax and extraordinary items = Rs. 1,10,000

Operating profit before working capital changes = Rs. 1,32,000

Cash flow from operating activities = Rs. 77,000

(OR)

9. Give a neat proforma of the Cash flow statement. 16 Marks L2 CO4

Sol:

Particulars	Rs.	Rs.
Cash flows from operating activities + cash flow from investing activities +cash flow from financing activities Net increase in cash & cash equivalents. cash & cash equivalents at the beginning cash & cash equivalents at the end		

MODULE-V

10. Define Budget. Explain the types of budgets. 16 Marks L2 CO5

Sol:

i) Classification according to time
ii) Classification based on functions
iii) Classification based on flexibility

(OR)

11. The expenses for the production of 5,000 units in a factory 16 Marks L4 CO5

Sol:

Prime cost:

5000 units = 3,50,000

7000 units = 4,90,000

Works cost:

5000 units = 4,75,000

7000 units = 6,45,000

Total cost:

5000 units = 5,80,000

7000 units = 7,69,600

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations April – 2024

MANAGEMENT OF FINANCIAL SERVICES

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Describe the functions of financial system.	2 Marks	L1	CO1
	b)	Discuss about SLR.	2 Marks	L1	CO1
	c)	What is Mutual Fund? Give an example.	2 Marks	L1	CO2
	d)	List out the types of mutual funds.	2 Marks	L2	CO2
	e)	What is Book Building?	2 Marks	L1	CO3
	f)	Define insider Trading.	2 Marks	L1	CO3
	g)	Define Venture Capital.	2 Marks	L2	CO4
	h)	Discuss about Housing Finance.	2 Marks	L2	CO4
	i)	What are all fee based Financial services?	2 Marks	L1	CO5
	j)	Discuss about Merchant Banking.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the elements of Indian financial system.	8 Marks	L1	CO1
	b)	Explain the significance of Indian Financial system.	8 Marks	L1	CO1
		(OR)			
3.		What is Monetary policy? Explain the significance of monetary policy.	16 Marks	L1	CO1

MODULE-II

4.	a)	What is Bank Capital? Explain the recommendations of Bassel committee on Bank Capital.	8 Marks	L1	CO2
	b)	Discuss about "Bank Innovation"	8 Marks	L1	CO2
		(OR)			
5.	a)	Describe the functions of Non-banking Financial institutions.	8 Marks	L1	CO2
	b)	Explain the role of AMFI.	8 Marks	L1	CO2

MODULE-III

6.	a)	What is money market? Explain the Functions of money market.	8 Marks	L1	CO3
	b)	Write short notes on the following i) Price –rigging ii) Lock-in -Period	8 Marks	L1	CO3
		(OR)			
7.	a)	Write short notes on commercial paper	8 Marks	L1	CO3
	b)	Elucidate the role and functions of SEBI.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Distinguish between Operating Lease and Financial Lease.	8 Marks	L1	CO4
	b)	Discuss the advantages and dis advantages of venture capital.	8 Marks	L1	CO4
		(OR)			
9.	a)	How new ideas can be financed by venture capitalist? - Discuss.	8 Marks	L1	CO4
	b)	What is Housing Finance? Explain the significance Housing Finance.	8 Marks	L1	CO4

MODULE-V

10.	a)	The scope of merchant banking is great in India. Discuss	8 Marks	L1	CO5
	b)	Discuss about underwriting services in India.	8 Marks	L1	CO5
		(OR)			
11.	a)	Discuss about depositary system in India.	8 Marks	L1	CO5
	b)	What are the challenges faced by Investment bankers?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations April – 2024

COMPUTERISED ACCOUNTING WITH TALLY

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define computerized Accounting	2 Marks	L1	CO1
	b)	What are the Accounting software's are available in the market?	2 Marks	L1	CO1
	c)	Define TALLY ERP 9.0.	2 Marks	L1	CO2
	d)	Discuss to the versions of Tally.	2 Marks	L1	CO2
	e)	What is Tally inventory?	2 Marks	L1	CO3
	f)	What is the procedure of Configuration?	2 Marks	L1	CO3
	g)	How to enable to the TDS in Tally.	2 Marks	L1	CO4
	h)	TDS features in Tally.ERP 9.	2 Marks	L1	CO4
	i)	What is Payroll?	2 Marks	L1	CO5
	j)	Features of payroll in Tally.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	What is computerized Accounting? Discuss its features.	16 Marks	L2	CO1
	(OR)			
3.	Briefly Explain to the in the followings Accounting software's. a) quick books b) marg books c) busy accounting software d) zoho books.	16 Marks	L2	CO1

MODULE-II

4.	Explain different types of vouchers in Tally.	16 Marks	L2	CO2
	(OR)			
5.	Discuss about Create, Display, Alter and Delete Ledgers in Tally.	16 Marks	L2	CO2

MODULE-III

6.	Write a detailed note on Inventory in Tally ERP 9.	16 Marks	L2	CO3
	(OR)			
7.	Write a detailed note on configuration of printing options in Tally.	16 Marks	L2	CO3

MODULE-IV

8.	Discuss about the TDS features in Tally.	16 Marks	L2	CO4
	(OR)			
9.	How to enable services tax in Tally. Discuss to the Company services tax details.	16 Marks	L2	CO4

MODULE-V

10	What is payroll? Explain the feature of payroll in Tally.	16 Marks	L2	CO5
	(OR)			
11.	Discuss to the in the following payroll details in Tally. i) Create payroll vouchers ii) Create a Attendance vouchers ii) Create a salaries payments vouchers.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations, April – 2024

RELATIONAL DATABASE MANAGEMENT SYSTEMS

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define DBMS. What is the Purpose of DBMS?	2 Marks	L1	CO1
	b)	State the use of Projection operator of Relational Algebra with example.	2 Marks	L1	CO1
	c)	Write down the syntax for create command with example	2 Marks	L1	CO2
	d)	Define primary key and foreign key with examples	2 Marks	L1	CO2
	e)	What is SQL?	2 Marks	L1	CO3
	f)	What is the importance of null values?	2 Marks	L1	CO3
	g)	Define Access control.	2 Marks	L1	CO4
	h)	What is an importance of database monitoring?	2 Marks	L1	CO4
	i)	Define trigger with examples.	2 Marks	L1	CO5
	j)	List out the states of Transaction.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the different kinds of users of DBMS.	8 Marks	L6	CO1
	b)	Discuss the various advantages and disadvantages of DBMS.	8 Marks	L6	CO1
		(OR)			
3.	a)	Explain the architecture of DBMS.	8 Marks	L5	CO1
	b)	Explain E-R model by giving a suitable diagram.	8 Marks	L5	CO1

MODULE-II

4.	a)	Discuss about Tuple relational calculus.	8 Marks	L6	CO2
	b)	Discuss the following relational algebra operations. Illustrate with an example for each: JOIN, DIFFERENCE, SELECT and UNION.	8 Marks	L6	CO2
		(OR)			
5.	a)	Explain the importance of Null values in Relational Model.	8 Marks	L2	CO2
	b)	Define the following terms: i) Super key ii) Candidate key iii) Primary key iv) Foreign key and give examples	8 Marks	L2	CO2

MODULE-III

6.	a)	Write SQL query for following : consider table stud (rollno, name, sub1, sub2, sub3) Display name of student who got minimum marks in sub1. Display name of student who obtained highest marks in sub3. Display number of students failed in sub2. Find total marks of sub1 of all students.	8 Marks	L5	CO3
	b)	Explain while …Loop statement in PL/SQL with an example.	8 Marks	L2	CO3
		(OR)			
7.	a)	Write a PL/SQL code to print largest number from three numbers (accept three numbers from user).	8 Marks	L6	CO3
	b)	By considering an example describe various data update operations in SQL.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain GRANT and REVOKE commands with examples.	8 Marks	L2	CO4
	b)	Discuss how do you recover from Concurrent transactions.	8 Marks	L6	CO4
		(OR)			
9.	a)	Discuss about the recover and Atomicity of database.	8 Marks	L6	CO4
	b)	Explain failure classification.	8 Marks	L2	CO4

MODULE-V

10.	a)	Illustrate Concurrent execution of transaction with examples.	8 Marks	L2	CO5
	b)	Define a Transaction. Discuss the properties of transaction.	8 Marks	L6	CO5
		(OR)			
11.	a)	Explain about locking protocols.	8 Marks	L2	CO5
	b)	Discuss about serializability.	8 Marks	L6	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations April – 2024

PYTHON PROGRAMMING

[Computer Applications]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write a short note on arithmetic and logical operators.	2 Marks	L1	CO1
	b)	Define the types of literals in Python.	2 Marks	L1	CO1
	c)	What is the syntax and functionality of a "while" loop?	2 Marks	L2	CO2
	d)	Define the "break" statement within loops.	2 Marks	L1	CO2
	e)	What is a tuple? Give an example.	2 Marks	L2	CO3
	f)	What is a string? Write a representation of strings in Python.	2 Marks	L1	CO3
	g)	List the types of arguments.	2 Marks	L1	CO4
	h)	What are lambda functions in Python?	2 Marks	L1	CO4
	i)	What is an object in Python? Give an example in Python.	2 Marks	L2	CO5
	j)	What is inheritance in Python?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.		What is Python? Explain the features and applications of Python in detail.	16 Marks	L3	CO1

(OR)

3.	a)	Explain the list and tuple with an example in Python.	8 Marks	L2	CO1
	b)	Discuss in detail the various types of operators in Python.	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss in detail the “if” and “if-elif-else” statements. Its role is to use a sample code in Python.	8 Marks	L3	CO2
	b)	Explain the "pass" and "break" statements in Python programming.	8 Marks	L2	CO2

(OR)

5.	a)	What is a loop statement? Discuss the "while" loop's essential parts using a piece of code in Python.	8 Marks	L3	CO2
	b)	Discuss briefly the membership operators and range functions using a sample Python program.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write a short note on Python strings?	8 Marks	L2	CO3
	b)	Describe in detail various methods of creating lists using Python code.	8 Marks	L2	CO3

(OR)

7.	a)	Explain the significance of using strings with an example program.	8 Marks	L3	CO3
	b)	Discuss creating tuples and various methods for tuples in Python.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Illustrate the positional line arguments.	8 Marks	L3	CO4
	b)	What are the types of variables? Explain the scope of variables in detail.	8 Marks	L4	CO4

(OR)

9.	a)	List some useful math methods/functions.	8 Marks	L2	CO4
	b)	Define variable-length arguments. Explain with an example.	8 Marks	L3	CO4

MODULE-V

10.	a)	What is polymorphism? How will you perform method overloading?	8 Marks	L2	CO5
	b)	Illustrate method overriding in Python with a suitable example.	8 Marks	L2	CO5

(OR)

11.	a)	Define abstract classes. Explain their role in Python with a suitable example.	8 Marks	L2	CO5
	b)	Describe the interfaces. How do interfaces differ from abstract classes in Python?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SoP-BPH-23) Regular Examinations, March – 2024

PHARMACEUTICAL ANALYSIS

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Polarography.	2 Marks	L1	CO3
	b)	Define Gravimetry.	2 Marks	L1	CO3
	c)	Define electrochemical methods of analysis.	2 Marks	L1	CO3
	d)	What is Precision?	2 Marks	L1	CO1
	e)	What is Pharmacopoeia?	2 Marks	L1	CO1
	f)	What are neutralization curves?	2 Marks	L1	CO2
	g)	What are solvents? Give different types of solvents.	2 Marks	L1	CO2
	h)	Define Acidimetric titration.	2 Marks	L1	CO2
	i)	What are masking and demasking reagents?	2 Marks	L1	CO2
	j)	What are metal ion indicators?	2 Marks	L1	CO2

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.		Explain in detail about Condutometric titrations and its applications.	10 Marks	L1	CO3
3.	a)	Define analysis and Explain different techniques in analysis.	5 Marks	L1	CO1
	b)	What are Primary and Secondary standard solutions?	5 Marks	L1	CO1
4.		Define and explain in detail about Complexometric titration.	10 Marks	L1	CO1

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain in about Coductometric titrations.	5 Marks	L1	CO3
6.	Write a note on Potentiometric titrations.	5 Marks	L1	CO3
7.	Explain different techniques in Pharmaceutical Analysis.	5 Marks	L1	CO1
8.	Explain different concentration expression method.	5 Marks	L1	CO1
9.	Define and classify acid base titrations.	5 Marks	L2	CO2
10	Write a note on Acidimetric titrations.	5 Marks	L6	CO2
11.	Explain in detail about Diazotization titration reaction?	5 Marks	L1	CO3
12.	Explain about estimation of sodium chloride by Precipitation titration?	5 Marks	L1	CO2
13.	Explain in detail about Potentiometric titrations and its applications.	5 Marks	L1	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SoP-BPH-23) Regular Examinations, March – 2024

PHARMACEUTICAL INORGANIC CHEMISTRY

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe radioactivity. Give the unit of radioactivity.	2 Marks	L1	CO4
	b)	Write different types of impurities in pharmaceuticals.	2 Marks	L6	CO1
	c)	Define cathartics.	2 Marks	L1	CO3
	d)	Define pharmacopoeia. Enlist the different pharmacopoeia.	2 Marks	L1	CO1
	e)	Write the ideal properties of buffer solutions.	2 Marks	L6	CO2
	f)	Define expectorants with examples.	2 Marks	L1	CO3
	g)	Write the limitations of Arrhenius theory.	2 Marks	L6	CO2
	h)	Define limit test and monograph.	2 Marks	L1	CO1
	i)	Define desensitizing agents. Give examples.	2 Marks	L1	CO3
	j)	Write the composition of ORS.	2 Marks	L6	CO2

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Write a note on major intra and extra cellular ions. Write their functions.	10 Marks	L1	CO1
3.	Define the term impurity. Discuss various sources of impurities in pharmaceutical substances.	10 Marks	L1	CO1
4.	Write brief note on Hydrogen peroxide and Chlorinated lime.	10 Marks	L6	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain various methods for adjusting isotonicity.	5 Marks	L1	CO2
6.	Write in detail about the pharmaceutical applications of radioisotopes.	5 Marks	L6	CO4
7.	Explain the method of preparation and assay of ammonium chloride	5 Marks	L1	CO3
8.	Classify buffer? Derive Henderson –Hasselbalch equation for buffers.	5 Marks	L2	CO2
9.	Write the principle and reactions involved in assay of sodium chloride.	5 Marks	L6	CO2
10	Write a short note on handling and storage of radioactive materials	5 Marks	L6	CO4
11.	Write the principle, reactions and procedure involved in limit test for iron.	5 Marks	L6	CO1
12.	Define the antimicrobial agents. Write the principle involved in the preparation and assay of hydrogen peroxide.	5 Marks	L1	CO3
13.	Explain the principle and medicinal uses of chlorinated lime.	5 Marks	L1	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SoP-BPH-23) Regular Examinations, March – 2024

HUMAN ANATOMY AND PHYSIOLOGY-I

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe the locations of intracellular fluid, extracellular fluid, interstitial fluid, and blood plasma.	2 Marks	L1	CO1
	b)	Define the receptor, control center, and effector in the feed-back system.	2 Marks	L1	CO1
	c)	Sketch a neatly labeled diagram of eye.	2 Marks	L3	CO2
	d)	How many vertebrae fuse to form the sacrum and coccyx?	2 Marks	L2	CO2
	e)	In what ways is blood plasma similar to interstitial fluid? How does it differ?	2 Marks	L2	CO3
	f)	Describe the size, microscopic appearance, and functions of RBCs.	2 Marks	L1	CO3
	g)	Draw a neat labeled diagram of Neuron.	2 Marks	L3	CO4
	h)	Define parasympathetic nervous system.	2 Marks	L1	CO4
	i)	Describe the structure of the pericardium and the layers of the wall of the heart.	2 Marks	L1	CO5
	j)	Which blood vessels deliver blood to the right and left atria.	2 Marks	L5	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.		Elaborate the anatomy and physiology of connective tissue and muscular tissue.	10 Marks	L1	CO1
3.		Describe the anatomy and physiology of the appendicle skeletal system.	10 Marks	L1	CO2
4.	a)	Write a detailed note on Blood grouping.	6 Marks	L1	CO3
	b)	Write a brief note on Blood transfusion.	4 Marks	L1	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write a note on extracellular fluid.	5 Marks	L6	CO3
6.	Explain anatomy and physiology of ear.	5 Marks	L1	CO4
7.	Describe the function of Cranial nerves.	5 Marks	L1	CO4
8.	Classify of bones with examples and write a note on bone cells	5 Marks	L2	CO2
9.	Describe the anatomy and physiology of the Skin.	5 Marks	L1	CO2
10	Write a note on reticular endothelial system.	5 Marks	L6	CO3
11.	Describe the components of systemic blood circulations	5 Marks	L1	CO5
12.	Explain the conductive zones of the heart.	5 Marks	L1	CO5
13.	Write the structure, location, and functions of cell junctions.	5 Marks	L2	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SoP-BPH-23) Regular Examinations, March – 2024

PHARMACEUTICS

Time: 3 hours **Max. Marks: 75**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define dosage form. Enlist out different types of liquid dosage forms.	2 Marks	L1	CO1
	b)	Define Syrups and Elixirs.	2 Marks	L1	CO1
	c)	Define prescription. Explain the steps involved in handling of prescription.	2 Marks	L1	CO1
	d)	Define syrups and classify them.	2 Marks	L1	CO3
	e)	Define powders. List out different powders used for internal applications.	2 Marks	L1	CO2
	f)	Describe hygroscopic and deliquescent powders.	2 Marks	L1	CO2
	g)	Describe flocculated and deflocculated suspensions.	2 Marks	L1	CO3
	h)	Describe methods of preparation of emulsions.	2 Marks	L1	CO3
	i)	Define suppositories. List out the evaluation of suppositories.	2 Marks	L1	CO4
	j)	Define pastes and ointments.	2 Marks	L1	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Define posology.	3 Marks	L1	CO1
	b)	Explain in detail about factors affecting the dose of the drug (posology).	7 Marks	L1	CO1
3.	a)	Explain various identification tests for emulsions.	5 Marks	L1	CO3
	b)	Summarize the stability of emulsions.	5 Marks	L2	CO3
4.	a)	Explain in detail about different methods of preparation of suppositories.	5 Marks	L1	CO4
	b)	Explain about evaluation tests for suppositories.	5 Marks	L1	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.		Explain about Indian Pharmacopoeia.	5 Marks	L1	CO1
6.	a)	Define powder dosage form.	1 Marks	L1	CO2
	b)	Classify powder dosage forms.	4 Marks	L2	CO2
7.		Explain in detail handling of prescription.	5 Marks	L1	CO1
8.		Explain any four factors affecting the dose of the drug (posology).	5 Marks	L1	CO1
9.	a)	Define suppository.	1 Marks	L1	CO4
	b)	Describe methods for preparation of suppositories.	4 Marks	L1	CO4

10	a)	Define and classify powders.	2 Marks	L1	CO2
	b)	Add a note on dusting powders.	3 Marks	L1	CO2
11.		Explain about gargles and mouthwashes.	5 Marks	L1	CO3
12.		Explain the difference between pastes and ointments	5 Marks	L1	CO5
13.	a)	Classify the types of incompatibility.	1 Marks	L2	CO4
	b)	Explain a note on different types of physical incompatibilities.	4 Marks	L1	CO4

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SoP-BPH-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SoP-BPH-23) Regular Examinations, March – 2024

COMMUNICATION SKILLS

Time: 2 hours **Max. Marks: 35**

PART - A

Answer any ONE Question

1 x 10 = 10 Marks

1.	Illustrate the classification of barriers in communication.	10 Marks	L2	CO1
2	Analyze the significance of Body Language (Non-verbal communication).	10 Marks	L4	CO2

PART - B

Answer any FIVE Question.

5 x 5 = 25 Marks

3.	Illustrate the importance of Interview Skills.	5 Marks	L2	CO4
4.	Illustrate the Do's of an interview.	5 Marks	L2	CO4
5.	Discuss the steps to be followed while giving Presentations.	5 Marks	L2	CO4
6.	Write about the techniques of delivery during Presentations.	5 Marks	L1	CO4
7.	Illustrate the role of Communication skills in group discussion.	5 Marks	L2	CO5
8.	Identify the Do's of group discussion.	5 Marks	L3	CO5
9.	Analyze the Don'ts of group discussion.	5 Marks	L4	CO5

CODE No.: 23PY101003

SoP-BPH-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SoP-BPH-23) Regular Examinations, March – 2024

REMEDIAL MATHEMATICS

Time: 2 hours **Max. Marks: 35**

PART - A

Answer any ONE Question

1 x 10 = 10 Marks

1.	a)	Simplify the expression $\frac{\log_2(64)}{\log_2(4)}$ Provide a step-by-step solution	5 Marks	L2	CO1
	b)	Simplify the expression $\log_2(8) + \frac{1}{2}\log_2(32) - \frac{3}{2}\log_2(2)$.	5 Marks	L2	CO1
2	a)	Differentiate the function u(x)=sin(2x).cos(3x) using the chain rule. Simplify the result.	5 Marks	L2	CO3
	b)	Determine the derivative of $y = e^{3x}.\sin(2x)$. Simplify the expression.	5 Marks	L2	CO3

PART - B

Answer any FIVE Question.

5 x 5 = 25 Marks

3.	For the function $f(x) = \frac{3x^2 - 2x + 1}{x + 1}$ find the domain, range.	5 Marks	L2	CO1
4.	Given matrices, $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ *and* $B = \begin{bmatrix} -1 & 0 \\ 2 & 5 \end{bmatrix}$ compute 2A−B.	5 Marks	L2	CO2
5.	Find the derivative of the parametric equations $x=3t^2$ and $y=2t+1$ with respect to t.	5 Marks	L2	CO3
6.	Given two points A(3,4) and B(−1,2), find the distance between them. Also, determine the midpoint of the line segment joining these points.	5 Marks	L2	CO4
7.	Solve the system of differential equations dx/dt=2x+3y and dy/dt=−4x−5y with initial conditions x(0)=1and y(0)=−2.	5 Marks	L2	CO5
8.	Express the rational function $f(x) = \frac{x^3 - 3x^2 + 2x + 1}{x^2 - 4}$ in partial fraction form. Solve for the constants.	5 Marks	L2	CO1
9.	Calculate the determinant of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$	5 Marks	L2	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

GENERAL CHEMISTRY

[Microbiology, Biotechnology & Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Lattice energy.	2 Marks	L1	CO1
	b)	Define n-type semi-conductors with two examples.	2 Marks	L1	CO1
	c)	What are composites?	2 Marks	L1	CO2
	d)	Define ceramics.	2 Marks	L1	CO2
	e)	What is Rf value?	2 Marks	L1	CO3
	f)	How to detect spots in chromatography?	2 Marks	L1	CO3
	g)	What is hybridization?	2 Marks	L1	CO4
	h)	Draw a molecular overlapping diagram of N_2 molecule.	2 Marks	L1	CO4
	i)	Define gold number.	2 Marks	L1	CO5
	j)	What is Hardy-Schulze law?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the factors influencing the formation of bonds in metals.	8 Marks	L3	CO1
	b)	Differentiate p- and n- type semi-conductors.	8 Marks	L2	CO1
		(OR)			
3.	a)	Differentiate between metals, semi-conductors and insulators.	8 Marks	L2	CO1
	b)	Explain physical properties of metals in detail.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe different types of ceramics and its applications.	8 Marks	L2	CO2
	b)	Describe intrinsic and extrinsic conducting polymers with examples.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe different types of composites.	8 Marks	L2	CO2
	b)	List out applications of composites.	8 Marks	L1	CO2

MODULE-III

6.	a)	Define and discuss the factors effecting Rf value.	8 Marks	L1	CO3
	b)	Describe the steps involved in thin layer chromatographic technique in detail.	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe the types in development of chromatogram in paper chromatography.	8 Marks	L2	CO3
	b)	Describe the different paper choices and solvent choices in paper chromatography with examples.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss Molecular orbital theory in detail with example.	8 Marks	L3	CO4
	b)	Explain LCAO.	8 Marks	L3	CO4
		(OR)			
9.	a)	Discuss difference between VB and MO theories.	8 Marks	L2	CO4
	b)	Explain valance bond theory in detail.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe gel preparation and uses with examples.	8 Marks	L1	CO5
	b)	Describe the mechanism of protective colloids.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss applications of adsorption.	8 Marks	L2	CO5
	b)	Explain freundlisch isotherms.	8 Marks	L3	CO5

CODE No.: 22BS101022 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

FOOD AND NUTRITION

[Microbiology, Biotechnology & Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define and describe food, nutrition, health and fitness.	2 Marks	L1	CO1
	b)	Define Basic Food Groups for Planning Balanced Diets.	2 Marks	L1	CO1
	c)	List the Guidelines for using the basic food groups.	2 Marks	L1	CO2
	d)	Explain about the FOOD AND ITS FUNCTIONS.	2 Marks	L1	CO2
	e)	Define NUTRITIONAL IMPORTANCE OF CARBOHYDATES	2 Marks	L1	CO3
	f)	List the Simple carbohydrates, Complex carbohydrates.	2 Marks	L1	CO3
	g)	Define about Fatty acids.	2 Marks	L1	CO4
	h)	List the Types of Amino Acid.	2 Marks	L1	CO4
	i)	Define Non-Metallic Minerals	2 Marks	L1	CO5
	j)	Explain about vitamins and their functions.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain about Physiological functions of food.	4 Marks	L2	CO1
	b)	Elaborate the various factors that affect human health.	12 Marks	L6	CO1
		(OR)			
3.	a)	Explain the Factors affecting health.	8 Marks	L2	CO1
	b)	Discuss about Nutritive components of diet.	8 Marks	L6	CO1

MODULE-II

4.	a)	Explain about ENERGY VALUE OF FOODS.	8 Marks	L2	CO2
	b)	Explain the Factors affecting Basal Metabolic Rate (BMR).	8 Marks	L2	CO2
		(OR)			
5.	a)	Illustrate the Factors that Influence Energy Consumption.	8 Marks	L2	CO2
	b)	Explain about macronutrients alter the thermic effect of food.	8 Marks	L2	CO2

MODULE-III

6.	a)	Classify about fibers.	12 Marks	L2	CO3
	b)	Discuss the Advantages of Natural Fibers over Synthetic Fibers.	4 Marks	L6	CO3
		(OR)			
7.	a)	Explain the Benefits of a high-fiber diet.	12 Marks	L2	CO3
	b)	Discuss about Fiber supplements and fortified foods.	4 Marks	L6	CO3

MODULE-IV

8.	a)	Explain about influence a food's glycemic index.	12 Marks	L2	CO4
	b)	Discuss about different kinds of fat.	4 Marks	L6	CO4

(OR)

9.	a)	Explain about Importance of the Calorific Value of Food.	4 Marks	L2	CO4
	b)	Discuss Benefits of Essential Fatty Acids.	12 Marks	L6	CO4

MODULE-V

10.	a)	Discuss about Vitamin A, Vitamin B.	8 Marks	L6	CO5
	b)	Explain about Vitamin C deficiency and scurvy.	8 Marks	L2	CO5

(OR)

11.	a)	Elaborate the Measurements for vitamins and minerals.	8 Marks	L6	CO5
	b)	Discuss about Water-Soluble Vitamins.	8 Marks	L6	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2024

BASIC STATISTICS

[Forensic Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define probability.	2 Marks	L1	CO1
	b)	Write the axioms of probability.	2 Marks	L1	CO1
	c)	Write any two limitations of statistics	2 Marks	L1	CO2
	d)	Write the types of statistical investigation.	2 Marks	L1	CO2
	e)	Define mean.	2 Marks	L1	CO3
	f)	Write the merits of mode.	2 Marks	L1	CO3
	g)	Define measures of dispersion.	2 Marks	L1	CO4
	h)	The marks scored by the students of class 10 are 45, 39, 55, 63, 49, 92, and 79. Find the range of the given dataset.	2 Marks	L1	CO4
	i)	Write the types of correlation.	2 Marks	L1	CO5
	j)	Define Rank correlation.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Three dice are thrown simultaneously. What is the probability of obtaining a total of 17 or 18?	8 Marks	L1	CO1
	b)	Determine the probability of getting a prime number when a die is rolled once?	8 Marks	L3	CO1

(OR)

3.	a)	If A and B are two events such that P(A)=1/3, P(B)=3/4 and P(AUB)=11/12, find P(A/B) and P(B/A).	8 Marks	L1	CO1
	b)	What is the probability of drawing either a king or a queen in a single draw from a well shuffled pack of 52 cards?	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain the scope of statistics?	8 Marks	L1	CO2
	b)	In a sample study about coffee habit in two towns, the following information was received : Town A: Females were 40%; Total coffee drinkers were 45% and Males non-coffee drinkers were 20% Town B: Males were 55%; Males non-coffee drinkers were 30% and Females coffee drinkers were 15%. Present the above data in a tabular form.	8 Marks	L3	CO2

(OR)

5. a) Distinguish between primary and secondary data — 8 Marks — L2 — CO2

b) The production cost of the company in Lakhs of Rupees is given below — 8 Marks — L3 — CO2

Year	2010	2011	2012	2013	2014	2015
Production Cost	55	40	30	25	35	70

i) Construct a simple bar diagram
ii) What is the average production cost of the company?
iii) Find in which year the production cost of the company is minimum
iv) What is the percntage increase from 2014 to 2015?

MODULE-III

6. a) Compute the average wage rate of factory workers using data given in table — 8 Marks — L1 — CO3

Wage Rate	50-70	70-90	90-110	110-130	130-150
No. of Workers	10	20	25	35	9

b) Calculate the median for the following distribution — 8 Marks — L3 — CO3

Class	20-40	40-60	60-80	80-100	100-120
Frequency	4	6	10	12	8

(OR)

7. a) Calculate the mode for the following distribution — 8 Marks — L3 — CO3

Class	10-20	20-30	30-40	40-50	50-60
Frequency	6	20	44	26	3

b) Find the Geometric mean for the following x: 3,6,24,48 — 8 Marks — L1 — CO3

MODULE-IV

8. a) First four moments about mean of a distribution are 0, 2.5, 0.7 and 18.75. Find coefficient of skewness and kurtosis. — 8 Marks — L1 — CO4

b) Find the mean deviation for the given data: 1,2,3,4,5,6,7. — 8 Marks — L1 — CO4

(OR)

9. a) Calculate Quartile deviation for a frequency distribution — 8 Marks — L3 — CO4

Class	0-10	10-20	20-30	30-40	40-50
Frequency	3	5	7	9	4

b) Find the standard deviation for the following numbers: 10,27,40,60,33,30,10. — 8 Marks — L1 — CO4

MODULE-V

10. Calculate correlation coefficient for the following data — 16 Marks — L3 — CO5

X	2	4	5	6	8	11
Y	18	12	10	8	7	5

(OR)

11. a) From the following data, calculate Spearman's rank correlation — 8 Marks — L3 — CO5

Rank in Economics	1	2	3	4	5	6	7	8	9	10
Rank in Statistics	4	8	2	3	5	7	6	9	10	1

b) By the method of least squares, find a straight line that best fits the following data points. — 8 Marks — L3 — CO5

X	1	2	3	4	5
Y	14	27	40	55	68

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2024

BIOINFORMATICS

[Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Recall chimera.	2 Marks	L1	CO1
	b)	What is the purpose of Pubmed?	2 Marks	L1	CO1
	c)	List any four Specialized Genome databases.	2 Marks	L1	CO2
	d)	Name protein structure databases.	2 Marks	L1	CO2
	e)	Recall the FASTA file format.	2 Marks	L1	CO3
	f)	What are Ontologies in the context of bioinformatics?	2 Marks	L1	CO3
	g)	Recall Local alignment and Global Alignment.	2 Marks	L1	CO4
	h)	Relate the scoring matrices BLOSUM and PAM.	2 Marks	L1	CO4
	i)	List commercial bioinformatics packages.	2 Marks	L1	CO4
	j)	Write a short note on SPDBV.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the generation of large-scale molecular biology data.	8 Marks	L2	CO1
	b)	Interpret the relation of bioinformatics with molecular biology.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss the Interdisciplinary nature of Bioinformatics.	8 Marks	L2	CO1
	b)	Link the applications of Bioinformatics to other fields of biology.	8 Marks	L3	CO1

MODULE-II

4.	a)	Compare and contrast the features of the nucleic acid databases.	8 Marks	L2	CO2
	b)	Analyze the importance of structure databases such as CATH, SCOP, and PDBsum in understanding protein structure and function.	8 Marks	L4	CO2
		(OR)			
5.	a)	Categorize the biological databases based on datatype and source of information.	8 Marks	L2	CO2
	b)	Illustrate the protein sequence databases.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the flat files and relational databases in terms of data organization and structure.	8 Marks	L2	CO3
	b)	Illustrate the file formats Genbank, FASTA and Swiss Prot.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the concept of metadata and its significance in data retrieval.	8 Marks	L2	CO3
	b)	Interpret the use of controlled vocabularies in data storage and retrieval.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Illustrate the concept of multiple sequence alignment.	8 Marks	L2	CO4
	b)	Summarize the different types of BLAST programs.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the concept of phylogenetic tree construction and its applications.	8 Marks	L2	CO4
	b)	Summarize pairwise sequence alignment methods emphasizing dynamic approach.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the purpose of structure visualization tools.	8 Marks	L2	CO4
	b)	Compare and contrast PyMol and RasMol tools.	8 Marks	L2	CO4
		(OR)			
11.	a)	Explain the sequence visualization tools focusing on Artemis and SeqVista.	8 Marks	L2	CO4
	b)	Analyze the functionalities and capabilities of comprehensive bioinformatics packages.	8 Marks	L4	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

BIOPHYSICAL TECHNIQUES

[Microbiology, Biotechnology & Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Recall the principle of pH meter and list out the advantages.	2 Marks	L1	CO1
	b)	Define BOD, COD and DO.	2 Marks	L1	CO1
	c)	Mention various Homogenization techniques.	2 Marks	L1	CO2
	d)	Recall the principle of Centrifugation.	2 Marks	L1	CO2
	e)	Enlist types of Chromatographic techniques.	2 Marks	L2	CO3
	f)	Mention the applications of affinity chromatography.	2 Marks	L2	CO3
	g)	Define Isoelectric and Chromato Focusing.	2 Marks	L1	CO4
	h)	Brief the principle of Electrophoresis.	2 Marks	L1	CO4
	i)	List out the uses of Radioactive isotopes in Biology.	2 Marks	L1	CO5
	j)	Recall Beer-Lamberts Law and its significance.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Enumerate the significance of water in biological system and mention its properties.	8 Marks	L2	CO1
	b)	Mention trouble shooting in pH meter and add a note on significance of pH in daily life.	8 Marks	L2	CO1

(OR)

3.	a)	Derive the equation for basic buffer solution using Handerson-Hassel balch concept.	8 Marks	L3	CO1
	b)	Explain the concept of Buffers with an example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain Ultrasonication and add a note on factors affecting on it.	8 Marks	L2	CO2
	b)	Brief the concept of RCF, RPM and sedimentation velocity.	8 Marks	L2	CO2

(OR)

5.	a)	Compare and contrast Differential and Density gradient centrifugation.	8 Marks	L3	CO2
	b)	Elucidate various types of Centrifuges.	8 Marks	L2	CO2

MODULE-III

6.	a)	Mention the Principle of Chromatography and explain TLC, Paper chromatography.	8 Marks	L2	CO3
	b)	Discus the role of Mobile phase and Stationary phases in chromatographic techniques.	8 Marks	L2	CO3

(OR)

7.	a)	Compare various types of Resins used in Ion exchange chromatography.	8 Marks	L2	CO3
	b)	Summarize the concept of Rf, Partition principle and Partition co-efficient.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Elucidate types of Electrophoresis.	8 Marks	L2	CO4
	b)	Extend the role of various reagents used in SDS-PAGE.	8 Marks	L3	CO4

(OR)

9.	a)	Apply the role of pH gradients in Isoelectric focusing and its role in 2D Gel electrophoresis.	8 Marks	L3	CO4
	b)	Elaborate Capillary electrophoresis with an application.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the construction and working of UV-VIS spectroscopy.	8 Marks	L2	CO5
	b)	Extend the concept of Florescence with a net labelled Jablonski Diagram.	8 Marks	L2	CO5

(OR)

11.	a)	Brief the principle of Radioactivity and mention the safety measures while using Radioactive isotopes in laboratories.	8 Marks	L2	CO5
	b)	Enumerate scintillography with its advantages.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2024

ENZYMOLOGY

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Which class does enzyme phosphorvlase belongs to?	2 Marks	L1	CO1
	b)	What do you mean by spontaneous reaction?	2 Marks	L1	CO1
	c)	How do enzymes act?	2 Marks	L1	CO2
	d)	Which forces stabilize tertiary structure of enzymes?	2 Marks	L1	CO2
	e)	What is the signrficance of muitiple subunits of enzymes?	2 Marks	L1	CO3
	f)	What are the salient features of induced fit model?	2 Marks	L1	CO3
	g)	What are biochips used for?	2 Marks	L1	CO4
	h)	Name an enzyme that requires Zn^{+2} for its activity.	2 Marks	L1	CO4
	i)	Describe the importance of enzymes in laundry.	2 Marks	L1	CO5
	j)	What are lyases and ligases?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Distinguish between active site, binding site and catalytic sites with reference to product synthesis.	8 Marks	L2	CO1
	b)	Given that standard marker proteins of size 67kDa, 44kDa , 29kDa & 14kDa travelled to distances of 1.2, 2.4 3.8 cm & 5.7 cm respectively, calculate the size of a protein that migrates to a distance of 2.3 cm.	8 Marks	L2	CO1
		(OR)			
3.	a)	Given that standard marker proteins of size 93kDa, 67kDa & 30 kDa travelled to distances of 0.8, 1.5 & 3.1cm respectively on 12.5% SDS-PAGE , calculate the distance travelled by a dimeric protein of size whose sub-units are 35 & 40 kDa each.	8 Marks	L4	CO1
	b)	Compare metal-induced catalysis with acid –base catalysis. What could be the possible applications of knowing these mechanisms of action & why?	8 Marks	L5	CO1

MODULE-II

4.	a)	An enzyme with a Km of 1X10^-3 M was assayed using an initial substrate concentration of 3X10^-5 M. After 2 min, 5 percent of the substrate was converted. Estimate the amount of substrate will be converted after 10, 30,and 60 min.	10 Marks	L6	CO2
	b)	Describe the various factors affected on the Enzyme activity.	6 Marks	L2	CO2

(OR)

5.	a)	Derive the Equation for the Lineweaver-Burk Plot From MM Kinetics.	10 Marks	L5	CO2
	b)	0.5mg of an enzyme gives a Vmax of 10mM/mint. The reaction is carried out in 1ml and the molecular mass of the enzyme is 40000 g/moles. Estimate the Enzyme specific activity.	6 Marks	L6	CO2

MODULE-III

6.	a)	Illustrate a detail note on Irreversible Inhibition of Enzyme with Examples.	6 Marks	L4	CO3
	b)	Derive the equation for Non-competitive Inhibition enzyme system and how does it differ from competitive inhibition.	10 Marks	L5	CO3

(OR)

7.	a)	Differentiate substrate and product inhibition with suitable examples.	6 Marks	L4	CO3
	b)	Explain the following terms with suitable examples. i) Electrostatic catalysis ii) Covalent catalysis iii) metal ion catalysis	10 Marks	L2	CO3

MODULE-IV

8.	a)	Illustrate the difference between Nicotinamide nucleotides and Flavin nucleotides.	8 Marks	L2	CO4
	b)	Describe the common classification of enzymatic mechanisms.	8 Marks	L2	CO4

(OR)

9.	a)	Discuss the mechanism and action of Chymotrypsin, Tryps in and Carboxypeptidase.	10 Marks	L5	CO4
	b)	What is the action of glyceraldehyde phosphate dehydrogenase? What are essential requirement for its action?	6 Marks	L4	CO4

MODULE-V

10.	a)	Glucose oxidize is noted for a wide range of applications. Substantiate whether yes/no.	10 Marks	L6	CO5
	b)	SGOT & SGPT act as excellent markers of myocardial infarction. Do you agree? Whether yes/no, give reasons.	6 Marks	L2	CO5

(OR)

11.	a)	Outline the difference between monomeric, oligomeric and allosteric enzymes? Give two examples of each of them.	8 Marks	L2	CO5
	b)	Enumerate the importance of Glycogen phosphorylase in covalent modification.	8 Marks	L5	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

BASIC ORGANIC CHEMISTRY

[Microbiology, Biotechnology & Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write the differences between a carbanion and a carbocation.	2 Marks	L2	CO1
	b)	What are tautomers? Give an example of tautomers.	2 Marks	L1	CO1
	c)	What is Wurtz reaction?	2 Marks	L1	CO2
	d)	What are eclipsed and staggered conformations of ethane?	2 Marks	L2	CO2
	e)	Is alkenes water soluble? Give reason.	2 Marks	L2	CO3
	f)	Why alkynes are less reactive than alkenes?	2 Marks	L2	CO3
	g)	List out a few groups which activate the benzene ring.	2 Marks	L1	CO4
	h)	What is the product/s of nitration of phenol?	2 Marks	L2	CO4
	i)	What is racemization?	2 Marks	L1	CO5
	j)	Draw the stereoisomers of 2, 3-dihydroxyprop-2-ene.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Write about the nomenclature of organic compounds.	8 Marks	L2	CO1
	b)	Compare hyper conjugation and electromeric effect.	8 Marks	L2	CO1
		(OR)			
3.	a)	Detail about hybridization in organic compounds.	8 Marks	L2	CO1
	b)	What is a Carbanion? Explain its structure and stabilities.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain any 2 methods for preparation of alkanes.	8 Marks	L2	CO2
	b)	Write a note on Baeyer strain theory.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain physical properties and isomerism in alkanes.	8 Marks	L2	CO2
	b)	Explain the conformational isomerism in cyclohexane with energy diagrams.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the E1, and E2 elimination mechanisms.	8 Marks	L2	CO3
	b)	Discuss hydroxylation reaction of alkenes.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the methods of preparing alkynes.	8 Marks	L2	CO3
	b)	Comment on the stability of dienes.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Elaborate on Aromaticity and Huckel's rule.	8 Marks	L2	CO4
	b)	Explain the mechanism of nitration of benzene.	8 Marks	L2	CO4
		(OR)			
9.	a)	What is meant by directive effect? Explain the directive effect of methyl and cyano groups on benzene ring towards electrophilic substitution reactions.	8 Marks	L2	CO4
	b)	Explain the Friedel Crafts alkylation reaction of benzene.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain optical isomerism in glyceraldehyde and tartaric acid.	8 Marks	L2	CO5
	b)	Differentiate between enantiomers and diastereomers. Give examples of both.	8 Marks	L2	CO5
		(OR)			
11.	a)	How is Absolute configuration assigned to an optically active molecule? Discuss the rules with examples.	8 Marks	L2	CO5
	b)	Comment on D-L notation of optically active organic compounds.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2024

PRINCIPLES OF MICROBIOLOGY

[Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What for Joseph Lister is credited in the field of Microbiology?	2 Marks	L1	CO1
	b)	What is Biogenesis?	2 Marks	L1	CO1
	c)	Differentiate disinfection and sterilization?	2 Marks	L1	CO2
	d)	What is Tindall effect?	2 Marks	L1	CO2
	e)	What is the resolution of a microscope?	2 Marks	L1	CO3
	f)	Which dye is used in endospore staining?	2 Marks	L1	CO3
	g)	Mention the eukaryotic microorganisms.	2 Marks	L1	CO4
	h)	Classify the bacteria based on their shape.	2 Marks	L1	CO4
	i)	Name any helical virus.	2 Marks	L1	CO5
	j)	What is a bacteriophage?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the theories of spontaneous generation.	8 Marks	L1	CO1
	b)	Discuss the contributions of Louis Pasteur in the field of Microbiology.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the numerical taxonomy in microbiology.	8 Marks	L1	CO1
	b)	Classify the bacteria based on the types of nutrition.	8 Marks	L1	CO1

MODULE-II

4.	a)	Determine the phenol coefficient of disinfection.	8 Marks	L1	CO2
	b)	Write on the various disinfectants used in microbiology laboratory.	8 Marks	L1	CO2
		(OR)			
5.	a)	Write on the moist and dry heat sterilization.	8 Marks	L1	CO2
	b)	Discuss the sterilization carried out by filtration and add notes on the various types of filters.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the principle and instrumentation of a compound microscope.	8 Marks	L1	CO3
	b)	Explain the sample preparation in electron microscopy.	8 Marks	L1	CO3

(OR)

7.	a)	Write on gram's staining and its importance in bacterial identification.	8 Marks	L1	CO3
	b)	Add notes on Acid fast staining.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Differentiate the gram positive and gram negative cell wall of bacteria.	8 Marks	L1	CO4
	b)	Write notes on the inclusion bodies in bacteria.	8 Marks	L1	CO4

(OR)

9.	a)	Explain the structure and significance of capsule in bacteria.	8 Marks	L1	CO4
	b)	Discuss the organization of genetic material in bacteria.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain in detail the Baltimore system of classification of Viruses.	8 Marks	L1	CO5
	b)	Explain the Lytic cycle in detail.	8 Marks	L1	CO5

(OR)

11.	a)	Add notes on HSV.	8 Marks	L1	CO5
	b)	Explain the structure of Polyoma virus.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

CRIMINALISTICS

[Forensic Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Difference between Abduction and Kidnapping.	2 Marks	L1	CO1
	b)	What are the types of sketching methods?	2 Marks	L1	CO1
	c)	Explain the dual role of crime scene logs in the investigative process.	2 Marks	L1	CO2
	d)	Explain the initial actions that first responders should take upon arriving at a crime scene.	2 Marks	L2	CO2
	e)	Define Hazardous Evidence.	2 Marks	L1	CO3
	f)	Differentiate between physical and trace evidence found at a crime scene. Provide examples of each type and explain their significance in forensic investigations.	2 Marks	L1	CO3
	g)	What is fracture analysis?	2 Marks	L2	CO4
	h)	Applications of FTIR.	2 Marks	L1	CO4
	i)	Collection of soil evidence.	2 Marks	L1	CO5
	j)	Define druggist folder.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Provide specific scenarios where spiral and zonal method would be most applicable and explain how these methods contribute to the systematic retrieval of evidence.	6 Marks	L1	CO1
	b)	Analyze the importance of maintaining a meticulous and standardized approach in documentation for chain of custody purposes and the presentation of evidence in court.	10 Marks	L4	CO1
		(OR)			
3.	a)	Explore the role of forensic technologies in investigating both outdoor and indoor crimes.	6 Marks	L1	CO1
	b)	Explain various types of sketching methods in detail.	10 Marks	L1	CO1

MODULE-II

4.	a)	How police personnel and forensic scientist related?	6 Marks	L1	CO2
	b)	Examine the challenges faced by first responders in securing and isolating a crime scene. Provide solutions and strategies to overcome these challenges, emphasizing the importance of preserving evidence.	10 Marks	L4	CO2

(OR)

5.	a)	Discuss the elements of crime in detail.	8 Marks	L1	CO2
	b)	Discuss the role of documentation in the Crime Scene Management.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain any two collection methods.	6 Marks	L1	CO3
	b)	Explain the common methods used to preserve biological evidences such as blood or saliva?	10 Marks	L1	CO3

(OR)

7.	a)	Give examples of Hazardous evidence in detail.	6 Marks	L1	CO3
	b)	Explain the importance of maintaining a detailed chain of custody in crime scene investigations.	10 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the working Principle of UV-Visible spectroscopy.	6 Marks	L1	CO4
	b)	Discuss the specific applications of FTIR spectroscopy in the analysis of paint evidence.	10 Marks	L2	CO4

(OR)

9.	a)	Explain the collection and packaging of glass evidences.	6 Marks	L1	CO4
	b)	Explain Bayes Theorem in analysis and applications.	10 Marks	L1	CO4

MODULE-V

10.	a)	Can soil be utilized as primary evidence? Justify?	6 Marks	L1	CO5
	b)	Explain the proper procedures for collecting fiber evidence at a crime scene. Include considerations for packaging, labeling, and preserving the integrity of the samples.	10 Marks	L1	CO5

(OR)

11.	a)	Discover the locations where soil evidence can be found.	6 Marks	L1	CO5
	b)	Explain any 2 case study related to tool marks.	10 Marks	L5	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

CRIMINAL LAW

[Forensic Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the purpose of criminal punishment?	2 Marks	CO1
	b)	Briefly explain the concept of 'common intention'.	2 Marks	CO1
	c)	Define 'criminal conspiracy'.	2 Marks	CO2
	d)	Explain the difference between actus reas and mens reas.	2 Marks	CO2
	e)	Who can grant bail under the CrPC?	2 Marks	CO3
	f)	What are the different stages of a criminal trial under the CrPC? (Mention at least 3).	2 Marks	CO3
	g)	Briefly describe the provisions related to electronic evidence in the Act.	2 Marks	CO4
	h)	What are the limitations of admissibility under Evidence Law?	2 Marks	CO4
	i)	Give an example of a social issue where judicial activism has played a significant role.	2 Marks	CO5
	j)	How can judicial activism potentially lead to social change?	2 Marks	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain briefly historical development of penal code.	8 Marks	L2	CO1
	b)	Critically evaluate the role of criminal law in deterring crime.	8 Marks	L4	CO1
		(OR)			
3.	a)	Discuss the concept of common intention as defined in S- 34 of IPC.	8 Marks	L2	CO1
	b)	Illustrate general exceptions under sections 76- 106 of IPC.	8 Marks	L2	CO1

MODULE-II

4.	a)	Analyze the concept of 'domestic violence' and legal remedies available to victims.	10 Marks	L4	CO2
	b)	Examine the powers of arrest enjoyed by the police under Crpc.	6 Marks	L4	CO2
		(OR)			
5.	a)	Relate the effectiveness of punishment in deterring crimes.	10 Marks	L2	CO2
	b)	Explore the importance of restorative justice in dealing with certain crimes.	6 Marks	L4	CO2

MODULE-III

6.	a)	Explain the concept of arrest without a warrant under the CrPC, considering the potential for abuse.	10 Marks	L4	CO3
	b)	How does the CrPC balance the need for effective investigation with the protection of individual liberty?	6 Marks	L1	CO3

(OR)

7.	a)	Assess the significance of the Code of Criminal Procedure (CrPC) in the Indian legal system.	8 Marks	L5	CO3
	b)	Describe the structure and organization of the Code of Criminal Procedure (CrPC).	8 Marks	L2	CO3

MODULE-IV

8.	a)	Critically evaluate the concept of 'hearsay evidence' and the exceptions that allow its admission in court.	8 Marks	L5	CO4
	b)	How do the provisions of the Evidence Act balance the need for accurate information with the protection of witness privileges?	8 Marks	L4	CO4

(OR)

9.	a)	Examine the provisions of the Indian Evidence Act related to privileged communications.	10 Marks	L4	CO4
	b)	Discuss the rules of hearsay evidence under the Indian Evidence Act.	6 Marks	L6	CO4

MODULE-V

10.	a)	Evaluate the impact of judicial activism on social legislation in democratic societies.	10 Marks	L5	CO5
	b)	Discuss the role and powers of Supreme Court.	6 Marks	L6	CO5

(OR)

11.	a)	Explain the potential for judicial overreach in the context of judicial activism.	8 Marks	L2	CO5
	b)	Critically evaluate the argument that judicial activism undermines democratic principles by usurping the role of the legislature.	8 Marks	L6	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

FUNDAMENTALS OF CRIME, CRIMINOLOGY AND POLICE

[Forensic Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define crime.	2 Marks	L1	CO1
	b)	Explain the nature, origin and scope of crime.	2 Marks	L2	CO1
	c)	Define the Pre-classical school of criminology and identify its key components.	2 Marks	L1	CO2
	d)	What are the fundamental principles of the Classical school of criminology?	2 Marks	L1	CO2
	e)	Define a crime against a person and provide an example.	2 Marks	L1	CO3
	f)	What constitutes a crime against property, and give an example?	2 Marks	L1	CO3
	g)	Describe the historical development of policing in ancient India.	2 Marks	L2	CO4
	h)	What were the main features of policing during the medieval period in India?	2 Marks	L1	CO4
	i)	Define Police Science and outline its scope briefly.	2 Marks	L2	CO5
	j)	Explain the significance of an FIR (First Information Report) in police investigations.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the evolution of criminological thought from the Pre-classical school to the modern Sociological Theories. Analyze the key principles and contributions of each school of thought, and evaluate their significance in shaping contemporary criminological discourse and criminal justice practices.	10 Marks	L2	CO1
	b)	Discuss the role of genetics and environmental factors in Biological Positivism, emphasizing how these factors interact to influence criminal behavior.	6 Marks	L2	CO1

(OR)

3.	a)	Define delinquency and discuss its implications for individuals and society.	8 Marks	L1	CO1
	b)	Analyze the impact of social factors on deviant behavior. Provide examples and discuss how societal norms and values contribute to the definition and labeling of certain behaviors as deviant.	8 Marks	L4	CO1

MODULE-II

4.	a)	Assess how well legislative actions and law enforcement tactics tackle property-related crimes, taking into account elements like discouragement, identification, and legal action. Explore how community policing and efforts focused on preventing crime contribute to lowering property crime rates.	10 Marks	L5	CO2

	b)	Analyze the characteristics and motivations of professional criminals, comparing and contrasting them with habitual offenders.	6 Marks	L4	CO2
		(OR)			
5.	a)	Explore the relationship between deviance and social norms.	4 Marks	L5	CO2
	b)	Explain the key principles of at least three major criminological theories (e.g., classical, biological, sociological). Compare and contrast these theories, highlighting their strengths and limitations.	12 Marks	L5	CO2
		MODULE-III			
6.	a)	Analyze the societal impact of crime against persons, comparing and contrasting the psychological, emotional, and economic consequences for victims and communities. Discuss potential strategies for victim support and rehabilitation.	10 Marks	L4	CO3
	b)	Discuss the impact of crime against persons on individuals and society, providing examples and potential long-term consequences.	6 Marks	L2	CO3
		(OR)			
7.	a)	Explain Biological Positivism. Assess the strengths and limitations of genetic and environmental explanat Cions for criminality, considering empirical evidence and ethical implications.	10 Marks	L2	CO3
	b)	Evaluate the relevance of the Cartographic school of criminology in contemporary criminological discourse, highlighting its impact on crime prevention strategies.	6 Marks	L5	CO3
		MODULE-IV			
8.	a)	Analyze the transition of Indian policing into the modern era, examining the factors that influenced its evolution and the key reforms introduced.	9 Marks	L4	CO4
	b)	Discuss the administrative hierarchy of state police in India, emphasizing the roles and responsibilities of each level within the hierarchy.	7 Marks	L2	CO4
		(OR)			
9.	a)	Distinguish between cognizable and non-cognizable offences, and analyze the procedural variances in the investigation of cognizable offences.	8 Marks	L4	CO4
	b)	Define the term "case diary" and elucidate its significance in the investigative process.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Discuss the historical development of policing in Ancient India, highlighting its key features and functions.	7 Marks	L2	CO5
	b)	Compare and contrast the organizational structures of ancient, medieval, and modern Indian police forces, highlighting key changes and continuities.	9 Marks	L2	CO5
		(OR)			
11.	a)	Define the scope of investigation within the criminal justice system and elucidate the significance of an FIR (First Information Report) and case diary in the investigative process.	10 Marks	L2	CO5
	b)	Briefly explain the concept of a cognizable offence and provide an example.	6 marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

CRIME AND SOCIETY

[Forensic Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define crime.	2 Marks	L1	CO1
	b)	Distinguish between Classical theory & positivist theory.	2 Marks	L4	CO1
	c)	Discuss how deviant behavior is different from disorder.	2 Marks	L6	CO2
	d)	Summarize Hate Crime.	2 Marks	L2	CO2
	e)	What are the factor that leads the growth of the domestic violence?	2 Marks	L1	CO3
	f)	Explain Victimology?	2 Marks	L5	CO3
	g)	How social Change is related to crime.	2 Marks	L1	CO4
	h)	What are dissasossiative disorders?	2 Marks	L1	CO4
	i)	Illustrate FIR.	2 Marks	L2	CO5
	j)	Explain the objectives of Criminal Justice System.	2 Marks	L5	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are the primary aims of studying criminal behavior within the field of criminology?	6 Marks	L1	CO1
	b)	Explain the definition of criminal behavior and how does it differ across legal and sociological perspectives?	10 Marks	L2	CO1

(OR)

3.	a)	How can the media be utilized as a tool for raising awareness about crime prevention and community safety?	8 Marks	L1	CO1
	b)	Summarize the potential risks and benefits of media involvement in criminal cases, and how can these be balanced to ensure fair and accurate reporting?	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the fundamental elements that constitute a crime, and how do they vary across different legal systems?	6 Marks	L5	CO2
	b)	How does the nature of crime differ from one context to another, and what are the underlying factors influencing this variation?	10 Marks	L1	CO2

(OR)

5.	a)	How do public policies and community initiatives aimed at addressing the underlying causes of public disorder contribute to long-term solutions and social cohesion?	8 Marks	L1	CO2
	b)	What are the ethical considerations involved in policing and regulating behaviors associated with public disorder, and how can these be balanced with considerations of individual rights and freedoms?	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain Section 498 A IPC in detail	6 Marks	L5	CO3
	b)	How work place crime is different from professional Crime?	10 Marks	L1	CO3
		(OR)			
7.	a)	Explain the Motivation behind white collar crimes & how do they differ from traditional forms of criminal behavior.	8 Marks	L2	CO3
	b)	What are the risk factors associated with Juvenile Delinquency?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe Psychological Disorder & its Major Categories.	10 Marks	L2	CO4
	b)	A person with Psychological Disorder had Committed the crime, why is it important to counsel the person rather than punishment? Explain with example.	6 Marks	L5	CO4
		(OR)			
9.	a)	Theme Ted Bundy Case in detail.	10 Marks	L4	CO4
	b)	How do situational crime prevention strategies intersect with broader social and economic factors, such as poverty, unemployment, and housing insecurity, and what challenges do they face in addressing underlying structural inequalities?	6 Marks	L1	CO4

MODULE-V

10.	a)	Recite a flow chart of Police Ranking.	6 Marks	L1	CO5
	b)	Interpret Policing Heterogeneous Society & its challenges.	10 Marks	L5	CO5
		(OR)			
11.	a)	Distinguish the difference between a lawyer from prosecutor & their role in CJS.	6 Marks	L4	CO5
	b)	Discuss the role, [principles & challenges of police, prosecutor & corrections in Criminal Justice System.	10 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

FUNDAMENTALS OF DIGITAL ELECTRONICS AND LOGIC DESIGN

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Convert $(BAD)_{16}$ to decimal form.	2 Marks	L3	CO1
	b)	What is a grey code and what are its advantages.	2 Marks	L2	CO1
	c)	Simplify the following expression Y = (A + B) (A + C') (B' + C').	2 Marks	L3	CO2
	d)	Which gates are called as the universal gates? What are its advantages?	2 Marks	L1	CO1
	e)	Give sum and carry expressions of Half Subtractor.	2 Marks	L2	CO3
	f)	What is decoder?	2 Marks	L2	CO3
	g)	What is the difference between a latch and a flip-flop?	2 Marks	L2	CO3
	h)	What is edge-triggered flip-flop?	2 Marks	L2	CO3
	i)	Why RAMs are called as Volatile?	2 Marks	L2	CO4
	j)	Define Static RAM and dynamic RAM	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.		Convert the following to Decimal and then to Hexadecimal. i) $(1234)_8$ ii) $(1267)_8$ iii) $(11001111)_2$ iv) $(11011101)_2$	16 Marks	L3	CO1
		(OR)			
3.	a)	Draw the truth table of the Boolean expression F=XY+X'Y'+Y'Z and implement it with only OR and NOT gates.	8 Marks	L3	CO2
	b)	Convert to octal : i) $(11001)_2$ ii) $(111010111)_2$	8 Marks	L3	CO1

MODULE-II

4.	a)	Obtain minimal function for F(A,B,C,D)=π (0,1,2,3,4,10,11) and implement using NOR gates.	10 Marks	L4	CO2
	b)	Obtain the simplified expressions in sum of products for the following Boolean functions i)xy+x'y'z' ii)xy'z+xyz'+x'yz+xyz	6 Marks	L4	CO2
		(OR)			
5.		Simplify the function F(A,B,C,D) =∑m (0,2,6,11,12,13,14) using k-map and implement the circuit using i)Only NAND gates ii)Only NOR gates	16 Marks	L4	CO2

MODULE-III

6.	a)	Minimize the given Boolean function using K-Map and implement the simplified function using NAND gates only. F(A, B, C, D) = ∑m(O, 1,2,9, 11, 15) +d(8, 10, 14).	8 Marks	L3	CO2
	b)	Implement the following function using 3:8 decoder and some logic gates: F(A,B,C,D)=∑m(1,3,4,6,8,10,12,15) where A= MSB and D=LSB.	8 Marks	L3	CO3
		(OR)			
7.	a)	Implement the logic expression given below using 8:1 multiplexer f(A,B,C,D)=∑m(0,2,4,6,8,10,12,13,15)	8 Marks	L3	CO3
	b)	Draw and explain the function of half-adder and full adder with suitable diagrams.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain Master slave flipflop.	10 Marks	L2	CO3
	b)	Distinguish between a combinational logic circuit and a sequential logic circuit.	6 Marks	L2	CO3
		(OR)			
9.	a)	Using a JK flip flop, explain how a D flip flop can be obtained.	8 Marks	L2	CO3
	b)	Design modulo 3-counter using S-R flip-flop.	8 Marks	L6	CO3
		MODULE-V			
10.		Write short notes with examples on: i) PLA ii)PAL	16 Marks	L2	CO4
		(OR)			
11.	a)	Explain the different types of ROM.	8 Marks	L2	CO4
	b)	What is RAM? Explain the different types of RAMs with block diagram representation.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2024

SINGLE VARIABLE CALCULUS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Show that every convergent sequence is bounded.	2 Marks	L2	CO1
	b)	Define monotonic sequence and Cauchy sequence.	2 Marks	L1	CO1
	c)	State Cauchy's condensation test.	2 Marks	L1	CO2
	d)	State Leibnitz's test.	2 Marks	L1	CO2
	e)	If $f(x) = \begin{cases} 3x-2 & \text{for } x<1 \\ 4x^2-3x & \text{for } x>1 \end{cases}$, then evelate $\lim_{x\to 1} f(x)$	2 Marks	L2	CO3
	f)	Show that $f(x)=\|x\|+\|x-1\|$ is continuous at x=1.	2 Marks	L2	CO3
	g)	Show that $f(x)=\|x\|+\|x-1\|$ is not differentiable at x=0.	2 Marks	L2	CO4
	h)	Verify the Rolle's theorem is applicable or not for $f(x)=\|x\|$ in $[-2,2]$	2 Marks	L3	CO4
	i)	Define Remain integral of a bounded function on [a, b].	2 Marks	L1	CO5
	j)	State mean value theorem for continuous function on [a,b] by using integration.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	State and prove Cauchy theorem for sequence $\{s_n\}$	8 Marks	L3	CO1
	b)	A sequence is convergent if and only if it is bounded and has only one limit point	8 Marks	L3	CO1
		(OR)			
3.	a)	Prove that the sequence $\{s_n\}$ defined by $s_n = 1+\frac{1}{1}+\frac{1}{2.1}+\frac{1}{3.2.1}+\dots+\frac{1}{n(n-1)(n-2)\dots 3.2.1}$. is convergent	8 Marks	L2	CO1
	b)	Prove that the sequence $\{s_n\}$ defined by $s_n = \frac{1}{n+1}+\frac{1}{n+2}+\dots+\frac{1}{n+n}$ is increasing and bounded above	8 Marks	L2	CO1

MODULE-II

4.	a)	If $\sum u_n$ and $\sum v_n$ are two series of positive terms and $Lim\left(\frac{u_n}{v_n}\right) = l \neq 0$ then the series $\sum u_n$ and $\sum v_n$ convergence or divergence together.	8 Marks	L3	CO2
	b)	Test the convergence $\sum_{n=1}^{\infty} \frac{2n-1}{n(n+1)(n+2)}$ by comparison test	8 Marks	L3	CO2
		(OR)			
5.	a)	If $\{u_n\}$ is a sequence of positive terms such that and $Lim\, u_n = 0$, then the alternative series $\sum_{n=1}^{\infty} (-1)^{n-1} u_n$ is convergent.	8 Marks	L3	CO2
	b)	Show that $\sum_{n=0}^{\infty} \frac{(-1)^n}{n(n-1)(n-2)---3.2.1}$ is convergent	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss $f(x) = \frac{xe^{\frac{1}{x}}}{1+e^{\frac{1}{x}}}$ *for* $x \neq 0$ and $f(0) = 0$ is continuous or not at x=0	8 Marks	L3	CO3
	b)	Define uniform continuity and show that , if a function f is continuous on [a, b], then f is uniformly on [a, b].	8 Marks	L3	CO3
		(OR)			
7.	a)	*If* $f(x) = \left(\frac{e^{\frac{1}{x}} - e^{\frac{-1}{x}}}{e^{\frac{1}{x}} + e^{\frac{-1}{x}}}\right)$ for $x \neq 0$ and $f(0) = 1$ for $x = 0$ discuss f(x) is continuous or not at x=0	8 Marks	L3	CO3
	b)	If a function $f : S \to R$ is uniformly continuous, then show that f is continuous on S.	8 Marks	L2	CO3

MODULE-IV

8.	a)	If $f : [a, b] \to R$ is deriable at c in [a, b], then f is continuous at c.	8 Marks	L2	CO4
	b)	Show that $f(x) = x\left(\frac{e^{\frac{1}{x}} - 1}{e^{\frac{1}{x}} + 1}\right)$ for $x \neq 0$ and $f(0) = 0$ for $x = 0$ is continuous at x=0 but not differentiable at x=0	8 Marks	L3	CO4
		(OR)			
9.	a)	State and prove Roll's Theorem	8 Marks	L3	CO4
	b)	State Cauchy mean value theorem and hence evaluate the value of c , from $f(x) = \sqrt{x}$ and $g(x) = \frac{1}{\sqrt{x}}$ in [2, 3]	8 Marks	L3	CO4

MODULE-V

10.	a)	State and prove necessary and sufficient condition for a bounded function $f:[a,b]\to R$ is Riemann integral on [a, b].	8 Marks	L3	CO5
	b)	Show that $f(x)=x^2$ is integrable on $[0,2]$ and hence find $\int_0^2 x^2\,dx$	8 Marks	L2	CO5

(OR)

11.	a)	If $f:[a,b]\to R$ is continuous on [a, b], then f is integrable on [a, b]	8 Marks	L4	CO5
	b)	State and prove fundamental theorem of integral calculus.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

DATA STRUCTURES

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Explain about Abstract data types.	2 Marks	L2	CO1
	b)	What is the use of Big 'O' notation?	2 Marks	L1	CO1
	c)	Create a structure node for Linked list.	2 Marks	L7	CO2
	d)	Differentiate between linear and non linear data structures.	2 Marks	L2	CO2
	e)	Why stack is called Abstract Data Type?	2 Marks	L1	CO3
	f)	Explain about Queue data structure.	2 Marks	L2	CO3
	g)	What are the properties of a tree in data structure?	2 Marks	L1	CO4
	h)	What is the use of Inorder Traversal in BST?	2 Marks	L1	CO4
	i)	List out different types of sorting in data structures.	2 Marks	L2	CO5
	j)	Give an example to find the shortest path of the graph.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define data structure. Discuss different types of data structure their implementations applications.	8 Marks	L2	CO1
	b)	Differentiate between data structure and data type.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain how to implement ADT using array. Discuss its Advantages and Disadvantages.	8 Marks	L2	CO1
	b)	What is recursion in data structure with an example?	8 Marks	L1	CO1

MODULE-II

4.	a)	What is an array? Discuss different types of arrays with examples.	8 Marks	L1	CO2
	b)	Write a program to find the sum of six numbers with arrays and pointers.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain representation of arrays along with their advantages and disadvantages.	8 Marks	L2	CO2
	b)	Write a program to pass two-dimensional arrays to function.	8 Marks	L2	CO2

MODULE-III

6.	a)	Give the structure of Queue ADT. Explain the operations in it.	8 Marks	L2	CO3
	b)	Explain the evaluation of prefix expression. Find the equivalent prefix of :8 6 3 + * 1 2 3 -/- .	8 Marks	L2	CO3

(OR)

7.	a)	Explain basic operations of queue. List the steps to implement queue using stack.	8 Marks	L2	CO3
	b)	Explain the procedure to convert infix expression to postfix expression with the following expression: ((A –(B+C) * D) / (E+F)) .	8 Marks	L2	CO3

MODULE-IV

8.	a)	What are the different tree traversals? Explain with example.	8 Marks	L1	CO4
	b)	Discuss representation of binary tree using arrays and linked list.	8 Marks	L5	CO4

(OR)

9.	a)	Explain the properties of a binary search tree in detail.	8 Marks	L2	CO4
	b)	Describe in-order traversal of threaded binary tree with an example.	8 Marks	L4	CO4

MODULE-V

10.	a)	Explain about Graph and types of graphs with its representation.	8 Marks	L2	CO5
	b)	Write code snippet for Bubble sort?	8 Marks	L2	CO5

(OR)

11.	a)	Explain merge sort algorithm with a suitable example.	8 Marks	L2	CO5
	b)	Describe about Graph Traversal and write the procedure for Graph traversal using Breadth First Search.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

STATISTICAL METHODS AND INFERENCES

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out the different methods of studying correlation.	2 Marks	L1	CO1
	b)	Sketch the graphs for positive and negative correlations using Scatter diagram method.	2 Marks	L1	CO1
	c)	State the difference between linear and Nonlinear regression.	2 Marks	L1	CO2
	d)	Write any two important properties of regression coefficients.	2 Marks	L1	CO2
	e)	Mention the basic steps involved in testing of hypothesis.	2 Marks	L1	CO3
	f)	Write a short note on Critical region.	2 Marks	L1	CO3
	g)	Conditions for the validity of chi-square test.	2 Marks	L1	CO4
	h)	State the assumptions of t-test.	2 Marks	L1	CO4
	i)	Applications of Non parametric test.	2 Marks	L2	CO5
	j)	List out the different types of scales used for measuring data.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	How can you use the scatter diagram to obtain an idea of the nature of the correlation coefficient?	8 Marks	L2	CO1
	b)	The value of Karlpearson's correlation (r) for the following data is **0.636**.	8 Marks	L3	CO1

x: 0.05 0.14 0.24 0.30 0.47 0.52 0.57 0.61 0.67 0.72
y: 1.08 1.15 1.27 1.33 1.41 1.46 1.54 2.72 4.01 9.63

i) Calculate the Spearman's rank correlation for this data.
ii) Obtain the advantage of ρ brought out in this problem?

(OR)

3.	a)	A Computer while calculating correlation coefficient between two variables x and y from 25 pairs of observations, the following results were obtained: n=25, $\sum x$=125, $\sum x^2$=650, $\sum y$=100, $\sum y^2$=460, $\sum xy$=508. Later it was discovered at the time of checking that he had copied down two pairs as	8 Marks	L2	CO1

x	Y
6	14
9	6

While the correct values are

x	y
8	12
6	8

Obtain the correct value of correlation coefficient.

	b)	Twelve recruits were subjected to a selection test to ascertain their suitability for a certain course of training. At the end of training there were given a proficiency test. The marks secure by recruits in the selection test (x) and the proficiency test (Y) are given below. x: 65 63 67 64 68 62 70 66 68 67 69 71 y: 68 66 68 65 69 66 68 65 71 67 68 70 Calculate coefficient of rank correlation.	8 Marks	L3	CO1

MODULE-II

4.	a)	Compare and contrast the roles of correlation and regression in studying the interdependence of two variates.	8 Marks	L2	CO2
	b)	A study was made on the amount of converted sugar in a certain process at various temperatures. The data were coded and recorded as follows Temperature x: 1.0 1.1 1.2 1.3 1.4 1.5 Converted sugar y: 8.1 7.8 8.5 9.8 9.5 8.9 a) Estimate the linear regression line b) Estimate the mean amount of converted sugar produced when the coded temperature is 1.75.	8 Marks	L3	CO2

(OR)

5.	a)	Determine the equations to the lines of regression and also show that the correlation coefficient is the geometric mean of coefficients of regression.	8 Marks	L2	CO2
	b)	The following results were obtained in the analysis of data on yield of dry bark in ounces (Y) and age in years (X) of 200 cinchona plants	8 Marks	L3	CO2

	X	Y
Average	9.2	16.5
Standard Deviation	2.1	4.2

Correlation coefficient between X and Y is 0.84. Construct the two lines of regression and estimate the yield of dry bark of a plant of age 8 years.

MODULE-III

6.	a)	Explain the concepts of i) Type I Error ii) Type II Error iii) Power function of a test iv) Level of significance	8 Marks	L2	CO3
	b)	Suppose you are testing H_0: $\lambda = 2$ against H_1: $\lambda = 1$, where λ is the parameter of the Poisson distribution. Obtain the best critical region of the test.	8 Marks	L2	CO3

(OR)

7.	a)	Explain how the best critical region is determined. State clearly the theorem which is used to determine the best critical region.	8 Marks	L2	CO3
	b)	Obtain the best critical region for testing H_0: $\mu = \mu_0$ against H_1: $\mu = \mu_1$ for the normal distribution.	8 Marks	L2	CO3

MODULE-IV

8. a) Describe the statistical procedure for the test of significance of two means in case of large samples. 8 Marks L2 CO4

b) In a certain experiment to compare two types of animal foods A and B, the following results of increase in weights were observed in animals: 8 Marks L3 CO4

Animal number		1	2	3	4	5	6	7	8
Increase weight in lb	Food A	49	53	51	52	47	50	52	53
	Food B	52	55	52	53	50	54	54	53

Assuming that the same set of animals were used, can we conclude that food b is better than food A?

(OR)

9. a) Explain briefly the testing procedure for paired t test. 8 Marks L2 CO4

b) 200 digits were chosen at random from a set of tables. The frequency of the digits was: 8 Marks L3 CO4

Digits	0	1	2	3	4	5	6	7	8	9
Frequency	18	19	23	21	16	25	22	20	21	15

Use Chi-Square test, to assess the correctness of hypothesis that the digits were distributed in equal number in the table at the level of significance 0.05.

MODULE-V

10. a) Describe the basic steps involved in any nonparametric test of hypothesis. When should the nonparametric methods be preferably used? 8 Marks L2 CO5

b) Examine whether the following samples have been drawn from the populations with same population or not using sign test. 8 Marks L3 CO5

Sample I: 76 81 74 68 52 49 86 75 51 47
43 80 38 29 75 84 63 80 65 39
Sample II: 71 83 70 65 80 76 90 71 58 47
36 87 88 47 62 80 72 90 61 32

(OR)

11. a) Explain the step by step procedure of Mann Whitney U test. 8 Marks L2 CO5

b) Examine whether the following samples have been drawn from populations with same median or not. 8 Marks L3 CO5

Sample I: 7 10 14 11 19 16
Sample II: 9 12 13 15 10

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations May – 2024

OBJECT ORIENTED PROGRAMMING WITH C++

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention any two differences between OOP&POP.	2 Marks	L1	CO1
	b)	List out the rules to define an identifier.	2 Marks	L2	CO1
	c)	Differentiate while loop with do while loop.	2 Marks	L2	CO2
	d)	Define inline function and give an example	2 Marks	L1	CO2
	e)	Define the term class. Give an example. How is it different from an object?	2 Marks	L1	CO3
	f)	Define the term friend function and its benefit in OOP.	2 Marks	L1	CO3
	g)	Define the term operator overloading. List the operators that cannot be overloaded.	2 Marks	L1	CO4
	h)	Define method overriding with a suitable example.	2 Marks	L2	CO4
	i)	List the various file types in CPP.	2 Marks	L1	CO5
	j)	Discuss briefly about error handling in files.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss about Object Oriented Paradigm with suitable example.	8 Marks	L2	CO1
	b)	Discuss briefly about OOP concepts with appropriate examples	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the general structure of a CPP program. Write a sample program to calculate the area of a rectangle given the inputs length and breadth. Note: Area of a rectangle = length*breadth	8 Marks	L3	CO1
	b)	Explain the following terms briefly with a suitable example i) keywords ii) variables ii) constant iv) identifier	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain different types of operators in CPP with examples.	8 Marks	L2	CO2
	b)	Write a program in C++ that takes a 3-digit positive integer as input and prints the sum of individual digits. Sample Input:153 Sample Output: 9	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the concept of function overloading in CPP with the help of a suitable example.	8 Marks	L2	CO2
	b)	Write a CPP function that receives 2 matrix objects as arguments and returns a new matrix object containing their addition.	8 Marks	L3	CO2

MODULE-III

6.	a)	Write a CPP program to read Account Number, Customer Name and Account balance and display the details using class and object.	8 Marks	L3	CO3
	b)	Define the term constructor and give an example. Explain different types of constructors with an example.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the concept of friend function and friend class by giving a suitable example.	8 Marks	L2	CO3
	b)	Explain static data member and member functions with a suitable example.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Demonstrate operator overloading with an example to overload a binary operator.	8 Marks	L3	CO4
	b)	Define the term inheritance and discuss its types giving an example for each type.	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss the essence of method overriding in CPP. Give a suitable example.	8 Marks	L2	CO4
	b)	Define Virtual functions. Describe with an example the need of virtual functions in CPP.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain by means of an example formatting of Output in a CPP program.	8 Marks	L2	CO5
	b)	Write short notes on File handling stream class with an example.	8 Marks	L2	CO5
		(OR)			
11.	a)	List the manipulators used in stream classes. Explain with a suitable example.	8 Marks	L2	CO5
	b)	With the help of a sample program discuss command line arguments in CPP.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

GENERAL CHEMISTRY

[Microbiology, Biotechnology, Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is an insulator?	2 Marks	L1	CO1
	b)	State free electron theory.	2 Marks	L1	CO1
	c)	What are conducting polymers?	2 Marks	L1	CO2
	d)	Define ceramics.	2 Marks	L1	CO2
	e)	State solvent system.	2 Marks	L1	CO3
	f)	What is R_f value?	2 Marks	L1	CO3
	g)	Compare bonding and anti-bonding molecular orbitals.	2 Marks	L1	CO4
	h)	What is a chemical bond?	2 Marks	L1	CO4
	i)	Define gels.	2 Marks	L1	CO5
	j)	What are colloids?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain band theory and valence bond theory.	12 Marks	L2	CO1
	b)	List the limitations of free electron theory.	4 Marks	L1	CO1
		(OR)			
3.	a)	Discuss the thermal and electrical conductivity of metals in free electron theory.	8 Marks	L2	CO1
	b)	Explain n-type and p-type semi-conductors.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain composites in brief.	8 Marks	L2	CO2
	b)	Define polymer. Explain the types of conducting polymers.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain Fiber-Reinforced composites in detail.	8 Marks	L2	CO2
	b)	Discuss how the composites are strengthened by large particle and dispersion.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the principle of Paper chromatography and give its applications.	4 Marks	L2	CO3
	b)	Explain the principle, preparation of plate and generation of chromatogram using TLC and its applications.	12 Marks	L2	CO3
		(OR)			
7.	a)	Discuss the types of planar and column chromatography.	12 Marks	L2	CO3
	b)	Differentiate HPLC with column chromatography.	4 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the salient features of molecular orbital theory.	6 Marks	L2	CO4
	b)	Explain the molecular orbital diagrams of N_2 and O_2 molecules.	10 Marks	L2	CO4
		(OR)			
9.	a)	Explain LCAO method of formation of molecular orbitals.	12 Marks	L2	CO4
	b)	Outline the Valence Bond theory.	4 Marks	L2	CO4

MODULE-V

10.	a)	Write a note on gold number. How gold sol can be prepared?	8 Marks	L1	CO5
	b)	Compare physical and chemical adsorption.	8 Marks	L2	CO5
		(OR)			
11.	a)	Derive Langmuir adsorption isotherm. Give some applications of adsorption.	12 Marks	L2	CO5
	b)	Compare positive and negative sols.	4 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

FOOD AND NUTRITION

[Microbiology, Biotechnology, Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is meant by Health?	2 Marks	L1	CO1
	b)	Define nutritional status.	2 Marks	L1	CO1
	c)	What are the units of Energy.	2 Marks	L1	CO2
	d)	Define BMR.	2 Marks	L1	CO2
	e)	What is the role of fibre in health?	2 Marks	L1	CO3
	f)	What are the main sources of carbohydrates in Indian diet?	2 Marks	L1	CO3
	g)	What are the two functions of proteins?	2 Marks	L1	CO4
	h)	Define lipids and add a note on its importance.	2 Marks	L1	CO4
	i)	What are the food sources of Iron, Calcium and Iodine?	2 Marks	L1	CO5
	j)	What are the functions and deficiency of vitamin A?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the concept of food and nutrients.	6 Marks	L2	CO1
	b)	Compare and contrast types of nutrients with suitable examples.	10 Marks	L2	CO1
		(OR)			
3.	a)	Describe the importance of food guide pyramid.	6 Marks	L2	CO1
	b)	Classify food into various groups as per the guidelines of ICMR.	10 Marks	L2	CO1

MODULE-II

4.	a)	Describe the significance of energy.	4 Marks	L2	CO2
	b)	Discuss the various factors affecting energy requirements.	12 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the concepts of energy content of food and unit of heat.	4 Marks	L2	CO2
	b)	Explain the factors influencing energy requirement of a normal person.	12 Marks	L2	CO2

MODULE-III

6.	a)	Classify fibers with suitable examples.	6 Marks	L2	CO3
	b)	Explain the significance of fibers in the diet along with dietary sources.	10 Marks	L2	CO3
		(OR)			
7.	a)	Discuss the functions of carbohydrates in our body.	8 Marks	L2	CO3
	b)	Summarize the effects of too high and too low intake of carbohydrates.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the nutritional classification of proteins.	6 Marks	L2	CO4
	b)	Describe the methods to improve the quality of proteins.	10 Marks	L6	CO4
		(OR)			
9.	a)	Explain the functions of PUFA and MUFA.Name one good source of PUFA and MUFA in regular diet.	8 Marks	L2	CO4
	b)	Discuss the digestion of Fats in our digestive system.	8 Marks	L6	CO4

MODULE-V

10.	a)	Explain the clinical manifestations of Vitamin-A deficiency.	4 Marks	L2	CO5
	b)	Enumerate the functions of vitamin A in body along with its important sources.	12 Marks	L6	CO5
		(OR)			
11.	a)	Identify various signs we see in our body which tells us that we are suffering from a deficiency of Vitamins and minerals.	8 Marks	L2	CO5
	b)	Discuss five examples of conditions of vitamins and minerals deficiency and suggest ways to improve it.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

BIOPHYSICAL TECHNIQUES

[Microbiology, Biotechnology & Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Discuss the importance of pH in the human body.	2 Marks	L2	CO1
	b)	What is BOD? How is it measured in water samples?	2 Marks	L1	CO1
	c)	Give uses of French press in cell homogenization.	2 Marks	L1	CO2
	d)	Define angular velocity. How do you calculate RCF acting on a particle during centrifugation?	2 Marks	L1	CO2
	e)	Define exclusion limit of a gel in GFC	2 Marks	L1	CO3
	f)	List any two uses of gradient elution in chromatography.	2 Marks	L2	CO3
	g)	What are poly ampholytes? How are they useful in electrophoresis?	2 Marks	L1	CO4
	h)	What are spacer arms used in affinity chromatography? Give 2 examples.	2 Marks	L1	CO4
	i)	What is a monochromatic light? Give example.	2 Marks	L1	CO5
	j)	Define Bequerel? Convert 1 Curie into S.I units.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain in detail about water quality parameters.	8 Marks	L2	CO1
	b)	Describe the principle, working and applications of oxygen electrode.	8 Marks	L2	CO1
		(OR)			
3.	a)	What is Chemical Oxygen demand? How is it measured?	8 Marks	L1	CO1
	b)	Find out the pH of 0.01 M KOH solution.	8 Marks	L2	CO1

MODULE-II

4.	a)	Give a brief note on principle and applications of Microfluidizer.	8 Marks	L2	CO2
	b)	Explain the principle and working of Potter-Elvehjem homogenizer.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the sucrose density gradient centrifugation for fractionating cell organelles.	8 Marks	L2	CO2
	b)	How is centrifugation useful in the study of macromolecules?	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the principle and applications of affinity chromatography.	8 Marks	L2	CO3
	b)	Describe with examples, the use of spacer arms to prepare an affinity matrix.	8 Marks	L2	CO3

(OR)

7.	a)	Describe the types of porous gels used in gel filtration chromatography.	8 Marks	L2	CO3
	b)	How is molecular weight of a protein determined in gel filtration chromatography?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe the principle and applications of isoelectric focusing.	8 Marks	L2	CO4
	b)	Give a detailed account of SDS-PAGE and its applications.	8 Marks	L2	CO4

(OR)

9.	a)	Explain the principle instrumentation and working of a Capillary electrophoresis.	8 Marks	L2	CO4
	b)	What is electro-endosmosis? How does it affect the ions mobility in Capillary electrophoresis?	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe the principle, instrumentation and applications of Colorimeter.	8 Marks	L2	CO5
	b)	Explain the principle, Instrumentation of a Photo-Fluorimeter.	8 Marks	L2	CO5

(OR)

11.	a)	Explain the measurement of radioactivity using GM-counters	8 Marks	L2	CO5
	b)	What are Radioisotopes? Give examples. List out the safety measures while working with radioisotopes.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January - 2024

ENZYMOLOGY

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

1.	a)	Define catalytic site and allosteric site.	2 Marks	L1	CO1
	b)	How pH and temperature affect the rate of enzyme activity?	2 Marks	L1	CO1
	c)	Write the equation for Eadie-Hofstee plot.	2 Marks	L1	CO2
	d)	Write the general mathematical expression of enzyme catalyzed reaction. Which is the rate limiting step in Michaelis-Menten (MM) reaction?	2 Marks	L1	CO2
	e)	Recall the difference between uncompetitive inhibition and non-competitive inhibition.	2 Marks	L1	CO3
	f)	What is transition state theory?	2 Marks	L1	CO3
	g)	What is coenzyme? Outline the function of coenzyme.	2 Marks	L1	CO4
	h)	Define synthetic enzyme. Outline one example of synthetic enzyme.	2 Marks	L1	CO4
	i)	Give an example of oligomer enzyme and allosteric enzyme.	2 Marks	L1	CO5
	j)	Mention the difference between MWC and KNF models.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the mechanism of enzyme catalyzed reaction with the help of graphical representation.	10 Marks	L2	CO1
	b)	What are cofactors? How they are useful? Explain with examples.	6 Marks	L2	CO1
		(OR)			
3.	a)	Write a note about classification of enzymes.	7 Marks	L1	CO1
	b)	What does IUBMB stands for? Explain the Nomenclature system of enzyme with example.	9 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the effect of pH, temperature and substrate concentration on enzyme activity.	8 Marks	L6	CO2
	b)	For an enzyme catalysed reaction, $V_{max} = 6 \times 10^{-3}$ M/s and $K_m = 4 \times 10^{-6}$ M with initial substrate concentration as 2×10^{-6} M. What might be the initial velocity of this reaction?	8 Marks	L6	CO2
		(OR)			
5.	a)	If KM = 2 mM, and vo = 100 μmol/(mL•s) when [S] = 2 mM, what is the velocity, vo, for the reaction when [S] = 18 mM?	7 Marks	L6	CO2
	b)	Illustrate the difference and significance of Lineweavar Burk, Eadie- Hofstee, Hanes plots.	9 Marks	L2	CO2

MODULE-III

6.	a)	Outline any two differences between completive inhibition and non-competitive inhibition. Also graphically represent both type of inhibition.	6 Marks	L2	CO3
	b)	Explain the different types of reversible enzyme inhibition. How do you distinguish those using kinetic data?	10 Marks	L2	CO3
		(OR)			
7.	a)	Derive a rate of equation for competitive inhibition enzyme system and how does it differ from non-competitive inhibition.	9 Marks	L5	CO3
	b)	What are allosteric enzymes? Describe the roles of allosteric inhibition.	7 Marks	L2	CO3

MODULE-IV

8.	a)	Recall the mechanism of site-directed mutagenesis with suitable example.	9 Marks	L1	CO4
	b)	Explain the mechanism of Coenzyme PLP.	7 Marks	L2	CO4
		(OR)			
9.	a)	Explain the mechanism of enzyme action and coenzymes.	6 Marks	L2	CO4
	b)	Write a note on Modern concepts of evaluation of catalysis with suitable examples.	10 Marks	L1	CO4

MODULE-V

10.	a)	What are zymogens? Explain the process of activation of zymogen with suitable examples.	8 Marks	L2	CO4
	b)	How the difference in the specificity of chymotrypsin and other related protease arise.	8 Marks	L1	CO4
		(OR)			
11.	a)	Illustrate the mechanistic role of the coenzymes in enzyme catalyzed reactions with suitable example.	6 Marks	L2	CO4
	b)	What is sigmoidal behavior? Write a note on significance of sigmoidal kinetics with one model.	10 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

BASIC ORGANIC CHEMISTRY

[Microbiology, Biotechnology & Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Show the structures of isopentane and neopentane.	2 Marks	L1	CO1
	b)	Recall the definition of tautomerism.	2 Marks	L1	CO1
	c)	Write the Corey-House reaction..	2 Marks	L1	CO2
	d)	What the most stable conformation of cyclohexane ? Give the structure.	2 Marks	L1	CO2
	e)	What is Saytzeff's rule ?	2 Marks	L1	CO3
	f)	What is hydroboration ?	2 Marks	L1	CO3
	g)	Define aromaticity.	2 Marks	L1	CO4
	h)	Explain Friedel Craft's acylation reaction.	2 Marks	L1	CO4
	i)	What are optical isomers ?	2 Marks	L1	CO5
	j)	Define enantiomers.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain about the geometry of organic molecules.	10 Marks	L2	CO1
	b)	Analyse steric effects with suitable examples.	6 Marks	L4	CO1

(OR)

3.	a)	Explain Keto-enol tautomerism.	8 Marks	L2	CO1
	b)	Explain hyperconjugation effect.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain Wurtz reaction and Wurtz-Fittig reaction.	9 Marks	L2	CO1
	b)	Discuss the nomenclature and types of cycloalkanes.	7 Marks	L2	CO1

(OR)

5.	a)	Explain the chemical properties of alkanes.	8 Marks	L2	CO1
	b)	Interpret conformations of cyclohexane with energy diagram.	8 Marks	L4	CO1

MODULE-III

6.	a)	Explain E1 and E1Cb reactions.	6 Marks	L2	CO2
	b)	Elaborate stability of dienes.	10 Marks	L2	CO2

(OR)

7.	a)	Outline the electrophilic addition reactions of alkenes.	8 Marks	L2	CO2
	b)	Interpret mechanism of addition of water, hydrogen halides and halogens to alkynes.	8 Marks	L4	CO2

MODULE-IV

8.	a)	Explain Huckel's rule and application to benzenoid and non benzenoid compounds.	9 Marks	L4	CO3
	b)	Discuss the mechanism of Friedel Craft's alkylation reaction.	7 Marks	L6	CO3

(OR)

9.	a)	Interpret molecular structure of benzene based on VBT and MOT.	8 Marks	L2	CO4
	b)	Summarize the Ring activating and deactivating groups with examples.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe optical isomerism in glyceraldehyde and tarataric acid.	9 Marks	L3	CO5
	b)	Discuss about E,Z-configuration with examples.	7 Marks	L6	CO5

(OR)

11.	a)	Explain optical activity of chiral molecules.	7 Marks	L2	CO5
	b)	Elaborate the optical isomerism in Lactic acid and 2,3-dibromopentane.	9 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January - 2024

PRINCIPLES OF MICROBIOLOGY

[Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Microbiology?	2 Marks	L1	CO1
	b)	What is germ theory of disease?	2 Marks	L1	CO1
	c)	What is psi & its importance in autoclave?	2 Marks	L1	CO2
	d)	Compare between antiseptic and disinfectant.	2 Marks	L1	CO2
	e)	List out the components of compound microscope.	2 Marks	L1	CO3
	f)	What is the function of an auxochrome in a stain?	2 Marks	L1	CO3
	g)	What is the function bacterial capsule?	2 Marks	L1	CO4
	h)	What is the taxonomic name of bacteria?	2 Marks	L1	CO4
	i)	Define bacteriophage.	2 Marks	L1	CO5
	j)	What are the common shapes of Viruses?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is germ theory and describe Koch postulates.	8 Marks	L1	CO1
	b)	Discuss the importance Edward Jenner experiment towards the world?	8 Marks	L1	CO1

(OR)

3.	a)	Briefly write a note on classification of bacteria based on nutrition	8 Marks	L1	CO1
	b)	Explain about growth of microorganisms based on oxygen requirements.	8 Marks	L1	CO1

MODULE-II

4.	a)	Describe pasteurization process	8 Marks	L1	CO2
	b)	What are the physical methods of sterilization.	8 Marks	L1	CO2

(OR)

5.	a)	Describe the role of disinfectants, sanitization, antiseptics and fumigation with examples.	8 Marks	L2	CO2
	b)	Explain the process of Rideal-walker Coefficient.	8 Marks	L1	CO2

MODULE-III

6.	a)	What are the applications of microscope in the field of microbiology?	8 Marks	L1	CO3
	b)	What are the different types of microscopes and draw a neat labelled diagram of compound microscope.	8 Marks	L1	CO3

(OR)

7.	a)	Describe the differences between simple staining and differential staining techniques.	8 Marks	L1	CO3
	b)	What is the principle and steps involved in negative staining?	8 Marks	L1	CO3

MODULE-IV

8.	a)	What are the various Shapes and arrangement of Bacteria	6 Marks	L1	CO4
	b)	Write about endospore formation in bacteria with neat labeled diagram.	10 Marks	L1	CO4

(OR)

9.	a)	What is the structure and function of prokaryotic cells?	8 Marks	L1	CO4
	b)	Explain briefly about microbial locomotion and arrangements of flagella.	8 Marks	L1	CO4

MODULE-V

10.	a)	Draw the structure and functions of bacteriophage.	8 Marks	L1	CO5
	b)	What are the steps of the lytic and lysogenic cycle?	8 Marks	L1	CO5

(OR)

11.	a)	What is bacterial (Phage) virus and describe its characteristics.	6 Marks	L1	CO5
	b)	Explain briefly about the life cycle of bacterial (Phage) virus?	10 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

FUNDAMENTALS OF DIGITAL ELECTRONICS AND LOGIC DESIGN

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Convert $(4BAC)_{16}$ to binary .	2 Marks	L1	CO1
	b)	Convert $(367.52)_8$ to binary.	2 Marks	L1	CO1
	c)	Simplify F(x, y, z) = x'yz'+xy'z+x'z'.	2 Marks	L3	CO2
	d)	Simplify F(x, y, z) = Σ(3, 4, 6, 7) using K-map.	2 Marks	L3	CO2
	e)	Write the sum and carry expression for half adder.	2 Marks	L1	CO2
	f)	Draw the block diagram of 2x4 decoder with enable input.	2 Marks	L1	CO2
	g)	Draw the logic diagram of SR NAND Latch.	2 Marks	L1	CO3
	h)	Difference between Latch and Flip-flop.	2 Marks	L2	CO3
	i)	List the major difference between PLA and PAL.	2 Marks	L2	CO4
	j)	Define EPROM.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Compare BCD, Excess-3 and Gray codes.	8 Marks	L1	CO1
	b)	Convert Binary code 101100 to Gray Code, hexadecimal, decimal and binary.	8 Marks	L1	CO1

(OR)

3.		Draw the logic symbol and construct the truth tables for the following gates i) OR gate ii) NOT gate iii) EX-NOR gate	16 Marks	L1	CO1

MODULE-II

4.		Simplify the following Boolean function using K-map method. $F(w,x,y,z) = \sum_m (1,11,12,13,14,15) + d(0,2,6)$.	16 Marks	L2	CO2

(OR)

5.		Find the F(W,X,Y,Z)=∑m(1,4,6,7,8,9,10,1115) using K- map method and draw the logic circuit of the minimal expression.	16 Marks	L2	CO2

MODULE-III

6.	a)	Design & implement Full Subtractor with truth table and also draw the block diagram of full adder using half adders.	8 Marks	L3	CO3
	b)	Design & implement Full Adder with truth table and also draw the block diagram of full subtractor using half subtractors.	8 Marks	L3	CO3

(OR)

7.	a)	Design a four input priority encoder with input D0 having the highest priority and input D3 the lowest priority.	8 Marks	L3	CO2
	b)	Draw the block diagram of 4*16 decoder using two 3*8 decoder circuits.	8 Marks	L1	CO2

MODULE-IV

8.	a)	Write the difference between combinational and sequential circuits	8 Marks	L1	CO3
	b)	Draw the circuit of JK flip flop using NAND gates and explain its operation	8 Marks	L1	CO3
		(OR)			
9.	a)	What is the function of shift register? With the help of simple diagram explain the working	8 Marks	L1	CO3
	b)	Draw the truth and excitation tables for T & D flip flops	8 Marks	L1	CO3

MODULE-V

10.	a)	Implement Boolean function using PLA $Y(A,B,C,D)=\Sigma m(2,3,8,9,10,12,13)+d(0,1,4,5)$	8 Marks	L3	CO4
	b)	Design PAL for the Boolean function $F1(X,Y,Z)=X'Y'Z+XZ'+YZ'$	8 Marks	L3	CO4
		(OR)			
11.		Implement the following Boolean functions using PAL. $W(A,B,C,D)=\Sigma m(0,2,6,7,8,9,12,13)+d(1,3,5,6,10).$ $X(A,B,C,D)=\Sigma m(0,2,6,7,8,9,12,13,14)+d(1,3,5,10,15).$	16 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

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B.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

SINGLE VARIABLE CALCULUS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Show that $\left\{\frac{1}{n!}\right\}$ is a subsequence of $\left\{\frac{1}{n}\right\}$.	2 Marks	L1	CO1
	b)	Prove that the sequence $S_n = \frac{3n-1}{n+2}$ is increasing and bounded above.	2 Marks	L2	CO1
	c)	Test for convergence $\sum \frac{1}{n^2+1}$.	2 Marks	L2	CO2
	d)	Define alternating series.	2 Marks	L1	CO2
	e)	Examine the continuity of $f(x) = 2x$ if $0 \le x < 1$, $f(x) = 3$ if $x = 1$ and $f(x) = 4x$ if $1 < x \le 2$ at the point $x = 1$.	2 Marks	L2	CO3
	f)	If $f(x) = \frac{e^{1/x}}{1+e^{1/x}}$, find whether $\lim_{x \to 0} f(x)$ exists or not.	2 Marks	L1	CO3
	g)	State Rolle's Theorem	2 Marks	L1	CO4
	h)	Find the left and right derivatives of $f(x) = x^2 - 1$ if $x \ge 1$ and $f(x) = 1 - x$ if $x < 1$ at $x = 1$.	2 Marks	L2	CO4
	i)	State fundamental theorem of integral calculus.	2 Marks	L1	CO5
	j)	If $f(x) = x$ on $[0,1]$ and $P = \left\{0, \frac{1}{3}, \frac{2}{3}, 1\right\}$ find $U(p, f)$	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	If $S_n = \frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \ldots\ldots\ldots + \frac{1}{n(n+1)}$ prove that $\{s_n\}$ is convergent.	8 Marks	L3	CO1
	b)	State and prove squeeze theorem.	8 Marks	L3	CO1
		(OR)			
3.	a)	Show that every convergent sequence is bounded	8 Marks	L3	CO1
	b)	Show that the sequence $\{X_n\}$ defined by $x_n = \frac{3n-1}{4n+5}$ converges to $\frac{3}{4}$.	8 Marks	L2	CO1

MODULE-II

4.	a)	State and prove limit comparison test.	8 Marks	L3	CO2
	b)	Test for convergence $\sum_{n=1}^{\infty}\left(\sqrt{n^3+1}-\sqrt{n^3}\right)$	8 Marks	L3	CO2

(OR)

5.	a)	Test for convergence $\sum_{n=1}^{\infty}\left(\sqrt{n^4+1}-\sqrt{n^4-1}\right)$	8 Marks	L3	CO2
	b)	State and prove Cauchy's condensation Test.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss the continuity of $f(x)=\dfrac{xe^{1/x}}{1+e^{1/x}}$ where $x\neq 0$ and $f(0)=0$ at the origin.	8 Marks	L2	CO3
	b)	If a function f is continuous on [a, b] then prove that it is uniform continuous on [a, b].	8 Marks	L3	CO3

(OR)

7.	a)	Let $f:R\to R$ be such that $f(x)=\dfrac{e^{1/x}-e^{-1/x}}{e^{1/x}+e^{-1/x}}$ if $x\neq 0$ and $f(0)=1$ discuss the continuity at $x=0$.	8 Marks	L2	CO3
	b)	If $f:[a,b]\to R$ is continuous on $[a,b]$ then prove that f is bounded on $[a,b]$	8 Marks	L2	CO3

MODULE-IV

8.	a)	State and prove Cauchy's mean value theorem.	8 Marks	L4	CO4
	b)	Discuss the applicability of Lagrange's mean value theorem for $f(x)=x(x-1)(x-2)$ on $\left[0,\dfrac{1}{2}\right]$.	8 Marks	L3	CO4

(OR)

9.	a)	Find C of Cauchy's mean value theorem for $f(x)=\sqrt{x}$ and $g(x)=\dfrac{1}{\sqrt{x}}$ in $[a,b]$ where $0<a<b$.	8 Marks	L2	CO4
	b)	If $f(x)=x\left(\dfrac{e^{1/x}-e^{-1/x}}{e^{1/x}+e^{-1/x}}\right)$ if $x\neq 0$ and $f(0)=0$. Show that f is not derivable at 0.	8 Marks	L3	CO4

MODULE-V

10.	a)	Prove that $f(x)=x^2$ is integrable on $[0,a]$ and $\int_0^a x^2dx=\dfrac{a^3}{3}$.	8 Marks	L2	CO5
	b)	If $f(x)=x^2$ on $[0,1]$ and $P=\left\{0,\dfrac{1}{4},\dfrac{2}{4},\dfrac{3}{4},1\right\}$ compute $L(p,f)$ and $U(p,f)$.	8 Marks	L3	CO5

(OR)

11.	a)	State and prove Fundamental theorem of integral calculus.	8 Marks	L4	CO5
	b)	If $f:[a,b]\to R$ is monotonic on $[a,b]$ then prove that f isintegrable on $[a,b]$.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

DATA STRUCTURES

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Data structure?	2 Marks	L2	CO1
	b)	Define ADT of Array? (or) Array Operations.	2 Marks	L1	CO1
	c)	Show the difference between Arrays and Linked List.	2 Marks	L2	CO2
	d)	List out Advantages and disadvantages of doubly link list.	2 Marks	L2	CO2
	e)	What is Queue with a real-life example?	2 Marks	L2	CO3
	f)	Illustrate various application of Stack.	2 Marks	L2	CO3
	g)	What are Binary Trees?	2 Marks	L1	CO4
	h)	Define the basic terminology of trees.	2 Marks	L2	CO4
	i)	Show the difference between linear and binary search.	2 Marks	L2	CO5
	j)	How we determine the efficiency of algorithm?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Distinguish between Linear and Non-Linear Data Structure.	8 Marks	L4	CO1
	b)	Explain various refinement stages in Data Structures.	8 Marks	L2	CO1

(OR)

3.	a)	Define how to approach to Structured Programming.	8 Marks	L3	CO1
	b)	Explain how to Data Representation into the main memory.	8 Marks	L2	CO1

MODULE-II

4.	a)	Classify the difference between Linear and Non-Linear Data Structures.	8 Marks	L3	CO2
	b)	Define an array. Explain about merits and demerits of Arrays in C++?.	8 Marks	L2	CO2

(OR)

5.	a)	What is Circular linked list? How to create and traversing circular linked list? Explain**.**	8 Marks	L5	CO2
	b)	Explain Data structure? List out different types of linked list.	8 Marks	L2	CO2

MODULE-III

6.	a)	Define stack? Design push and pop algorithm that manipulate a stack.	8 Marks	L2	CO3
	b)	Design an Algorithm for Conversion Infix to Prefix Notation:	8 Marks	L5	CO3

(OR)

7.	a)	How queues are implemented using arrays?	8 Marks	L3	CO3
	b)	Compare between **Stack** and **Queue** in data structure.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain about Binary Tree and write Properties of Binary trees.	8 Marks	L2	CO3
	b)	What is tree traversal? Illustrate different tree traversal methods of a binary tree**.**	8 Marks	L5	CO3

(OR)

9.	a)	Discuss the traversing of binary search trees.	8 Marks	L4	CO3
	b)	Design an algorithm using C++ for the following operations a) Searching an item in a binary search tree b) Inserting an item a) Deleting an item	8 Marks	L5	CO3

MODULE-V

10.	a)	Outline the concept of Merge Sort Technique. With an example.	8 Marks	L4	CO3
	b)	Develop an algorithm for traversing a graph using Depth First Search.	8 Marks	L5	CO3

(OR)

11.	a)	Define Minimal Spanning Trees in Graphs. Illustrate an example.	8 Marks	L3	CO3
	b)	Design a program to search an item in a given list using Linear Search.	8 Marks	L5	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations January – 2024

STATISTICAL METHODS AND INFERENCES

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How can you interpret the strength of correlation?	2 Marks	L1	CO1
	b)	Write the formula for Spearman's rank correlation.	2 Marks	L1	CO1
	c)	What is the difference between linear and nonlinear regression?	2 Marks	L1	CO2
	d)	Write the two Regression coefficients.	2 Marks	L1	CO2
	e)	What is a type I error?	2 Marks	L1	CO3
	f)	What is critical region?	2 Marks	L1	CO3
	g)	What is the F-test?	2 Marks	L1	CO4
	h)	What is small sample?	2 Marks	L1	CO4
	i)	When is a nonparametric test used in hypothesis testing?	2 Marks	L1	CO5
	j)	List disadvantages of non-parametric tests.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain different types of correlations?	8 Marks	L2	CO1
	b)	Calculate Karl Pearson's coefficient of correlation for the following data using step deviation method.	8 Marks	L3	CO1

X	300	350	400	450	500	550	600	650	700
Y	800	900	1000	1100	1200	1300	1400	1500	1600

(OR)

3.	a)	Explain Karl Pearson correlation coefficient of correlation?	8 Marks	L2	CO1
	b)	Calculate the correlation coefficient between X and Y, and comment on their relationship.	8 Marks	L3	CO1

X	-3	-2	-1	1	2	3
Y	9	4	1	1	4	9

MODULE-II

4.	a)	Compare the differences of correlation and regression.	8 Marks	L2	CO2
	b)	Obtain regression equation of Y on X and estimate Y when X=55 from the following.	8 Marks	L3	CO2

X	40	50	38	60	65	50	35
Y	38	60	55	70	60	48	30

(OR)

5.	a)	Demonstrate the concept of regression.	8 Marks	L2	CO2
	b)	Find the means of X and Y variables and the coefficient of correlation between them from the following two regression equations: 2Y–X–50 = 0, 3Y–2X–10 = 0.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain critical region with suitable diagrams.	8 Marks	L2	CO3
	b)	Obtain the best critical region for testing H_0: $\lambda = \lambda_0$ against H_1: $\lambda = \lambda_1$ in a Poisson Distribution.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain two types of errors used in decision making.	8 Marks	L2	CO3
	b)	Obtain best critical region for testing H_0: $p=p_0$ against H_1: $p=p_1$ in a binomial distribution.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the confidence intervals for means.	8 Marks	L2	CO4
	b)	A random sample of 120 students from large university yields mean GPA 2.71 with sample standard deviation 0.51. Construct a 90% confidence interval for the mean GPA of all students at the university.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the large sample test for single proportion.	8 Marks	L2	CO4
	b)	In 1993 the General Social Survey found that approximately 23% of the adult population opposed the death penalty for persons convicted of murder. A researcher thinks that the current proportionof the adult population that opposes the death penalty is greater than 23%. The researcher takes an SRS of 2000 adults and finds that 535 people oppose the death penalty. State the hypotheses, give the test statistic, find the P-value, and state your conclusion. Use the 5% significance level.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain non parametric tests and their disadvantages.	8 Marks	L2	CO5
	b)	We have the following data: Group A: 78 83 72 77 85 80 71 76 Group B: 92 87 93 89 88 90 91 94 Perform the Wilcoxon-Mann-Whitney U test.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the differences between parametric test and non-parametric tests.	8 Marks	L2	CO5
	b)	We have the following data: **Group A:** 58 62 66 69 70 72 74 75 77 79 81 84 85 86 87 89 91 92 93 94 **Group B:** 47 52 53 54 56 57 58 60 61 62 63 64 65 67 68 70 71 73 75 76 Perform the Wilcoxon-Mann-Whitney U test.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, January - 2024

OBJECT ORIENTED PROGRAMMING WITH C++

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write a short note on Programming language generation?	2 Marks	L1	CO1
	b)	List out the benefits of Object oriented programming?	2 Marks	L2	CO1
	c)	Compare the difference between while and do-while?	2 Marks	L1	CO2
	d)	What is the need of inline function in C++?	2 Marks	L2	CO2
	e)	Explain about friend function?	2 Marks	L1	CO3
	f)	What is the use of destructor in C++?	2 Marks	L2	CO3
	g)	Recall the special operators in C++?	2 Marks	L1	CO4
	h)	Write a short note on virtual functions?	2 Marks	L1	CO4
	i)	Discuss about file classes in C++?	2 Marks	L2	CO5
	j)	What is command line arguments with syntax?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write about object oriented programming paradigm? What are the unique advantages of an object oriented programming paradigm?	8 Marks	L1	CO1
	b)	Compare difference between C Programming language and C++ Programming language.	8 Marks	L2	CO1

(OR)

3.	a)	Write about scope resolution operator in C++ with example?	8 Marks	L1	CO1
	b)	Define Constant? Classify different types of constants supported by C++ language.	8 Marks	L3	CO1

MODULE-II

4.	a)	What is looping statement? Explain types of looping statements supported by C++.	8 Marks	L2	CO2
	b)	Demonstrate about two- dimensional arrays with example.	8 Marks	L3	CO2

(OR)

5.	a)	Define Recursion? How Recursion will be implemented? Explain with an example.	8 Marks	L3	CO2
	b)	Demonstrate about one- dimensional arrays with example.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain about various methods for defining member functions with an example?	8 Marks	L4	CO3
	b)	Demonstrate about constructor overloading with an example?	8 Marks	L3	CO3

(OR)

7.	a)	Write about array of Objects in C++ with an example?	8 Marks	L2	CO3
	b)	Write about dynamic constructor with an example in C++?	8 Marks	L1	CO3

MODULE-IV

8.	a)	What is Operator Overloading? Write advantages of Operator Overloading?	8 Marks	L1	CO4
	b)	Demonstrate about Multilevel Inheritance with an example?	8 Marks	L3	CO4

(OR)

9.	a)	Write about unary Operator Overloading with an example.	8 Marks	L3	CO4
	b)	Illustrate about Multiple Inheritances with an example?	8 Marks	L1	CO4

MODULE-V

10.	a)	Briefly explain about file operations in C++?	8 Marks	L2	CO5
	b)	Explain about file pointers and their manipulations?	8 Marks	L2	CO5

(OR)

11.	a)	Explain about file modes in C++.	8 Marks	L2	CO5
	b)	Design a C++ program to reading and writing data from a file.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

OPERATING SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Operating System?	2 Marks	L2	CO1
	b)	What is a Process?	2 Marks	L2	CO1
	c)	What is Semaphore?	2 Marks	L1	CO2
	d)	What do you meant by Monitors?	2 Marks	L1	CO2
	e)	Define Swapping?	2 Marks	L2	CO3
	f)	What is Page fault?	2 Marks	L1	CO3
	g)	Define File Structure?	2 Marks	L2	CO4
	h)	Define Kernel?	2 Marks	L2	CO4
	i)	Explain about Access Control?	2 Marks	L2	CO5
	j)	What is a Worm?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the features of open source operating systems with examples?	8 Marks	L2	CO1
	b)	What is system call? Discuss major system calls of operating system?	8 Marks	L2	CO1
		(OR)			
3.		Explain the criteria for evaluation of CPU scheduling algorithms?	16 Marks	L2	CO1

MODULE-II

4.	a)	What are semaphores?	8 Marks	L2	CO1
	b)	Explain solution to producer-consumer problem using semaphores?	8 Marks	L3	CO1
		(OR)			
5.	a)	Explain the Banker's algorithm for deadlock avoidance with an example	8 Marks	L3	CO1
	b)	Explain about deadlocks in detail?	8 Marks	L4	CO1

MODULE-III

6.	a)	Compare and contrast paging and segmentation.	8 Marks	L3	CO3
	b)	Explain about Contiguous memory allocation?	8 Marks	L4	CO1
		(OR)			
7.	a)	What are the different page replacement algorithms?	8 Marks	L3	CO1
	b)	Explain them with examples?	8 Marks	L3	CO2

MODULE-IV

8.	a)	What is the purpose of I/O system calls and device-driver?	8 Marks	L2	CO3
	b)	How do the devices vary?	8 Marks	L2	CO3
		(OR)			
9.	a)	Describe the services provided by the Kernel I/O subsystem in detail?	8 Marks	L3	CO4
	b)	What is access matrix? Describe how it can be implemented effectively?	8 Marks	L1	CO4

MODULE-V

10.	a)	Discuss network threats and its protection mechanisms required for operating system in detail?	8 Marks	L1	C05
	b)	Define system threat. Give example of system threats?	8 Marks	L2	CO5
		(OR)			
11.	a)	What is the need for language-based protection? What are the advantages of enforcing protection in programming language?	8 Marks	L2	CO5
	b)	Explain About User Authentication?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

GENOMICS

[Bioinformatics, Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define genomics and explain its significance in the field of molecular biology.	2 Marks	L1	CO1
	b)	Differentiate between genomics and genetics, highlighting their key distinctions.	2 Marks	L2	CO1
	c)	What is Sanger sequencing, and how does it work at a molecular level?	2 Marks	L3	CO2
	d)	What is the significance of dideoxynucleotides in the Sanger sequencing reaction?	2 Marks	L3	CO2
	e)	Define genome organization and explain the hierarchical levels of genome structure.	2 Marks	L4	CO3
	f)	List three types of DNA sequences commonly found in eukaryotic genomes.	2 Marks	L2	CO3
	g)	Define metagenomics and explain its significance in the study of microbial communities.	2 Marks	L3	CO4
	h)	List two key differences between metagenomics and traditional genomics.	2 Marks	L4	CO4
	i)	What does SNP stand for?	2 Marks	L5	CO5
	j)	Define Linkage.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define gene bank and what are the activities carried out in a gene bank.	10 Marks	L2	CO1
	b)	Define the primary structure of DNA.	6 Marks	L4	CO1
		(OR)			
3.	a)	What are the types of gene banks and provide list of gene banks present in India?	8 Marks	L3	CO1
	b)	Give an overview of genomics.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe Automated sequencing method.	10 Marks	L2	CO2
	b)	Briefly describe the mechanisms involved in DNA repair. How does the cell detect and repair DNA damage?	6 Marks	L4	CO2

(OR)

5.	a)	What do you mean by transposable elements and how are they useful in genome sequencing and genome editing?	9 Marks	L2	CO2
	b)	What is the role of dideoxynucleotides (ddNTPs) in Sanger sequencing? How does capillary electrophoresis contribute to the Sanger sequencing process?	7 Marks	L4	CO2

MODULE-III

6.	a)	Define phylogenomics and phytogenomics. How do these fields contribute to our understanding of evolutionary relationships among species	10 Marks	L3	CO3
	b)	Provide examples of second-generation sequencing platforms and their applications. Describe the process of genome assembly. What challenges are associated with assembling a genome from sequencing data?	6 Marks	L4	CO3

(OR)

7.	a)	What are the characteristics of third-generation sequencing technologies?	8 Marks	L4	CO3
	b)	Discuss the significance of comparative genomics in understanding evolutionary relationships and functional genomics.	8 Marks	L3	CO3

MODULE-IV

8.	a)	How do bioinformatics tools contribute to metagenome assembly?	10 Marks	L4	CO4
	b)	Discuss the types of information that can be extracted from metagenomic data.	6 Marks	L3	CO4

(OR)

9.	a)	Differentiate between microbial and eukaryotic genomes.	8 Marks	L2	CO4
	b)	How do the characteristics of microbial genomes influence metagenomic studies?	8 Marks	L4	CO4

MODULE-V

10.	a)	Describe the McDonald-Kreitman test and its purpose in evolutionary biology.	10 Marks	L2	CO5
	b)	Define linkage and recombination in genetics.	6 Marks	L3	CO5

(OR)

11.	a)	Discuss the concept of spatial and temporal variation in genetic populations.	8 Marks	L3	CO5
	b)	How does the MK-Test distinguish between neutral evolution and positive selection?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

BASIC CONCEPTS OF MICROBIAL GENETICS

[Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain SSB.	2 Marks	L1	CO1
	b)	Write about conservative replication.	2 Marks	L1	CO1
	c)	What is RNA polymerase.	2 Marks	L1	CO2
	d)	Define transcription.	2 Marks	L1	CO2
	e)	Write about structural genes.	2 Marks	L1	CO3
	f)	Name the examples of chemical mutagen.	2 Marks	L1	CO3
	g)	Define transformation and write the examples.	2 Marks	L1	CO4
	h)	What is specialized transduction?	2 Marks	L1	CO4
	i)	Write about uses of plasmids.	2 Marks	L1	CO5
	j)	What are the uses of transposons?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Summarize mode of replication.	8 Marks	L2	CO1
	b)	Describe the enzymes involved in replication.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize unidirectional replication and note few examples.	8 Marks	L2	CO1
	b)	Discuss bidirectional replication and note few examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the process of transcription.	8 Marks	L2	CO2
	b)	Explain the properties of Genetic code.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the translation process.	8 Marks	L2	CO2
	b)	Explain in detail about translation inhibitors.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain about one gene one polypeptide hypothesis.	8 Marks	L2	CO3
	b)	Summarize about types of genes.	8 Marks	L2	CO3
		(OR)			
7.	a)	Summarize about mutagens.	8 Marks	L2	CO3
	b)	Explain about spontaneous and induced mutation.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain about Hfr strains.	8 Marks	L2	CO4
	b)	Summarize how F^- strain becomes to F^+ strain.	8 Marks	L2	CO4

(OR)

9.	a)	Summarize detail about transformation process.	8 Marks	L2	CO4
	b)	Explain in detail about transduction.	8 Marks	L2	CO4

MODULE-V

10.	a)	Outline the difference of replicative and non-replicative transposons.	8 Marks	L2	CO5
	b)	Describe types of Insertion sequences.	8 Marks	L2	CO5

(OR)

11.	a)	Explain in detail steps to involve in transposition.	8 Marks	L2	CO5
	b)	Summarize about uses of transposition.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

MICROBES IN SUSTAINABLE AGRICULTURE AND DEVELOPMENT

[Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain why soil is considered a complex microbial habitat.	2 Marks	L3	CO1
	b)	Name two key factors influencing microbial activity in soil.	2 Marks	L1	CO1
	c)	How is carbon dioxide produced in soil, and what are the primary sources of CO2 emissions?	2 Marks	L2	CO2
	d)	Discuss the microbial processes leading to methane production in anaerobic environments.	2 Marks	L4	CO2
	e)	Define Plant Growth-Promoting Bacteria (PGPB) and explain their role in plant health.	2 Marks	L1	CO3
	f)	Name two mechanisms by which PGPB enhance nutrient availability for plants.	2 Marks	L1	CO3
	g)	What is biotech feed?	2 Marks	L4	CO4
	h)	What is silage?	2 Marks	L2	CO4
	i)	List two advantages of genetically modified (GM) crops in agriculture	2 Marks	L3	CO5
	j)	Name one potential disadvantage associated with the cultivation of GM crops.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain how microbial diversity contributes to soil health.	10 Marks	L1	CO1
	b)	Discuss the factors influencing the distribution of microorganisms in soil.	6 Marks	L3	CO1

(OR)

3.	a)	Define mineralization in the context of soil microbiology.	8 Marks	L1	CO1
	b)	Describe the steps involved in the mineralization of cellulose in soil.	8 Marks	L1	CO1

MODULE-II

4.	a)	Provide examples of microorganisms used as biocontrol agents against microbial plant pathogens and describe their modes of action.	9 Marks	L3	CO2
	b)	Explain how insects and weeds can serve as vectors for soil-borne plant pathogens.	7 Marks	L2	CO2

(OR)

5.	a)	Discuss the concept of induced systemic resistance (ISR) as a biocontrol mechanism against soil-borne plant pathogens.	10 Marks	L4	CO2
	b)	Explain how microbial competition for nutrients can be a biocontrol strategy in soil.	6 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the environmental benefits of using biofertilizers over chemical fertilizers.	8 Marks	L3	CO3
	b)	Examine the challenges and potential solutions in the large-scale application of biofertilizers in agriculture.	8 Marks	L1	CO3

(OR)

7.	a)	Explain at least three mechanisms by which Plant Growth-Promoting Bacteria enhance plant growth. Discuss the importance of each mechanism in agricultural practices.	9 Marks	L1	CO3
	b)	Discuss the molecular and physiological interactions between PGPB and plants. Explain how these interactions contribute to improved plant health and productivity.	7 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the concept of biotech feed and how it incorporates biotechnology to improve animal nutrition.	9 Marks	L4	CO4
	b)	Discuss how biotech feed formulations can enhance animal health and productivity.	7 Marks	L2	CO4

(OR)

9.	a)	Discuss the advantages of incorporating biotechnological advancements into animal feed production	10 Marks	L1	CO4
	b)	Examine the challenges associated with the production and acceptance of biotech feed	6 Marks	L2	CO4

MODULE-V

10.	a)	Examine the social and economic aspects of GM crop adoption.	9 Marks	L3	CO5
	b)	Explore the environmental consequences associated with the cultivation of GM crops.	7 Marks	L2	CO5

(OR)

11.	a)	Provide a detailed analysis of both the advantages and disadvantages of genetically modified (GM) crops in agriculture	8 Marks	L1	CO5
	b)	Discuss how these factors impact global food production and safety.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

COMPUTATIONAL BIOLOGY

[Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is sequence alignment?	2 Marks	L1	CO1
	b)	List different types of Biological data.	2 Marks	L1	CO1
	c)	What are the different types of nodes in the Phylogentic tree?	2 Marks	L1	CO2
	d)	Compare rooted and unrooted Phylogenetic trees?	2 Marks	L1	CO2
	e)	Recall the different Molecular display programs.	2 Marks	L1	CO3
	f)	List the different types of beta strands.	2 Marks	L1	CO3
	g)	What is ORF?	2 Marks	L1	CO4
	h)	List the Gene prediction tools.	2 Marks	L1	CO4
	i)	What is the significance of Perl in Bioinformatics?	2 Marks	L1	CO5
	j)	Show the commands for copy and move in the Unix.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the traditional and Next generation sequence methods.	9 Marks	L6	CO1
	b)	Illustrate the classification of biological databases.	7 Marks	L2	CO1
		(OR)			
3.	a)	Explain Heuristic methods of sequence alignment.	10 Marks	L2	CO1
	b)	Summarize the applications of Multiple sequence alignment methods.	6 Marks	L2	CO1

MODULE-II

4.		Discuss Ultrametric, Mini ultrametric, Additive and Cladistic phylogenetic trees.	16 Marks	L6	CO2
		(OR)			
5.	a)	Explain UPGMA and Neighbor joining methods of Phylogenetic tree generation.	9 Marks	L2	CO2
	b)	Summarize Bootstrapping and Jackkniffing.	7 Marks	L2	CO2

MODULE-III

6.	a)	Explain the Structural genomics.	8 Marks	L2	CO3
	b)	Outline the secondary structure modeling methods.	8 Marks	L2	CO3
		(OR)			
7.	a)	Identify the steps in Molecular docking and explain.	8 Marks	L3	CO3
	b)	Compare protein structure modeling methods.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Summarize the applications of Neural networks in Bioinformatics.	8 Marks	L2	CO4
	b)	Explain different Gene prediction methods.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain DNA computing.	8 Marks	L2	CO4
	b)	Summarize the clustering techniques for the analysis of Microarray data.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the file handling in Perl.	8 Marks	L2	CO5
	b)	Analyze the importance of Unix in bioinformatics.	8 Marks	L4	CO5
		(OR)			
11.	a)	Explain Unix programming and few commands.	8 Marks	L2	CO5
	b)	Identify the significance of Perl.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

MOLECULALR BIOLOGY

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is m-RNA.	2 Marks	L1	CO1
	b)	What is Z-DNA .	2 Marks	L1	CO1
	c)	Define transcription.	2 Marks	L1	CO2
	d)	What is lac operon.	2 Marks	L1	CO2
	e)	Write about promoters.	2 Marks	L1	CO3
	f)	Define transcription.	2 Marks	L1	CO3
	g)	What is amino acid tRNA synthetase .	2 Marks	L1	CO4
	h)	Define operon.	2 Marks	L1	CO4
	i)	Define mutation.	2 Marks	L1	CO5
	j)	Write about SOS.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the structure of DNA.	8 Marks	L2	CO1
	b)	Summarize about different types of DNA.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize DNA as genetic material.	8 Marks	L2	CO1
	b)	Summarize about the types of the genes.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe how initiation of replication takes place in detail.	8 Marks	L2	CO2
	b)	Summarize difference between DNA replication in eukaryotes and prokaryotes .	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss about bidirectional replication.	8 Marks	L2	CO2
	b)	Discuss about rolling circular replication.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the steps involved in transcription.	8 Marks	L2	CO3
	b)	Describe the termination process of transcription.	8 Marks	L2	CO3
		(OR)			
7.	a)	Summarize the comparison of transcription between prokaryotes and eukaryotes .	8 Marks	L2	CO3
	b)	Describe the concept and strength of promoter.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss about translational inhibitors.	8 Marks	L2	CO4
	b)	Explain in detail about aminoacylation of t-RNA.	8 Marks	L2	CO4
		(OR)			
9.	a)	Describe about trp opern.	8 Marks	L2	CO4
	b)	Explain in detail about lac operon.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain about physical mutagens.	8 Marks	L2	CO5
	b)	Discuss about chemical mutagens.	8 Marks	L2	CO5
		(OR)			
11.	a)	Summarize about outlines of DNA damage and repair mechanism.	8 Marks	L2	CO5
	b)	Describe the deletions, inversions, tandem duplications, insertion mutations.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

ADVANCED CHEMISTRY-II

[Bioinformatics, Biotechnology, Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is tartaric acid and state its applications?	2 Marks	L1	CO1
	b)	Define ozonolysis.	2 Marks	L1	CO1
	c)	Write the main ore of thorium and uranium?	2 Marks	L1	CO2
	d)	Give a few instances and uses for metal powders.	2 Marks	L2	CO2
	e)	What is eutectic system?	2 Marks	L1	CO3
	f)	What is the role of freezing point in colligative property?	2 Marks	L2	CO3
	g)	For the following reaction, mention the product with suitable cation: Metal ion (Mn+) + EDTA → Complex (M-EDTA)	2 Marks	L1	CO4
	h)	Write few examples of indicators in acid base titration.	2 Marks	L1	CO4
	i)	Point the few advantages of microwave assisted saponification.	2 Marks	L1	CO5
	j)	Write the reactants and microwave conditions in microwave assisted reaction in Classic Diels-Alder reaction.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the Acetoacetic ester synthesis with suitable reactions.	8 Marks	L3	CO1
	b)	Explain the Malonic ester synthesis with suitable reactions.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss the higher alkane synthesis with any four naming reactions	8 Marks	L3	CO1
	b)	How could you use organometallic compounds in the cancer treatment with your known ideas.	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss the methods in the production of metal powders.	8 Marks	L3	CO2
	b)	Explain the advantages and applications of powder metallurgy in industrial production activities.	8 Marks	L3	CO2
		(OR)			
5.	a)	Discuss the production of tungsten powder from wolframite.	8 Marks	L3	CO2
	b)	Write the definition of metallurgy and general introduction to isolation and purification of metals from its ore.	8 Marks	L3	CO2

MODULE-III

6.	a)	State the following: i) Triple point ii) Phase diagrams and iii) Equilibrium.	8 Marks	L3	CO3
	b)	Analyze your understanding on phase equilibria and its application in industrial processes with suitable illustration.	8 Marks	L3	CO3

(OR)

7.	a)	State the following: i) Phase ii) Components iii) Critical point and iv) Degrees of freedom.	8 Marks	L3	CO3
	b)	Explain the thermodynamic derivation of Gibbs phase rule.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss your understanding on theory of potentiometric titrations. Write the Nernst equation and mention its terminology.	8 Marks	L3	CO4
	b)	Discuss in detail about the acid base titration with suitable example.	8 Marks	L3	CO4

(OR)

9.	a)	Explain in detail about the redox titration with suitable example.	8 Marks	L3	CO4
	b)	Write your understanding on complexometric titration with suitable example.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the microwave assisted reactions in organic solvents.	8 Marks	L3	CO5
	b)	State few examples of microwave assisted reactions in organic solvents. Mention the concept of reaction, solvent and advantages in each reactions.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the process of microwave assisted synthesis of organic compounds with suitable examples.	8 Marks	L3	CO5
	b)	Discuss the microwave assisted reactions in diels-alder reaction.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

FUNDAMENTALS OF ANALYTICAL CHEMISTRY

[Bioinformatics, Biotechnology, Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Differentiate volumetry and gravimetry.	2 Marks	L1	CO1
	b)	Explain the structure of EDTA.	2 Marks	L1	CO1
	c)	What are significant figures ?	2 Marks	L2	CO2
	d)	Define error.	2 Marks	L2	CO2
	e)	What are dissolved solids?	2 Marks	L3	CO3
	f)	Differentiate hard and soft water.	2 Marks	L3	CO3
	g)	Define column chromatography.	2 Marks	L4	CO4
	h)	Differentiate stationary and mobile phase.	2 Marks	L4	CO4
	i)	State TEM.	2 Marks	L5	CO5
	j)	What are the applications of Mass spectrometry?	2 Marks	L5	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the ttheories of acid-base titrations.	8 Marks	L2	CO1
	b)	Discuss in brief of redox and complexometric titrations.	8 Marks	L2	CO1
		(OR)			
3.	a)	Name the different types of titrations and explain the choice of indicators for those titrations.	8 Marks	L2	CO1
	b)	Discuss about the coagulation and peptization.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the use of common laboratory apparatus.	8 Marks	L2	CO2
	b)	Give a brief note on types of errors.	8 Marks	L1	CO2
		(OR)			
5.	a)	Give a brief note on accuracy and precision.	8 Marks	L1	CO2
	b)	Define error. Explain the type of errors which can be minimized.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write a note on turbidity and dissolved solids.	8 Marks	L1	CO3
	b)	Explain the hardness of water in brief by complexometric method.	8 Marks	L2	CO3
		(OR)			
7.	a)	What is solvent extraction. Explain the factors affecting solvent extraction.	8 Marks	L2	CO3
	b)	What is water analysis. Explain the reasons to do water analysis.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the Reverse phase column chromatography in detail.	8 Marks	L2	CO4
	b)	Explain the basic principle and applications of HPLC.	8 Marks	L2	CO4
		(OR)			
9.	a)	Differentiate column chromatography with HPLC.	8 Marks	L2	CO4
	b)	Explain the instrumentation of HPLC.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define spectroscopy. Explain the types of energy present in the molecules.	8 Marks	L2	CO5
	b)	Define the terms chromophore, auxochrome, Bathochromic shift and Hypsochromic shift.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss in brief of chromophore and auxochrome.	8 Marks	L2	CO5
	b)	Explain the instrumentation of UV-Vis spectrophotometer.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

MEDICAL MICROBIOLOGY

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe the concept of opportunistic infections and give examples.	2 Marks	L2	CO1
	b)	Define nosocomial infection and identify common sources in healthcare settings.	2 Marks	L3	CO1
	c)	Discuss preventive measures for typhoid, including vaccination and hygiene practices to reduce the risk of infection.	2 Marks	L4	CO2
	d)	Examine public health strategies implemented to control typhoid outbreaks. How are sanitation and water quality crucial in typhoid control?	2 Marks	L4	CO2
	e)	Discuss preventive measures for dengue, including vector control strategies and vaccination. How can communities reduce the risk of dengue transmission?	2 Marks	L2	CO3
	f)	Examine public health strategies used to control dengue outbreaks. How do vector control programs and community engagement contribute to dengue control?	2 Marks	L5	CO3
	g)	Discuss prophylactic measures for Kala-azar, including vector control and personal protection methods. How can individuals in endemic regions reduce the risk of infection?	2 Marks	L1	CO4
	h)	Examine strategies used to control Kala-azar outbreaks, considering early detection, treatment, and community involvement. How can interventions be tailored to specific endemic settings?	2 Marks	L2	CO4
	i)	What is the main clinical use of Amphotericin B?	2 Marks	L4	CO5
	j)	Discuss the mechanism of action of Amphotericin B.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain how knowledge of the normal flora is applied in medical and research settings. Discuss examples where manipulating the normal flora can be therapeutic or diagnostic.	10 Marks	L3	CO1
	b)	Explore the various strategies employed by pathogens to evade the host immune system. Discuss examples of immune evasion mechanisms used by bacteria, viruses, fungi, and parasites.	6 Marks	L2	CO1

(OR)

3.	a)	Evaluate the effectiveness of various strategies for preventing and controlling nosocomial infections. Discuss the roles of infection control practices, antimicrobial stewardship, and vaccination in healthcare settings.	8 Marks	L1	CO1
	b)	Discuss recent advancements in molecular diagnostic techniques used in microbiology. How have techniques such as PCR, DNA sequencing, and metagenomics transformed the field of diagnostic microbiology	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the mode of transmission of Mycobacterium tuberculosis and factors influencing its spread. How does the transmission dynamics differ in high-burden areas compared to low-burden areas?	9 Marks	L2	CO2
	b)	Explain the pathophysiology of tetanus and its clinical features. How does the neurotoxin produced by Clostridium tetani lead to the characteristic symptoms of tetanus?	7 Marks	L1	CO2

(OR)

5.	a)	Discuss the mode of transmission of Clostridium tetani and the entry points for the bacterium. How does the spore-forming nature of the bacterium contribute to its persistence in the environment?	10 Marks	L2	CO2
	b)	Discuss the different stages of syphilis and the corresponding clinical symptoms. How does the disease progress from primary to tertiary stages, and what are the potential complications?	6 Marks	L2	CO2

MODULE-III

6.	a)	Examine how HIV/AIDS leads to immune system compromise. Discuss the impact of CD4+ T-cell depletion and the role of opportunistic infections in the progression of AIDS.	8 Marks	L3	CO3
	b)	Discuss the neurological complications associated with Japanese Encephalitis and the challenges in rehabilitation for survivors. How can healthcare systems provide comprehensive care for individuals with long-term sequelae?	8 Marks	L2	CO3

(OR)

7.	a)	Discuss the social determinants that contribute to the vulnerability of certain populations to HIV infection. How do factors such as stigma, discrimination, and socioeconomic status influence the spread of HIV?	9 Marks	L3	CO3
	b)	Evaluate the application of the One Health approach in dengue control. How does the integration of human, animal, and environmental health perspectives contribute to comprehensive dengue prevention strategies?	7 Marks	L2	CO3

MODULE-IV

8.	a)	Examine the transmission, symptoms, and preventive measures for opportunistic mycoses, focusing on Candidiasis. How does Candida overgrowth lead to various forms of infection, and what preventive strategies are recommended for susceptible populations?	10 Marks	L3	CO4
	b)	Provide an overview of recent research advances in the treatment of Kala-azar, including new drug developments and therapeutic approaches. How can innovation in treatment modalities contribute to improved outcomes for Kala-azar patients?	6 Marks	L4	CO4

(OR)

9.	a)	Discuss the impact of Kala-azar on public health, considering the consequences of untreated cases and the challenges in diagnosing and treating the disease. How can public health campaigns raise awareness and improve early detection?	9 Marks	L2	CO4
	b)	Discuss the emergence of antifungal resistance in opportunistic mycoses, with a focus on Candidiasis. How does the misuse of antifungal medications contribute to resistance, and what strategies can be employed to address this issue?	7 Marks	L1	CO4

MODULE-V

10.	a)	Differentiate between natural and recombinant vaccines, explaining the processes involved in their development. Provide examples of diseases prevented by each type.	8 Marks	L3	CO5
	b)	Discuss the challenges and benefits associated with the development and distribution of vaccines, emphasizing the role of vaccination in public health.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss the historical development of penicillin, its impact on medicine, and how the discovery revolutionized the treatment of bacterial infections. Include insights into subsequent generations of penicillins.	10 Marks	L2	CO5
	b)	Examine the role of Streptomycin in the treatment of Mycobacterium tuberculosis infections. Discuss the challenges associated with antibiotic resistance and potential strategies to address them.	6 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

CLOUD COMPUTING

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is meant by virtualization?	2 Marks	L1	CO1
	b)	List two primary objectives of virtualization in IT infrastructure.	2 Marks	L1	CO1
	c)	Define private cloud?	2 Marks	L1	CO2
	d)	Define public cloud?	2 Marks	L1	CO2
	e)	Write about the concept of IaaS workloads	2 Marks	L1	CO3
	f)	What is a "Pod" in the context of cloud computing?	2 Marks	L1	CO3
	g)	Explain any two components of AWS?	2 Marks	L2	CO4
	h)	What is the role of system images and software play in cloud computing?	2 Marks	L1	CO4
	i)	Define encryption in cloud security.	2 Marks	L1	CO5
	j)	Define "brokered cloud storage access" in cloud computing.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the primary objectives of virtualization in IT infrastructure	8 Marks	L6	CO1
	b)	Discuss the key benefits of virtualized technologies in terms of resource optimization and cost reduction.	8 Marks	L6	CO1
		(OR)			
3.	a)	Explain the concept of adding a guest operating system in virtualized environments.	8 Marks	L2	CO1
	b)	Discuss about the architecture and features of Ubuntu's virtualization technology.	8 Marks	L6	CO1

MODULE-II

4.	a)	List some of the challenges in cloud computing.	8 Marks	L1	CO2
	b)	Give the overview of the applications of cloud computing.	8 Marks	L1	CO2
		(OR)			
5.	a)	Describe the NIST model.	8 Marks	L2	CO2
	b)	Explain about the cloud cube model.	8 Marks	L2	CO2

MODULE-III

6.	a)	Analyze some examples of IaaS implementation.	8 Marks	L4	CO3
	b)	Write down the applications of IaaS.	8 Marks	L1	CO3

(OR)

7.	a)	Discuss the fundamental principles of Infrastructure as a Service (IaaS) and provide real-world examples of IaaS providers.	8 Marks	L6	CO3
	b)	Explore the concept of virtual machine types and Assess the advantages and disadvantages of each approach.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Write about Amazon Web Services(AWS) in the context of cloud computing.	8 Marks	L1	CO4
	b)	Explain about Amazon Elastic Compute Cloud (EC2).	8 Marks	L2	CO4

(OR)

9.	a)	Outline the key steps involved in creating an account and instance on Amazon EC2.	8 Marks	L2	CO4
	b)	Explain the management responsibilities and life cycle management of cloud computing.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the role of "security mapping" in aligning security services with cloud resources.	8 Marks	L6	CO5
	b)	Explain the concept of "brokered cloud storage access." How does it enhance data security in cloud storage environments?	8 Marks	L5	CO5

(OR)

11.	a)	Discuss the challenges associated with securing cloud environments. How can organizations mitigate these risks?	8 Marks	L6	CO5
	b)	Explore the best practices for securing data in the cloud.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

COMPUTER ORGANIZATION AND ARCHITECTURE

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain the term "computer function" in the context of computer architecture.	2 Marks	L1	CO1
	b)	Describe the significance of structure in computer organization.	2 Marks	L2	CO1
	c)	Define addressing modes and give an example.	2 Marks	L2	CO2
	d)	How are instruction-formats designed in computer architecture?	2 Marks	L1	CO2
	e)	How do sequencing techniques affect the operation of a micro programmed control unit?	2 Marks	L2	CO3
	f)	Define Direct Memory Access (DMA) and its significance in I/O operations.	2 Marks	L1	CO3
	g)	What are the characteristics of DDR DRAM compared to traditional DRAM?	2 Marks	L2	CO4
	h)	Define cache memory and its importance in computer architecture.	2 Marks	L2	CO4
	i)	Discuss the software performance issues that arise in multicore organizations.	2 Marks	L2	CO5
	j)	Define multicore organization and its advantages over single-core processors.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What role does the architecture of a computer play in determining its capability to execute various types of software?	8 Marks	L1	CO1
	b)	Describe the process of data transfer within a computer system, focusing on the role of bus interconnections.	8 Marks	L2	CO1
		(OR)			
3.	a)	How do interconnection structures influence the speed and efficiency of a computer system? Provide examples to support your answer.	8 Marks	L1	CO1
	b)	Discuss the concept of parallelism in computer architecture. How does it improve computer performance?	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain how addressing modes enhance the flexibility and efficiency of instruction execution.	8 Marks	L1	CO2
	b)	Discuss the design considerations for instruction formats and how they influence the processing capability of a CPU.	8 Marks	L3	CO2

(OR)

5.	a)	How does processor organization affect the overall performance of a computer system?	8 Marks	L1	CO2
	b)	Explain the importance of control and status registers in the operation and management of CPU activities.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the architecture and function of input/output (I/O) modules in computer systems.	8 Marks	L2	CO3
	b)	Explain the principle of direct memory access (DMA) and its importance in I/O operations.	8 Marks	L1	CO3

(OR)

7.	a)	Describe the roles of I/O channels and processors in managing external devices and data transfer.	8 Marks	L2	CO3
	b)	Outline the physical and logical architecture of the PCI (Peripheral Component Interconnect) standard and its role in I/O operations.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the principles of cache memory and its role in improving computer performance.	8 Marks	L2	CO4
	b)	Describe the elements of cache design, including cache addresses and mapping functions.	8 Marks	L1	CO4

(OR)

9.	a)	Compare direct-mapped, fully associative, and set-associative mapping techniques in cache memory.	8 Marks	L2	CO4
	b)	Discuss the impact of solid-state drives (SSDs) on external memory solutions and their advantages over traditional hard disk drives (HDDs).	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe the software performance issues that arise with multicore processing and strategies to mitigate these challenges.	8 Marks	L2	CO5
	b)	Explain the organization of multicore processors and how it differs from single-core processors.	8 Marks	L1	CO5

(OR)

11.	a)	Describe the architecture and performance characteristics of the Intel Core i7-990X processor.	8 Marks	L2	CO5
	b)	Compare and contrast the different approaches to parallel organization in computer systems.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

INTELLECTUAL PROPERTY RIGHTS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define 'originality' according to copyright law	2 Marks	L1	CO1
	b)	Name two international organizations which deal with IPR matters.	2 Marks	L1	CO1
	c)	Define 'protectionable matter'.	2 Marks	L1	CO2
	d)	Explain 'Trade secret' registration.	2 Marks	L2	CO2
	e)	Why do we need to register for IPR?	2 Marks	L1	CO3
	f)	Summarize the effect of copyright registration.	2 Marks	L2	CO3
	g)	Define 'confidentiality'.	2 Marks	L1	CO4
	h)	List the effect of 'Geographical Indication' registration.	2 Marks	L2	CO4
	i)	Define the term 'natural goods'.	2 Marks	L1	CO5
	j)	Illustrate the functions of trademark.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Identify the features of 'intangible property'.	10 Marks	L3	CO1
	b)	Discuss the components of IPR laws .	6 Marks	L2	CO1
		(OR)			
3.	a)	Explain the various features of TRIPS.	8 Marks	L2	CO1
	b)	Identity the role played by WIPO.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the process involved in acquisition of Trademark.	10 Marks	L2	CO2
	b)	Classify the importance of 'trademark' registration to protect the business interest.	6 Marks	L4	CO2
		(OR)			
5.	a)	Discuss what kind of services and products can be classified under protectable matter.	7 Marks	L2	CO2
	b)	Describe how Trademark registration grants protection to companies.	8 Marks	L2	CO2

MODULE-III

6.	a)	Briefly illustrate different provisions relating to copyrights in India.	10 Marks	L2	CO3
	b)	Interpret what constitutes 'copyright infringement'.	6 Marks	L2	CO3

(OR)

7.	a)	Discuss the period of protection accorded to copyright owners.	8 Marks	L5	CO3
	b)	Elucidate the steps involved in copyrights registration.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Illustrate different types of trade secrets.	7 Marks	L2	CO4
	b)	Explain the concept of 'commercially valuable information' .	8 Marks		CO4

(OR)

9.	a)	Describe the matters which are protected under Trade Secret.	10 Marks	L2	CO4
	b)	Explain the different between technical information and commercial information.	6 Marks	L5	CO4

MODULE-V

10.	a)	Discuss the types of goods for which GI can be applied.	8 Marks	L6	CO5
	b)	Describe conditions for registration under Geographical Indication.	8 Marks	L2	CO5

(OR)

11.	a)	Explain the eligibility conditions for applying for registration of GI.	8 Marks	L5	CO5
	b)	Discuss the purpose of registration under GI (Geographical Indication).	8 Marks	L6	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

ENGLISH FOR PROFESSIONAL

[Bioinformatics, Biotechnology, Microbiology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the meaning and usage of the following idiomatic expression. Young at heart	2 Marks	L1	CO4
	b)	Write the meaning and usage of the following idiomatic expression. As gentle as a lamb	2 Marks	L1	CO4
	c)	Find one-word substitutes for this description Art related to ornate, good handwriting	2 Marks	L1	CO4
	d)	Find one-word substitutes for this description Study of collection of coins, tokens, paper money, etc.	2 Marks	L1	CO4
	e)	Identify and define the tense of the underlined verbs In June, Mani will have been working here for 40 years.	2 Marks	L3	CO2
	f)	Identify and define the tense of the underlined verbs This time next week, I will be enjoying the holiday trip.	2 Marks	L3	CO2
	g)	Fill in the blanks using suitable forms of the words given in brackets. Unless they …….. (request) me, I would not go.	2 Marks	L1	CO2
	h)	Fill in the blanks using suitable forms of the words given in brackets. In case you …….. (see) Ravi, give him this book.	2 Marks	L1	CO2
	i)	Fill in the blanks with the correct modal verbs It is possible that Christopher Marlowe ……have written plays for Shakespeare. (Might/could).	2 Marks	L1	CO2
	j)	Fill in the blanks with the correct modal verb. He …….write a poem on this topic. (Can/ May)	2 Marks	L1	CO2

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the characteristic features of superheroes with examples.	8 Marks	L2	CO1
	b)	Write a review on a 5G technology in India.	8 Marks	L1	CO5

(OR)

3.	a)	Write the meaning of the following idiomatic expressions. a) to turn a deaf ear b) to make both ends meet c) To fight tooth and nail d) To be hand in glove with	8 Marks	L1	CO4

e) Not your cup of tea
f) Just beating around the bush
g) Every cloud has a silver lining
h) At the drop of a hat

	b)	Write a review of an Air Conditioner of your choice.	8 Marks	L1	CO5

MODULE-II

4.	a)	Explain how aliens are depicted in the movies you have seen.	8 Marks	L2	CO1
	b)	Write a description of a cinema hall in about 200-250 words.	8 Marks	L1	CO5

(OR)

5.	a)	Write a description of the exhibition that you have visited in about 200-250 words.	8 Marks	L1	CO5
	b)	Explain the flow of communication in detail.	8 Marks	L2	CO1

MODULE-III

6.	a)	Fill in the blanks using verbs in the correct tense.	8 Marks	L1	CO2
		a) _____ the car _____ (come) yet? It _____ (be) already ten minutes late. I hope it _____ (be) here soon. b) It _____ (rain) since last night, and it _____ (look) as if it may rain for the rest of the day. c) c. We _____ (go) shopping last weekend. There _____ (be) a great crowd at the shopping center.			
	b)	Identify the type of barrier that obstructs communication in this situation. You are talking to your project supervisor over the telephone in a noisy restaurant. She is unable to hear your message where you tell that you will send your project report by the end of the day.	8 Marks	L3	CO1

(OR)

7.	a)	Raman's discovery had caught the attention of the world. Discuss in detail about where, what, when and how.	8 Marks	L2	CO1
	b)	Fill in the blanks using verbs in the correct tense. a) Everybody will be at the office at about 08:30 tomorrow as the meeting ---- (start) at nine o'clock. b) The candidate who we had interviewed before we--- (speak) to any others is still my favorite. c) While climbing the mountain, we---- (encounter) a strange animal which I'd never seen before. d) The chairman was sure that his proposal would be accepted as no other member ---- (oppose) it up to that time. e) I wasn't surprised to hear that Monica--- (have) an accident because she is such a reckless driver. f) Since the day the management changed and started running risky experiments, very strange incidents ---(take place) within the research complex. g) Urbanization ---- (always / be) a problem causing several environmental issues ever since the rate of migration----(increase) after the industrial revolution.	8 Marks	L1	CO2

MODULE-IV

8.	a)	Analyze the importance of intonation in statements with suitable examples.	8 Marks	L4	CO3
	b)	Identify the errors in these sentences and correct them. a) The children was playing in the Giant's garden. b) The children decided to surprise Miss Holmes on teacher's day. c) I saw Richard when I'm on the flight.	8 Marks	L3	CO2

d) Man have depended on nature for a long time.
e) Ramu is a honest man.
f) Bread and butter are Sheldon's favourite breakfast.
g) Birds of feathers flock together.
h) h. The teacher called me on 12 o'clock.

(OR)

9.	a)	Write a description of the process of unboxing and setting up of a television set.	8 Marks	L1	CO5
	b)	Illustrate text-based modes of communication with examples.	8 Marks	L2	CO1

MODULE-V

10.	a)	You want to organize an event in your office on the occasion of Women's Day. Write a proposal for this.	8 Marks	L1	CO5
	b)	You are planning to sell your electric car online. Write a description.	8 Marks	L1	CO5

(OR)

11.	a)	You are planning to sell your dining table online. Write a detail description.	8 Marks	L1	CO5
	b)	Discuss the measures that assisted to make Ms Zhou successful.	8 Marks	L2	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

MULTIVARIABLE CALCULUS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	If $u = x^2 + y^2$, $v = 2xy$, then Find $\frac{\partial(u,v)}{\partial(x,y)}$.	2 Marks	L1	CO1
	b)	Write the necessary condition for Maxima point of a function.	2 Marks	L3	CO1
	c)	Evaluate the integral: $\int_{-1}^{0}\int_{-1}^{1}(x+y+1)\,dxdy$.	2 Marks	L5	CO2
	d)	Write the equivalent polar integral: $\int_{-1}^{1}\int_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}}\frac{2}{(1+x^2+y^2)^2}\,dydx$.	2 Marks	L2	CO2
	e)	Translate the integral into equivalent cylindrical co-ordinates: $\int_{0}^{2}\int_{0}^{\sqrt{2x-x^2}}\int_{-\sqrt{4-x^2-y^2}}^{\sqrt{4-x^2-y^2}} dzdydx$.	2 Marks	L4	CO3
	f)	Evaluate the volume of integral: $\int_{0}^{1}\int_{0}^{2}\int_{0}^{3} xyz\,dxdydz$.	2 Marks	L5	CO3
	g)	Find the greatest value of the directional derivative of the function $f = x^2yz^3$ at $(2,1,-1)$.	2 Marks	L3	CO4
	h)	Define Curl of a vector point function.	2 Marks	L1	CO4
	i)	If $F(t) = t\hat{i} + (t^2 - 2t)\hat{j} + (3t^2 + 3t^3)\hat{k}$; Find $\int_{0}^{1} F(t)dt$.	2 Marks	L3	CO5
	j)	If $A = t\hat{i} - 3\hat{j} + 2t\hat{k}$; $B = \hat{i} - 2\hat{j} + 2\hat{k}$; $C = 3\hat{i} + t\,\hat{j} - \hat{k}$, Find $\int_{1}^{2}[A\times(B\times C)]\,dt$.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	If $x = r\cos\theta$, $y = r\sin\theta$; then Show that $\frac{\partial(x,y)}{\partial(r,\theta)}\times\frac{\partial(r,\theta)}{\partial(x,y)} = 1$.	8 Marks	L2	CO1
	b)	Find the maxima and minima of the function $f(x,y) = x^3 + y^3 - 3axy$.	8 Marks	L3	CO1

(OR)

3.	a)	If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$, $z = r\cos\theta$; Show that $\frac{\partial(x,y,z)}{\partial(r,\theta,\phi)} = r^2\sin\theta$ and also Find $\frac{\partial(r,\theta,\phi)}{\partial(x,y,z)}$.	8 Marks	L2	CO1
	b)	Find the maximum value of $u = x^2y^3z^4$ subject to the condition $2x + 3y + 4z = a$.	8 Marks	L3	CO1

MODULE-II

4.	a)	Find the area of the region: $\int_0^2 \int_{x^2-4}^0 dydx + \int_0^4 \int_0^{\sqrt{x}} dydx$.	8 Marks	L3	CO2
	b)	By changing the order of integration evaluate the integral: $\int_0^4 \int_{-\sqrt{4-y}}^{(y-4)/2} dxdy$.	8 Marks	L3	CO2

(OR)

5.	a)	Evaluate $\iint_R (x + y)\,dxdy$, where R is the region bounded by the planes $x = 0$, $x = 2$, $y = x$, $y = x + 2$.	8 Marks	L5	CO2
	b)	Change the cartesian integral into an equivalent polar integral and Evaluate the polar integral: $\int_0^2 \int_0^{\sqrt{4-y^2}} (x^2 + y^2)\,dydx$.	8 Marks	L4	CO2

MODULE-III

6.	a)	Evaluate the integral: $\int_{-2}^{2} \int_{-\sqrt{\frac{4-x^2}{2}}}^{\sqrt{\frac{4-x^2}{2}}} \int_{x^2+3y^2}^{8-x^2-y^2} dzdydx$.	8 Marks	L5	CO3
	b)	Evaluate: $\int_0^{\pi} \int_0^{\pi/2} \int_{\cos\theta}^{2} r^3\sin\theta\,drd\theta d\phi$.	8 Marks	L3	CO3

(OR)

7.	a)	Evaluate the integral: $\int_0^2 \int_{-\sqrt{4-y^2}}^{\sqrt{4-y^2}} \int_0^{2x+y} dzdxdy$.	8 Marks	L5	CO3
	b)	Convert the integral into an equivalent Cylindrical co-ordinates: $\int_{-1}^{1} \int_0^{\sqrt{1-x^2}} \int_0^y x^2\,dzdydx$ and evaluate the integral.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Find the angle of intersection at $(4,-3,2)$ of the spheres: $x^2 + y^2 + z^2 = 29$ and $x^2 + y^2 + z^2 + 4x - 6y - 8z - 47 = 0$.	8 Marks	L3	CO4
	b)	Prove that: $\nabla \times (\nabla \times A) = \nabla(\nabla \cdot A) - \nabla^2 A$.	8 Marks	L2	CO4

(OR)

9.	a)	Find the directional derivative of the function $f = x^2 - y^2 + 2z^2$ at the point $P = (1,2,3)$ in the direction of the line PQ where $Q = (5,0,4)$.	8 Marks	L3	CO4
	b)	Show that: $\nabla^2(\log r) = \frac{1}{r^2}$.	8 Marks	L2	CO4

MODULE-V

10.	a)	State and Prove Stoke's theorem.	8 Marks	L1	CO5
	b)	Evaluate by Stokes theorem: $\int_C F \cdot dr$ where $F = yz\hat{i} + zx\hat{j} + xy\hat{k}$ where C is the curve: $x^2 + y^2 = 1,\ z = y^2$.	8 Marks	L5	CO5

(OR)

11.	a)	If $F = (x - 3y)\hat{i} + (y - 2x)\hat{j}$; Find $\int_C F \cdot dr$ where C is the closed curve in the xy-plane; $x = 2\cos t,\ y = 3\sin t$ from $t = 0$ to $t = 2\pi$.	8 Marks	L3	CO5
	b)	Evaluate: $\oint_C F \cdot dr$ where $F = 3x^2\,\hat{i} + (2xz - y)\hat{j} + z\hat{k}$ along the straight line C from $(0,0,0)$ to $(2,1,3)$.	8 Marks	L5	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2024

INTEGRAL TRANSFORMS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Determine half range fourier series.	2 Marks	L2	CO1
	b)	Define EVEN and ODD functions.	2 Marks	L2	CO1
	c)	Write a0 function in periodic 2L.	2 Marks	L1	CO2
	d)	Write an function in periodic 2L.	2 Marks	L1	CO2
	e)	Explain shifting property.	2 Marks	L2	CO3
	f)	Explain about scaler prooerty.	2 Marks	L2	CO3
	g)	Define Laplace transform.	2 Marks	L1	CO4
	h)	What is first shifting theorem?	2 Marks	L1	CO4
	i)	Definition of Laplace transform to ordinary differential equations.	2 Marks	L2	CO5
	j)	How to solve ordinary differential equations with variable coefficients?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Expand $f(x) = \begin{cases} 1; & 0 < x < \pi \\ 0; & \pi < x < 2\pi \end{cases}$ as a fourier series.	8 Marks	L2	CO1
	b)	Find a fourier series to represent f(x)=x^2 in the interval (0,2π).	8 Marks	L2	CO1
		(OR)			
3.	a)	Find the fourier series to represent the the function f(x) give by $F(x) = \begin{cases} -k; & for\ -\pi < x < 0 \\ k; & for\ 0 < x < \pi \end{cases}$ Hench show that $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \ldots\ldots = \frac{\pi}{4}$.	8 Marks	L1	CO1
	b)	Express f(x)=x as a fourier series in (-π,π).	8 Marks	L2	CO1

MODULE-II

4.	a)	Find the half range sine series for f(x)=x(π-x), in 0<X<π. Deduce that $\frac{1}{1^3} - \frac{1}{3^3} + \frac{1}{5^3} - \frac{1}{7^3} + \ldots\ldots = \frac{\pi^3}{32}$	8 Marks	L1	CO2
	b)	Express f(x) = x^2 as a fourier series in [-L,L].	8 Marks	L2	CO2
		(OR)			

5.	a)	Develop f(x) as fourier series in (-2,2) if $f(x) = \begin{cases} 0; -<x<-1 \\ k; -1<x<1 \\ 0; 1<x<2 \end{cases}$	8 Marks	L3	CO2
	b)	Obtain the half -range cosine and sine series for f(x)=1 on [0, L].	8 Marks	L4	CO2

MODULE-III

6.	a)	Find the Finite Fourier cosine transform of $f(x) = \left[1 - \frac{x}{\pi}\right]$ *in* $(0,\pi)$.	8 Marks	L1	CO3
	b)	Find the Fourier cosine transform of e^{-x^2}.	8 Marks	L1	CO3

(OR)

7.	a)	Find the Fourier sine and cosine transform for $(x) = e\frac{-ax}{x}$ and deduce that $\int_0^\infty \frac{e^{-ax} - e^{-bx}}{x} \sin 5x dx = \tan^{-1}\left(\frac{s}{a}\right) - \tan^{-1}\left(\frac{s}{b}\right)$.	8 Marks	L1	CO3
	b)	Find the Finite Fourier sine and cosine transforms of F(x)= e^{ax} in (o,z).	8 Marks	L2	CO3

MODULE-IV

8.	a)	Find the Laplace transforms of: (i) $(t^2+1)^2$ (ii) $\frac{e^{-at}-1}{a}$ (iii) sin 2t cost (iv) cos h^2 2t	8 Marks	L3	CO4
	b)	Find: i) L{e^{4t} sin 2t cos t} ii) L(cosh at sin bt).	8 Marks	L3	CO4

(OR)

9.	a)	Using the Theorem on transforms of derivatives, find the Laplace Transform of the following functions. i) e^{at} ii) cos at iii) t sin at	8 Marks	L3	CO4
	b)	Find: i) L{t e^{at}sin bt} ii) L{ $\int_0^t t\ e^{-t}$ sin 4t dt } iii) L{ $\int_0^t t\ e^{-t}$ sin 2t dt}	8 Marks	L3	CO4

MODULE-V

10.	a)	Using Laplace transform method, solve $\frac{d^2y}{dt^2} + \frac{dy}{dt} + 5y = e^{-t}$ sint, given that y(0)=0 y(0)=1.	8 Marks	L3	CO5
	b)	Using Laplace transform, solve (D^2+1) y = sint,sin2t,t>0, if y=1,Dy=0 where t=0.	8 Marks	L3	CO5

(OR)

11.	a)	Solve $\frac{d^2x}{dt^2} + 2\frac{dx}{dt} + x = 3t\ e^{-t}$ *given* $(0) = 4, \frac{dx}{dt} = 0$ *at* $t = 0$.	8 Marks	L2	CO5
	b)	Using Laplace transform, solve $(D^2+4D+5)y=5$, given that y(0)=0, $y''(0)=0$.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

SOFTWARE ENGINEERING

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Outline any two Validation activities take place at the beginning of every software process iteration.	2 Marks	L2	CO4
	b)	State Management myths.	2 Marks	L1	CO1
	c)	List the Non-Functional Requirements.	2 Marks	L2	CO2
	d)	State Umbrella activities occur throughout the software process.	2 Marks	L2	CO1
	e)	Discuss the importance of Class Diagram.	2 Marks	L3	CO3
	f)	Define System Testing.	2 Marks	L1	CO4
	g)	Define Restructuring.	2 Marks	L1	CO5
	h)	Write the metrics of Software Quality.	2 Marks	L1	CO3
	i)	Mention the advantages Prototype model.	2 Marks	L1	CO1
	j)	Define the Metrics of Software Reliability.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss in detail various values of Scrum.	8 Marks	L2	CO1
	b)	Outline the essence of software engineering practices.	8 Marks	L1	CO1

(OR)

3.	a)	Explain any two specialized process models in detail.	8 Marks	L2	CO1
	b)	How incremental model is employed in spiral model.	8 Marks	L3	CO1

MODULE-II

4.	a)	Mark out the types of requirements identified by Quality Function Deployment.	8 Marks	L3	CO2
	b)	Illustrate the process of incorporating quality in generating requirements for any social networking website.	8 Marks	L3	CO2

(OR)

5.	a)	Compare functional and non-functional requirements.	8 Marks	L1	CO2
	b)	Set out a plan for establishing the ground work in requirement engineering.	8 Marks	L2	CO2

MODULE-III

6.	a)	Identify and draw the role of use case diagram for Online Banking case study while describing the steps involved in it.	8 Marks	L3	CO3
	b)	Develop an activity diagram for issuing a book in the library and write in detail its procedure.	8 Marks	L3	CO3

(OR)

7.	a)	Distinguish between Activity diagram and State machine diagram.	8 Marks	L2	CO3
	b)	State and explain Metrics of Software quality.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Draw a diagram to explain how software testing with a big picture is carried out in "Spiral" software development methodology.	8 Marks	L3	CO4
	b)	Explain the Strategies of testing Object Oriented Software.	8 Marks	L1	CO4

(OR)

9.	a)	Summarize various strategic approaches that are used in software Testing.	8 Marks	L1	CO4
	b)	Explain the Importance of Debugging with an example.	8 Marks	L2	CO4

MODULE-V

10.	a)	Examine the meaning of software quality and detail the factors which affects the quality but not productivity of a software product.	8 Marks	L3	CO5
	b)	Differentiate between Reactive and Proactive Risk.	8 Marks	L1	CO5

(OR)

11.	a)	Define reverse engineering and sketch the process of reverse engineering with a help of neat diagram.	8 Marks	L1	CO5
	b)	Explain in detail about importance of FTR.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA/B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

GENERAL ENGLISH

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the correct spellings to the following: i) Meintainance ii) Questionnair iii) Mideval iv) Collaegue	2 Marks	L1	CO2
	b)	Find the diphthong sound in the given words. i) Allow ii) Fewer iii) Boy iv) Pierce	2 Marks	L1	CO3
	c)	State any two examples for imperative sentences.	2 Marks	L1	CO3
	d)	Change the following sentences into interrogative sentence. i) She has lived in America for three years. ii) They swim now.	2 Marks	L1	CO3
	e)	List any two examples for non-finite verbs.	2 Marks	L1	CO3
	f)	Find verb forms for the following words. i) Fly ii) cast	2 Marks	L1	CO3
	g)	Recall the passive voice for the give sentences. i) I have studied English still now. ii) Does she eat banana?	2 Marks	L1	CO3
	h)	Use the following conjunctions in a sentence. i) So …… that ii) But	2 Marks	L1	CO3
	i)	Find the suitable article to fill the blank. i) I have …… (A, An, The) one rupee. ii) I play ……. (A, An, The) guitar.	2 Marks	L1	CO3
	j)	Find the number of syllables in the given words. i) Different ii) Attract	2 Marks	L1	CO3

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		"A Snake in the Grass is a perfect example to understand the human nature". Analyze with reference to the lesson.	16 Marks	L4	CO4
		(OR)			
3.	a)	Develop a conversation between customer and shop-keeper on buying a laptop.	8 Marks	L3	CO5
	b)	Discuss the character Dasa in 'A Snake in the Grass'.	8 Marks	L2	CO1

MODULE-II

4.		"The words 'sorry', 'thank you' and 'please' are important in conversation". Analyze the statement with reference to the lesson 'On Saying Please'.	16 Marks	L4	CO5

(OR)

5.	a)	How does the stream of general life get affected by one's behaviour?	8 Marks	L1	CO4
	b)	List any four examples for assertive sentences.	8 Marks	L1	CO3

MODULE-III

6.		"The poem showcases the intensity of the love for his beloved". Explain the statement in connection with the poem "If You Forget Me".	16 Marks	L2	CO4

(OR)

7.	a)	'A crystal moon', 'red branch', 'the slow autumn at my window' – Explain these phrases in brief.	8 Marks	L2	CO3
	b)	Use appropriate tense form to fill the blanks given. i) I …… now. (Study) ii) They …….. the play recently. (See) iii) They …… the seminar scheduled tomorrow. (Attend) iv)Students …….. their presentation tomorrow. (Finish)	8 Marks	L1	CO3

MODULE-IV

8.		"Society accepts discrimination despite the fact that we are all human beings". Explain in the context of 'After the Sunset'.	16 Marks	L2	CO4

(OR)

9.	a)	Discuss the lamentations of the victims of the Gokul chat blast.	8 Marks	L2	CO4
	b)	Change the given sentences into active voice. i) Three pencils will have been bought by him. ii) Tea had been prepared by me. iii) A letter was sent to me by my friend. iv) Has the book been read by you?	8 Marks	L1	CO3

MODULE-V

10.		Interpret the summary of Betrand Russell's essay 'Man's Peril'.	16 Marks	L2	CO4

(OR)

11.	a)	Russell places two options before general public – end the human race or renounce war. Explain.	8 Marks	L2	CO4
	b)	Rewrite the sentences with necessary corrections. i) Either of the two boys know the secret. ii) Petrol and diesel has become expensive these days. iii) Dal and rice are her regular diet. iv) Many a boy have accepted his failure.	8 Marks	L1	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

MATRIX THEORY AND LINEAR ALGEBRA

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define rank of a matrix.	2 Marks	L1	CO1
	b)	Determine the matrix $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & -1 \end{bmatrix}$ is an elementary or not.	2 Marks	L1	CO1
	c)	Find the characteristic polynomial of the matrix $A = \begin{bmatrix} 8 & -4 \\ 2 & 2 \end{bmatrix}$.	2 Marks	L1	CO2
	d)	State Cayley-Hamilton theorem.	2 Marks	L1	CO2
	e)	Define vector space.	2 Marks	L1	CO3
	f)	Define dimension of a vector space.	2 Marks	L1	CO3
	g)	Write the properties of linear transformation.	2 Marks	L1	CO4
	h)	Define kernel of a linear transformation.	2 Marks	L1	CO4
	i)	Calculate the norm of the vector $(1,2,1)$.	2 Marks	L1	CO5
	j)	Define inner product space.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Find the rank of matrix $\begin{bmatrix} 1 & 1 & -1 & -1 \\ 1 & -1 & -2 & -4 \\ 3 & 1 & 3 & -2 \\ 1 & 3 & 0 & -1 \end{bmatrix}$ by reducing it to echelon form.	8 Marks	L1	CO1
	b)	Test for consistency and hence solve the system of equations $x+y+z=9;\ 2x+5y+7z=52;\ 2x+y-z=0$.	8 Marks	L3	CO1
		(OR)			
3.	a)	Expressing a matrix $\begin{bmatrix} 1 & 2 & 0 \\ 0 & 1 & 3 \\ 3 & 8 & 7 \end{bmatrix}$ as a product of elementary matrices	8 Marks	L2	CO1

	b)	Find the LDU decomposition of the matrix $A = \begin{bmatrix} 1 & -1 & 3 \\ 1 & -1 & 0 \\ 0 & 1 & 0 \end{bmatrix}$.	8 Marks	L1	CO1

MODULE-II

4.	a)	Determine the Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$.	8 Marks	L3	CO2
	b)	Show that the matrix $A = \begin{bmatrix} -1 & 1 & 1 \\ 0 & -1 & 2 \\ 1 & 1 & 1 \end{bmatrix}$ satisfies Cayley-Hamilton theorem.	8 Marks	L2	CO2

(OR)

5.		Show that the matrix $A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}$ is diagonalizable.	16 Marks	L3	CO2

MODULE-III

6.	a)	Show that the set of all $m \times n$ matrices forms a vector space with the usual operations matrix addition and matrix scalar multiplication.	8 Marks	L2	CO3
	b)	In vector space P_2, determine whether $r(x) = 1 - 4x + 6x^2$ is in span $(p(x), q(x))$, where $p(x) = 1 - x + x^2$ and $q(x) = 2 + x - 3x^2$.	8 Marks	L3	CO3

(OR)

7.	a)	In vector space P_2, determine whether the set of vectors $B = \{1 + x, 1 + x^2, 1 - x + x^2\}$ form a basis or not.	8 Marks	L3	CO3
	b)	Find the dimension of the vector space P_2 of the given set $B = \{x, 1 + x, x - x^2\}$ and give a basis for V.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Prove that the given transformation is a linear transformation $T : R^2 \to R^3$ defined by $T\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} x \\ 2x - y \\ 3x + 4y \end{bmatrix}$.	8 Marks	L5	CO3
	b)	Find the kernel and Range of the differential operator $D : P_3 \to P_2$ defined by $D(p(x)) = p'(x)$.	8 Marks	L3	CO3

(OR)

9.	a)	Let $T : R^2 \to R^3$ be a linear transformation for which $T\begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ -1 \end{bmatrix}$ and $T\begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 3 \\ 0 \\ 4 \end{bmatrix}$, then find $T\begin{bmatrix} 5 \\ 2 \end{bmatrix}$ and $T\begin{bmatrix} a \\ b \end{bmatrix}$.	8 Marks	L1	CO3
	b)	Determine the matrix of linear transformation $T : P_2 \to P_2$ defined	8 Marks	L3	CO3

by $T(p(x)) = p(x+1)$ with respect to the basis $B = \{1, x, x^2\}$, here P_2 is the vector space of all polynomials of degree at most 2.

MODULE-V

10.	a)	Let $u = \begin{bmatrix} u_1 \\ u_2 \end{bmatrix}$ and $v = \begin{bmatrix} v_1 \\ v_2 \end{bmatrix}$ be two vectors in R^2. Show that $\langle u, v \rangle = 2u_1v_1 + 3u_2v_2$ is inner product.	8 Marks	L2	CO4
	b)	Find the angle between 1 and x^2 in $C[-1,1]$.	8 Marks	L1	CO4
		(OR)			
11.		Apply Gram-Schmidt process, obtain an orthonormal basis of $R^3(R)$ from the basis $\{(1,0,1),(1,0,-1),(0,1,1)\}$.	16 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

CALCULUS AND TRANSFORMATION TECHNIQUES

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State Cauchy's mean value theorem.	2 Marks	L1	CO1
	b)	Identify the stationary point of the function $f(x,y) = x^3 + y^3 - 63(x+y) + 12xy$.	2 Marks	L1	CO1
	c)	State the necessary conditions for $f(x,y)$ to have a minimum at the point (a,b).	2 Marks	L1	CO2
	d)	Find $\frac{\partial^2 f}{\partial x \partial y}$ for the function $f = x^3 + y^3 - 3axy$.	2 Marks	L1	CO2
	e)	Write the condition for the existence of the Laplace transform.	2 Marks	L1	CO3
	f)	Find the Laplace transform of $x + \cos 2t$.	2 Marks	L1	CO3
	g)	Determine the inverse Laplace transform of $\frac{1}{(s+1)(s+2)}$.	2 Marks	L3	CO4
	h)	Find the Inverse Laplace transform of $\frac{s}{s^2 + 2s + 2}$.	2 Marks	L1	CO4
	i)	Find a_0 in Fourier series for the function $f(x) = x^2$.	2 Marks	L1	CO5
	j)	Write the formulae for the half range Fourier sine and cosine series and sine series for $f(x)$ in the interval $0 < x < \pi$.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Show that for any $x \geq 0, 1+x < e^x < 1+xe^x$.	8 Marks	L2	CO1
	b)	Verify Lagrange's mean value theorem for the function $f(x) = x(x+1)$ in $[1,6]$.	8 Marks	L1	CO1

(OR)

3.	a)	Verify Rolles' theorem for the function $f(x) = 2x^3 + x^2 - 4x - 2$ in $\left[-\sqrt{3}, \sqrt{3}\right]$.	8 Marks	L4	CO1
	b)	Verify Cauchy's theorem for $f(x) = e^x, g(x) = e^{-x}$ in $[a,b]$.	8 Marks	L4	CO1

MODULE-II

4.	a)	Discuss the maxima and minima of $x^3 + y^3 - 3axy$.	8 Marks	L2	CO2
	b)	If $x = r\cos\theta, y = r\sin\theta$ then show that $\frac{\partial r}{\partial x} = \frac{\partial x}{\partial r}$ and $\frac{1}{r}\frac{\partial x}{\partial \theta} = r\frac{\partial \theta}{\partial x}$.	8 Marks	L2	CO2

(OR)

5.	a)	Prove that $JJ' = 1$ for the functions $x = u(1 - v), y = uv$.	8 Marks	L5	CO2
	b)	Find the maximum value of $u = x^2y^3z^4$ subject to the condition $2x + 3y + 4z = a$ by using Lagrange's method.	8 Marks	L1	CO2

MODULE-III

6.	a)	Evaluate $L\{t\, e^{-t} sn2t\}$.	8 Marks	L5	CO3
	b)	Find the Laplace transform of $g(t)$, where $g(t) = \begin{cases} \cos\left(t - \frac{3\pi}{4}\right), & if\ t > \frac{3\pi}{4} \\ 0, & if\ t < \frac{3\pi}{4} \end{cases}$.	8 Marks	L1	CO3

(OR)

7.	a)	Using Laplace transform, Show that $\int_0^\infty te^{-3t}\sin t\, dt = \frac{3}{50}$.	8 Marks	L3	CO3
	b)	Evaluate $L\left\{ e^t\left(\cos 2t + \frac{1}{2}\sinh t\right)\right\}$.	8 Marks	L5	CO3

MODULE-IV

8.	a)	Find $L^{-1}\left\{ s\ \log\left(\frac{s-1}{s+1}\right)\right\}$.	8 Marks	L1	CO4
	b)	By using Convolution theorem, Find $L^{-1}\left\{\frac{1}{(s^2+9)(s+3)}\right\}$.	8 Marks	L3	CO4

(OR)

9.	a)	Find the inverse Laplace transform of $\log\left(\frac{s^2+4}{s^2+9}\right)$.	8 Marks	L3	CO4
	b)	Using Laplace transform, solve the differential equation $y'' + y = t$ given that $y(0) = 1, y'(0) = -2$.	8 Marks	L3	CO4

MODULE-V

10.	a)	Examine whether the function $f(x) = x^2$ in $(-\pi, \pi)$ is even or odd and hence obtain it's Fourier series.	8 Marks	L4	CO5
	b)	Find the Fourier sine transform of $f(x) = \frac{e^{-ax}}{x}$ and deduce that $\int_0^\infty \frac{e^{-ax} - e^{-bx}}{x}\sin sx\, dx = \tan^{-1}\left(\frac{s}{a}\right) - \tan^{-1}\left(\frac{s}{b}\right)$.	8 Marks	L1	CO5

(OR)

11. a) Find the half-range sine series of $f(x) = \begin{cases} kx, & if\ 0 < x < \frac{\pi}{2} \\ k(\pi - x), & if\ \frac{\pi}{2} < x < \pi \end{cases}$ *in* $0 < x < \pi$. 8 Marks L1 CO5

b) Find the Fourier cosine transform of $f(x) = e^{-x^2}$. 8 Marks L1 CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

INFORMATION TECHNOLOGY FOR BUSINESS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Classify various Input& output Devices.	2 Marks	L2	CO1
	b)	Distinguish Primary memory and Secondary memory.	2 Marks	L1	CO1
	c)	Define MIS.	2 Marks	L1	CO2
	d)	What is a patent? Explain.	2 Marks	L2	CO2
	e)	Name few audio and video formats.	2 Marks	L1	CO3
	f)	List out various multimedia devices.	2 Marks	L1	CO3
	g)	What are the various types of online business? Define tem.	2 Marks	L1	CO4
	h)	Recall the advantages of E-Commerce	2 Marks	L1	CO4
	i)	List the features of Power Point.	2 Marks	L1	CO4
	j)	How to give border to a word document?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define Computer. Recall characteristics of computer.	8 Marks	L1	CO1
	b)	Contrast OSI and TCP/IP models.	8 Marks	L2	CO1
		(OR)			
3.		Summarize Functionality of Different Units of Computer with a neat diagram.	16 Marks	L2	CO1

MODULE-II

4.	a)	Tell about strategic and Tactical IS.	8 Marks	L1	CO2
	b)	Define DBMS. What are the advantages and disadvantages of DBMS?	8 Marks	L1	CO2
		(OR)			
5.	a)	Explain the concept of MIS in detail.	8 Marks	L2	CO2
	b)	Define Information system. What are the types of IS?	8 Marks	L1	CO2

MODULE-III

6.	a)	Tell about various multimedia devices and their usage in detail.	8 Marks	L4	CO3
	b)	Illustrate Business applications of multimedia.	8 Marks	L3	CO3
		(OR)			
7.	a)	Tell about video image compression.	8 Marks	L3	CO3
	b)	What is the need of compression in multimedia?	8 Marks	L1	CO3

MODULE-IV

8.	a)	What are the advantages and drawbacks of E-Mail?	8 Marks	L1	CO4
	b)	Recall and write down the Process to send an email.	8 Marks	L3	CO4
		(OR)			
9.	a)	Classify internet services.	8 Marks	L2	CO4
	b)	Explain the concept of M-commerce.	8 Marks	L1	CO4

MODULE-V

10.	a)	Outline Internet Telephony	8 Marks	L2	CO5
	b)	Recall the following. i) Bluetooth ii) WIFI	8 Marks	L1	CO5
		(OR)			
11.	a)	Define VPN. What is the use of VPN?	8 Marks	L1	CO5
	b)	Define Groupware. Mention its types and Advantages.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

BUSINESS MATHEMATICS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Limit of function.	2 Marks	L1	CO1
	b)	Evaluate $\lim_{x \to 0} \frac{3x^2 + 4x + 1}{4x^2 + 7x + 2}$.	2 Marks	L2	CO1
	c)	Define Matrix.	2 Marks	L1	CO2
	d)	If $A = \begin{bmatrix} 1 & 0 \\ 0 & -2 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 \\ 0 & 4 \end{bmatrix}$, *find* AB.	2 Marks	L2	CO2
	e)	Find the differential coefficient of $4X^2 + \frac{e^x}{2} - x^m + 2$ w.r.t. x	2 Marks	L2	CO3
	f)	Integrate $\int (4x^3 + 3x^2 - 2x + 5)dx$.	2 Marks	L2	CO3
	g)	Define Average Cost.	2 Marks	L1	CO4
	h)	Define price elasticity of Demand.	2 Marks	L1	CO4
	i)	Define Geometric Progression.	2 Marks	L1	CO5
	j)	Determine the 7th term of : 9, -6,4,-8/3,….	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain Indices and laws of Indices.	8 Marks	L2	CO1
	b)	Simplify $\frac{x^{4/7}\, 5\sqrt{x^3}\, 7\sqrt{x^3}}{8\sqrt{x^{-3}\, 5\sqrt{y^5 x^8}}} \; \frac{y^2}{\left(x^{1/8}\right)^3}$.	8 Marks	L2	CO1

(OR)

3.	a)	Explain Quadratic function with an example.	8 Marks	L2	CO1
	b)	The total annual profit in rupees of a table fan manufacturing company from the sale of x number of table fans is given by $Y=-2x^2+400x-1700$. i) How many table fans the company must sell per year to achieve maximum profit? ii) What is the profit per table fan at the maximum profit level?	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain Matrix and Types of Matrices.	8 Marks	L2	CO2
	b)	Verify that the matrix $A=\begin{bmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{bmatrix}$ satisfies the equation $A^3+2A^2-A-20I=0$.	8 Marks	L3	CO2

(OR)

5.	a)	Using matrix inversion method, solve the following system of equations: $2x+8y+5z=5$ $x+y+z=-2$ $x+2y-z=2$	8 Marks	L3	CO2
	b)	In a certain city there are 5 Colleges and 20 schools. Each school has 3 peons, 1 Clerk and 1 Head clerk, Whereas a college has 5 peons , 3 clerks, 1 head clerk and additional staff of a caretaker. The monthly salary of an employee is as follows. Peon: Rs 1100 , Clerk : Rs 1700 Head Clerk Rs 3000 Caretaker Rs 2500. Using matrix method, find the total monthly bill of each school and college.	8 Marks	L3	CO2

MODULE-III

6.	a)	Differentiate $y = e^x \log x$.	8 Marks	L2	CO3
	b)	Explain the Concept of Integration.	8 Marks	L2	CO3

(OR)

7.	a)	Evaluate $\int (3x^2-6x+11)10\,(x-1)\,dx.$	8 Marks	L2	CO3
	b)	A revenue function is given by $R=24X-3X^2$ where R is the revenue and X is the quantity. What value of X maximizes revenue? What is the maximum revenue?	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain elasticity of Demand and types of demand elasticity.	8 Marks	L2	CO4
	b)	The price P per unit at which a company can sell all that it produces is given by the function P(x)=300-4x. The cost function is C(x)=500+28x, where x is the number of units produced. Find x so that the profit is maximum.	8 Marks	L4	CO4

(OR)

9.	a)	Explain Average Revenue, Marginal Revenue and Total Revenue.	8 Marks	L2	CO4
	b)	If c(x) rupees is the total cost of manufacturing x toys and $c(x)=500+\frac{50}{x}+\frac{x^2}{10}$. Estimate the average cost and the marginal cost when x=20.	8 Marks	L4	CO4

MODULE-V

10.	a)	Explain Geometric progression with an example.	8 Marks	L2	CO5
	b)	Three numbers whose sum is 12 are in A.P. If 1,2 and 6 are added to them respectively, the results are in G.P. Find the numbers.	8 Marks	L3	CO5

(OR)

11.	a)	Explain Sinking Fund with an example.	8 Marks	L2	CO5
	b)	A company intends to create a depreciation fund to replace at the end of the 20th years assets costing Rs. 5, 00,000.Calculate the amount to be retained out of profits every year if the interest rate is 5%.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

INFORMATION TECHNOLOGY FOR MANAGERIAL APPLICATIONS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Classify various Input& output Devices.	2 Marks	L2	CO1
	b)	What are the advantages of computers.	2 Marks	L1	CO1
	c)	compare Primary memory and Secondary memory.	2 Marks	L2	CO2
	d)	What is PROM, EPROM and EEPROM.	2 Marks	L1	CO2
	e)	List out Common office tools and techniques.	2 Marks	L3	CO3
	f)	Tell about the features of MS Word.	2 Marks	L1	CO3
	g)	Write steps in creating Spread sheet for the data .	2 Marks	L2	CO4
	h)	Define Spread Sheet. List the Data formats available in Excel.	2 Marks	L1	CO4
	i)	List the features of slide layout.	2 Marks	L1	CO5
	j)	How to create Customizing Presentation?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define Computer. List out the different characteristics of computer.	8 Marks	L1	CO1
	b)	Write about Network Management in detail. Describe the components of a computer network.	8 Marks	L2	CO1
		(OR)			
3.	a)	Classify Generations of Computer Programming languages.	8 Marks	L2	CO1
	b)	Summarise Functionality of Different Units of Computer.	8 Marks	L2	CO1

MODULE-II

4.	a)	Illustrate the concept of RAM and ROM memory in computers.	8 Marks	L2	CO2
	b)	Distinguish Primary memory and Secondary memory.	8 Marks	L4	CO2
		(OR)			
5.	a)	Summarize the concepts of SASD and DASD with suitable examples.	8 Marks	L2	CO2
	b)	Interpret different types of Operating Systems.	8 Marks	L2	CO2

MODULE-III

6.	a)	What are the common office tools and techniques? How do you create a chart with some data in a table?	8 Marks	L1	CO3
	b)	Write about steps in creating charts for some data and working graphics.	8 Marks	L2	CO3

(OR)

7.	a)	How did you find Spelling& grammar and correct an existing word document.	8 Marks	L1	CO3
	b)	Simply various techniques of editing text. Discuss i) Table Properties dialog box and ii) the Steps to create a mail merged document.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain the different ways of formatting a worksheet. Justify the options in chart options dialog box. Write about Solver in MS-Excel.	8 Marks	L2	CO4
	b)	What are various Functions in Excel with suitable examples.	8 Marks	L1	CO4

(OR)

9.	a)	Elucidate the different ways of paragraph Formatting. What is macro? Explain its use.	8 Marks	L2	CO4
	b)	Write the steps in creating Pivot table and about Goal Seek.	8 Marks	L2	CO4

MODULE-V

10.	a)	What are design templates? How can you change the design template for an existing Presentation?	8 Marks	L1	CO5
	b)	Explain the slide layout features. Describe the action buttons.	8 Marks	L2	CO5

(OR)

11.	a)	Determine the components of Power Point window.	8 Marks	L3	CO5
	b)	State the use of Slide Master. Describe the animation options and their use in power point.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

MULTIVARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Find $\frac{\partial(u,v)}{\partial(r,\theta)}$ when $u = r\cos\theta$; $v = r\sin\theta$.	2 Marks	L1	CO1
	b)	Identify the stationary points on the curve $f(x,y) = x^2 + y^2 + 6x + 12$.	2 Marks	L3	CO1
	c)	Evaluate $\int_0^2 \int_0^3 dydx$.	2 Marks	L5	CO2
	d)	Identify the limits to cover the region R bounded by $y = x^2, y = x$.	2 Marks	L3	CO2
	e)	Find curl $\bar{f}$ for $\bar{f} = xy^2\bar{i} + 2x^2yz\,\bar{j} - 3yz^2\bar{k}$ at the point (1,-1,1)	2 Marks	L1	CO3
	f)	Define irrotational vector.	2 Marks	L1	CO3
	g)	Find the general solution of $(D^2 + 3D + 2)y = 0$	2 Marks	L1	CO4
	h)	Find the Particular integral of $\frac{1}{D^2 - 1}e^{3x}$.	2 Marks	L1	CO4
	i)	Construct a partial differential equation by eliminating the arbitrary constants a and b from $z = (x + a)(y + b)$.	2 Marks	L3	CO5
	j)	Construct a partial differential equation by eliminating the arbitrary function f from $z = f(x^2 - y^2)$.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Find $\frac{\partial(u,v,w)}{\partial(x,y,z)}$, where $u = x + y + z$ $uv = y + z, uvw = z$.	8 Marks	L1	CO1
	b)	Examine the function for extreme values of the function $f(x,y) = x^3 + 3xy^2 - 3x^2 - 3y^2 + 4$.	8 Marks	L4	CO1

(OR)

3.	a)	Show that the functions $u = xy + yz + zx; v = x^2 + y^2 + z^2; w = x + y + z$ are functionally dependent and find the relation between them.	8 Marks	L2	CO1

	b)	Show that $\frac{\partial u}{\partial x}+\frac{\partial u}{\partial y}+\frac{\partial u}{\partial z}=0$, if $u=f(y-z,z-x,x-y)$	8 Marks	L2	CO1

MODULE-II

4.	a)	Evaluate $\int_{-1}^{1}\int_{0}^{z}\int_{x-z}^{x+z}(x+y+z)dxdydz$.	8 Marks	L5	CO2
	b)	By changing in to polar coordinates, evaluate $\int_{0}^{\infty}\int_{0}^{\infty}e^{-(x^2+y^2)}dx\,dy$.	8 Marks	L5	CO2

(OR)

5.	a)	Change the order of integration $\int_{0}^{1}\int_{0}^{\sqrt{1-x^2}}y^2\,dy\,dx$ and hence evaluate the double integral.	8 Marks	L5	CO2
	b)	Evaluate $\int_{-c}^{c}\int_{-b}^{b}\int_{-a}^{a}(x^2+y^2+z^2)dx\,dy\,dz$.	8 Marks	L5	CO2

MODULE-III

6.	a)	Find the directional derivative of $f=xy+yz+zx$ at (1,1,1) in the direction of $\bar{i}+\bar{j}+\bar{k}$.	8 Marks	L1	CO3
	b)	Show that the vector $(x^2-yz)\bar{i}+(y^2-zx)\bar{j}+(z^2-xy)\bar{k}$ is irrotational and find its scalar potential.	8 Marks	L2	CO3

(OR)

7.	a)	Evaluate $\oint_C \bar{F}.d\bar{r}$, where $\bar{F}=(5xy-6x^2)\bar{i}+(2y-4x)\bar{j}$ along the curve Cin xy-plane $y=x^3$ from (1,1) to (2,8).	8 Marks	L5	CO3
	b)	Using Green's theorem, evaluate $\oint_C (xy+y^2)dx+x^2dy$, where C is the closed curve of the region bounded by $y=x^2$ and $y=x$.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Solve the differential equation $(D^2+9)y=xe^x+\sin 2x$.	8 Marks	L3	CO4
	b)	Applying the method of variation of parameters to solve $(D^2+4)y=Tan2x$.	8 Marks	L3	CO4

(OR)

9.	a)	Solve the differential equation $x^2\frac{d^2y}{dx^2}-x\frac{dy}{dx}+y=\log x$.	8 Marks	L3	CO4
	b)	Solve the differential equation $(D^2-5D+6)y=e^x\sin x$.	8 Marks	L3	CO4

MODULE-V

10.	a)	Find the complete solution of the linear partial differential equation $(x^2-yz)p+(y^2-zx)q=z^2-xy$.	8 Marks	L1	CO5
	b)	Construct the PDE of eliminating arbitrary function f from the relation $f(x^2+y^2,z-xy)=0$	8 Marks	L3	CO5

(OR)

11.		Apply the method of separation variables, solve $3\frac{\partial u}{\partial x}+2\frac{\partial u}{\partial y}=0$ where $u(x,0)=4e^{-x}$	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA/B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

GENERAL ENGLISH

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the correct spellings to the following: i) Meintainance ii) Questionnair iii) Mideval iv) Collaegue	2 Marks	L1	CO2
	b)	Find the diphthong sound in the given words. i) Allow ii) Fewer iii) Boy iv) Pierce	2 Marks	L1	CO3
	c)	State any two examples for imperative sentences.	2 Marks	L1	CO3
	d)	Change the following sentences into interrogative sentence. i) She has lived in America for three years. ii) They swim now.	2 Marks	L1	CO3
	e)	List any two examples for non-finite verbs.	2 Marks	L1	CO3
	f)	Find verb forms for the following words. i) Fly ii) cast	2 Marks	L1	CO3
	g)	Recall the passive voice for the give sentences. i) I have studied English still now. ii) Does she eat banana?	2 Marks	L1	CO3
	h)	Use the following conjunctions in a sentence. i) So …… that ii) But	2 Marks	L1	CO3
	i)	Find the suitable article to fill the blank. i) I have …… (A, An, The) one rupee. ii) I play ……. (A, An, The) guitar.	2 Marks	L1	CO3
	j)	Find the number of syllables in the given words. i) Different ii) Attract	2 Marks	L1	CO3

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		"A Snake in the Grass is a perfect example to understand the human nature". Analyze with reference to the lesson.	16 Marks	L4	CO4
		(OR)			
3.	a)	Develop a conversation between customer and shop-keeper on buying a laptop.	8 Marks	L3	CO5
	b)	Discuss the character Dasa in 'A Snake in the Grass'.	8 Marks	L2	CO1

MODULE-II

4.		"The words 'sorry', 'thank you' and 'please' are important in conversation". Analyze the statement with reference to the lesson 'On Saying Please'.	16 Marks	L4	CO5

(OR)

5.	a)	How does the stream of general life get affected by one's behaviour?	8 Marks	L1	CO4
	b)	List any four examples for assertive sentences.	8 Marks	L1	CO3

MODULE-III

6.		"The poem showcases the intensity of the love for his beloved". Explain the statement in connection with the poem "If You Forget Me".	16 Marks	L2	CO4

(OR)

7.	a)	'A crystal moon', 'red branch', 'the slow autumn at my window' – Explain these phrases in brief.	8 Marks	L2	CO3
	b)	Use appropriate tense form to fill the blanks given. i) I …… now. (Study) ii) They …….. the play recently. (See) iii) They …… the seminar scheduled tomorrow. (Attend) iv)Students …….. their presentation tomorrow. (Finish)	8 Marks	L1	CO3

MODULE-IV

8.		"Society accepts discrimination despite the fact that we are all human beings". Explain in the context of 'After the Sunset'.	16 Marks	L2	CO4

(OR)

9.	a)	Discuss the lamentations of the victims of the Gokul chat blast.	8 Marks	L2	CO4
	b)	Change the given sentences into active voice. i) Three pencils will have been bought by him. ii) Tea had been prepared by me. iii) A letter was sent to me by my friend. iv) Has the book been read by you?	8 Marks	L1	CO3

MODULE-V

10.		Interpret the summary of Betrand Russell's essay 'Man's Peril'.	16 Marks	L2	CO4

(OR)

11.	a)	Russell places two options before general public – end the human race or renounce war. Explain.	8 Marks	L2	CO4
	b)	Rewrite the sentences with necessary corrections. i) Either of the two boys know the secret. ii) Petrol and diesel has become expensive these days. iii) Dal and rice are her regular diet. iv) Many a boy have accepted his failure.	8 Marks	L1	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

OPERATING SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the Coffman's conditions that lead to a deadlock.	2 Marks	L1	CO3
	b)	Define progress and bounded waiting.	2 Marks	L1	CO1
	c)	Name the types of semaphores.	2 Marks	L1	CO2
	d)	There are 5 processes and each process require the three resources of same type then what is the maximum no of resources for deadlock free.	2 Marks	L2	CO3
	e)	Which module gives control of the CPU to the process selected by the short-term scheduler?	2 Marks	L1	CO1
	f)	Define Starvation.	2 Marks	L1	CO2
	g)	List the necessary conditions that lead to a deadlock.	2 Marks	L1	CO3
	h)	Difference between Process and thread.	2 Marks	L2	CO1
	i)	Classify kinds of Semaphores.	2 Marks	L1	CO2
	j)	Define the modes of Operating System.	2 Marks	L1	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	With the help of a diagram, describe the actions taken by the kernel to context-switch between processes.	8 Marks	L2	CO1
	b)	Consider the following set of processes that arrive at time 0 with the length of the CPU burst time given in milliseconds.	8 Marks	L2	CO1

Process	Burst Time
P1	24
P2	3
P3	3

Draw the Gnatt chart using FCFS, SJF and Round Robin Scheduling Algorithm. Calculate the average waiting time in both cases.
Note: Take time quantum = 4ms

(OR)

3.	a)	Illustrate with an example that the shortest job first scheduling does not necessarily give the minimum waiting time for a set of jobs if the jobs arrive at different times. Do not use more than 3 jobs in your solution.	8 Marks	L2	CO1
	b)	Differentiate between long term and short term scheduler.	8 Marks	L4	CO1

MODULE-II

4.	a)	Write the safety and Resource-Request Algorithms.	7 Marks	L2	CO3
	b)	Consider the following snapshot of a system:	9 Marks	L2	CO3

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

By using Bankers Algorithm,

i) Check whether the system is in safe state or not

ii) If a request from process P_1 arrives for (0,4,2,0), can the request be granted immediately?

(OR)

5.	a)	Explain critical section problem. What are the requirements that critical section problem must satisfy?	9 Marks	L2	CO2
	b)	Consider a system containing m resources of the same type being shared by n processes. Resources can be requested and released by processes only one at a time. Show that the system is deadlock free if the following two conditions hold : i) The maximum need of each process is between 1 and m resources ii) The sum of all maximum needs is less than m * n.	7 Marks	L2	CO3

MODULE-III

6.	a)	What is virtual memory? Discuss the benefits of virtual memory technique.	8 Marks	L2	CO4
	b)	State the cause of Thrashing and explain how does a system detect & eliminate the problem of Thrashing.	8 Marks	L2	CO4

(OR)

7.	a)	Compare and contrast internal fragmentation and external fragmentation.	8 Marks	L2	CO4
	b)	Suppose the head of a moving head disk with 200 tracks, numbered 0 to 199, is currently serving a request at track 143 and has just finished a request at track 125.If the queue of requests is kept in FIFO order: 86, 147, 91, 177, 94, 150, 102, 175, 130. What is the total head movement to satisfy these requests for the following disk scheduling algorithms? i) FCFS ii) SCAN iii) SSTF iv) C- SCAN	8 Marks	L2	CO4

MODULE-IV

8.	a)	Explain different file allocation methods	8 Marks	L2	CO5
	b)	Explain about inodes and file descriptors.	8 Marks	L2	CO5

(OR)

9.	a)	Explain various applications of I/O interface.	8 Marks	L2	CO6
	b)	Explain any three different services provided by the kernel I/O subsystem.	8 Marks	L2	CO6

MODULE-V

10.	a)	Appraise the various kinds of program threats and system threats.	6 Marks	L2	CO6
	b)	Analyse why simple password protection is the most common authentication scheme in use today and discuss the weakness inherent in the password protection scheme.	10 Marks	L2	CO6

(OR)

11.	a)	Write a short note on: i) Domain of protection ii) Access Matrix	7 Marks	L2	CO6
	b)	Explain the principles that dictates that programs and users be given just enough privileges to perform their tasks?	9 Marks	L2	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

ANATOMY - I

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write a brief note on Wrist drop.	2 Marks	L2	CO1
	b)	What are Pneumatic bones?	2 Marks	L1	CO1
	c)	What is Inguinal ligament?	2 Marks	L3	CO2
	d)	Define Wolf's law.	2 Marks	L1	CO2
	e)	Define Hybrid muscle.	2 Marks	L3	CO2
	f)	List the names of tarsal bones.	2 Marks	L1	CO2
	g)	Write about Interosseous membrane.	2 Marks	L2	CO1
	h)	Write about Dorsalis pedis artery.	2 Marks	L3	CO1
	i)	Write the differences between artery and vein.	2 Marks	L2	CO1
	j)	Write a short note on Claw hand.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks.

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is a synovial joint? Explain the features of a synovial joint with examples.	8 Marks	L2	CO1
	b)	Describe conducting system of heart and it's clinical importance.	8 Marks	L3	CO1
		(OR)			
3.		Define joint. Classify types of joints with examples.	16 Marks	L1	CO1

MODULE-II

4.	a)	Define bronchopulmonary segment. And add a note on bronchopulmonary segments and its clinical importance.	8 Marks	L4	CO2
	b)	Describe popliteal fossa and its contents.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain saphenous nerve under the following headings. i) Origin ii) Course and Relations iii) Branches iv) Applied anatomy	8 Marks	L3	CO2
	b)	Write in detail about blood supply of a long bone with a neat labelled diagram.	8 Marks	L1	CO2

MODULE-III

6.	a)	What are neural crest cells? Explain it's derivatives.	8 Marks	L4	CO3
	b)	Explain great saphenous vein and its tributaries	8 Marks	L3	CO3
		(OR)			
7.	a)	Define ossification. Write about laws of ossification.	8 Marks	L3	CO3
	b)	Define Bone. Classify types of bones with examples.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe blood supply of heart.	8 Marks	L4	CO4
	b)	Define anastomosis. Write about anastomosis around knee joint.	8 Marks	L3	CO4

(OR)

9.	a)	What are parts of a young long bone? Explain types of epiphysis with examples.	8 Marks	L3	CO4
	b)	Define a muscle. Explain types of muscles with examples.	8 Marks	L1	CO4

MODULE-V

10.	a)	What is cell division? Explain stages of Mitosis.	8 Marks	L4	CO5
	b)	Explain stages of spermatogenesis and oogenesis.	8 Marks	L3	CO5

(OR)

11.	a)	Explain foetal circulation with a neat labelled diagram.	8 Marks	L3	CO5
	b)	Define bone. What are the laws of ossification?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

PYTHON PROGRAMMING

[Computer Science and Engineering (Artificial Intelligence and Machine Learning),

Computer Science and Engineering (Data Science),

Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is python interpreter?	2 Marks	L2	CO1
	b)	List the standard data types in python.	2 Marks	L1	CO1
	c)	Mention the features of lists in python.	2 Marks	L3	CO2
	d)	What is a function? Mention the type of function and use.	2 Marks	L1	CO2
	e)	Define the types of arguments in python.	2 Marks	L3	CO2
	f)	What are the rules for writing an identifier?	2 Marks	L1	CO2
	g)	List some built in modules in python.	2 Marks	L2	CO1
	h)	What is the use of dir() function?	2 Marks	L3	CO1
	i)	What is range() function and how it is used in lists?	2 Marks	L2	CO1
	j)	Explain how can you access a module written in Python from C.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	List the salient features of python programming language.	8 Marks	L2	CO1
	b)	Write a python program to calculate the area of circle, rectangular and triangle. print the results.	8 Marks	L3	CO1
		(OR)			
3.	a)	What is an operator and explain about the arithmetic operators and assignment operators in Python with example.	8 Marks	L1	CO1
	b)	Explain about identity operators and operator precedence and associativity with example.	8 Marks	L4	CO1

MODULE-II

4.	a)	What are the different flow control statements available in python? Explain with suitable examples.	8 Marks	L1	CO2
	b)	Write a python program to print Fibonacci series up to given number.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain different types of selection statements with suitable example.	8 Marks	L1	CO2
	b)	Write a python program to check whether a given number is palindrome or not.	8 Marks	L3	CO2

MODULE-III

6.	a)	What is list? Explain the concept of slicing and indexing with proper examples.	8 Marks	L1	CO3
	b)	What are the different methods supports in python List. Illustrate all the methods with an example.	8 Marks	L1	CO3
		(OR)			
7.	a)	What is dictionary? Illustrate with an example python program the usage of nested dictionary.	8 Marks	L1	CO3
	b)	What are regular expression? What are the different steps to be follow to use a regular expression in python?	8 Marks	L1	CO2

MODULE-IV

8.	a)	Write a Python program to illustrate the use of command-line arguments.	8 Marks	L5	CO4
	b)	With necessary examples briefly explain how to define a function and call a function.	8 Marks	L3	CO4
		(OR)			
9.	a)	What are the key properties of a file? Explain in detail file reading/writing process with an example of python program.	8 Marks	L2	CO4
	b)	Write a python program to create a folder PYTHON and under the hierarchy 3 files file1,file2 and file3.write the content in file1 as ”MBU” and in file2 as “UNIVERSITY” and file3 content should be by opening and merge of file1 and file2. Check out the necessary condition before write file3.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the role of object oriented programming compared with the procedure oriented programming.	8 Marks	L1	CO4
	b)	Illustrate the use of creating a class, constructor, and the self variable with the necessary examples.	8 Marks	L1	CO4
		(OR)			
11.	a)	Demonstrate the use of Exception Handling in Python.	8 Marks	L1	CO4
	b)	Differentiate between compile-time and run-time polymorphism.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	If two Inductors L1=20mH and L2=50mH are connected in parallel across the voltage source, determine the equivalent inductance.	2 Marks	L2	CO1
	b)	A 0.1Ω resistor has a power rating of 5 W. Is this resistor safe when conducting a current of 20 A, justify?	2 Marks	L2	CO1
	c)	Mention the applications of stepper motor	2 Marks	L1	CO2
	d)	A transformer has 200 turns in primary and 50 turns in secondary. With a primary supply voltage of 230V. What is the secondary voltage also find transformation ratio K.	2 Marks	L1	CO2
	e)	State Lambert's square law.	2 Marks	L1	CO3
	f)	Define Candle power.	2 Marks	L1	CO3
	g)	List the factors responsible in the selection of transducer.	2 Marks	L1	CO4
	h)	Mention the objectives of Data Acquisition system.	2 Marks	L1	CO4
	i)	Draw the pin diagram of IC741.	2 Marks	L1	CO5
	j)	Draw the symbols for NPN and PNP transistor.	2 Marks	L1	CO5

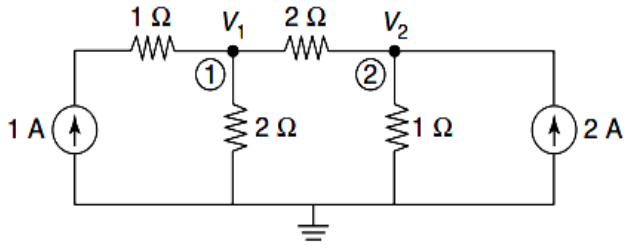
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

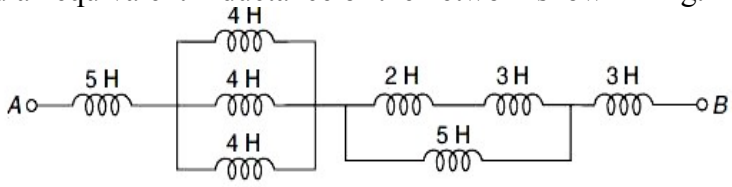
5 x 16 = 80 Marks

MODULE-I

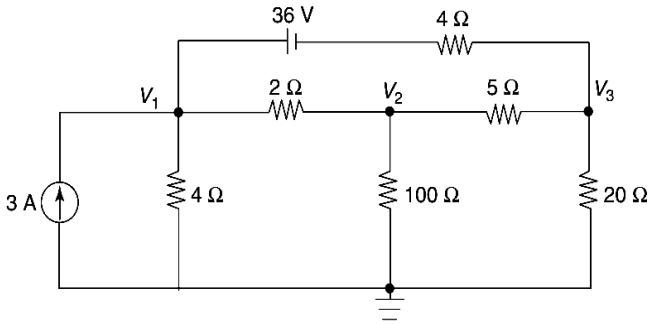
2.	a)	Determine the voltages at the node 1 and 2 using nodal analysis.	8 Marks	L3	CO1



	b)	Find an equivalent inductance of the network shown in fig.	8 Marks	L2	CO1



(OR)

3.	a)	Determine the current through the 5 ohm resistor for the network shown using Nodal analysis. 	12 Marks	L3	CO1
	b)	Determine the phasor relationship between voltage and current for the Capacitor.	4 marks	L2	CO1
		MODULE-II			
4.	a)	With neat sketch demonstrate the working principle of single phase transformer.	6 Marks	L2	CO2
	b)	With the neat diagram explain the construction and working of DC motor.	10 Marks	L2	CO2
		(OR)			
5.	a)	Explain the construction and working principle of stepper motor.	8 Marks	L2	CO2
	b)	Explain the operation of MCB with the help of relevant diagram.	8 Marks	L2	CO2
		MODULE-III			
6.	a)	What is Street Lighting? Mentions its Objective, Principle, Advantages and Disadvantages.	10 Marks	L2	CO3
	b)	In a street lighting scheme, lamps having uniform candle power of 800 are hung at a height of 10 m. distance between consecutive lamp posts is 12 m. find the illumination under the lamp and at the center in between the lamp posts.	6 Marks	L3	CO3
		(OR)			
7.	a)	Prove that "Illuminance varies inversely as the square of the illuminated point from the source" using laws of Illumination.	6 Marks	L2	CO3
	b)	What are the main components of UPS systems? Explain.	10 Marks	L2	CO3
		MODULE-IV			
8.	a)	With neat diagram, explain the basic components and working principle of Wireless Bluetooth sensor.	8 Marks	L2	CO4
	b)	Suggest the suitable device to convert linear displacement to electrical voltage. With neat sketch, explain the principle of operation. Mention its Applications.	8 Marks	L3	CO4
		(OR)			
9.	a)	With neat sketch, explain the working principle of Temperature and Humidity Sensor. Mention its advantages and disadvantages.	10 Marks	L2	CO4
	b)	What is data acquisition system? With generalized block diagram, explain the functions of it.	6 Marks	L2	CO4
		MODULE-V			
10.	a)	Discuss the working of NPN and PNP transistor with a neat sketch.	8 Marks	L2	CO5
	b)	Examine and derive an expression for V_0 of the Differentiator circuit by using Op-Amp.	8 Marks	L2	CO5
		(OR)			
11.	a)	With neat sketch, Explain the operation of Flash type ADC with an example.	8 Marks	L2	CO5
	b)	Discuss the working of NPN and PNP transistor with a neat sketch.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

BUSINESS ENVIRONMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe about internal Business environment?	2 Marks	L2	CO1
	b)	State the nature of external business environment.	2 Marks	L1	CO1
	c)	Define Fiscal policy?	2 Marks	L1	CO2
	d)	State about monetary policy.	2 Marks	L1	CO2
	e)	Define political institutions.	2 Marks	L1	CO2
	f)	State the concept of legal environment.	2 Marks	L1	CO2
	g)	Write about business ethics.	2 Marks	L1	CO3
	h)	Write about impact of cultural environment.	2 Marks	L1	CO3
	i)	Define the concept of MNC.	2 Marks	L2	CO1
	j)	Explain about challenges of Global environment.	2 Marks	L2	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Paraphrase the techniques of environmental scanning and monitoring.	8 Marks	L2	CO1
	b)	Demonstrate influencing factors of business environment.	8 Marks	L3	CO1
		(OR)			
3.	a)	State about External business environment.	8 Marks	L1	CO1
	b)	Outline the internal business environment.	8 Marks	L4	CO1

MODULE-II

4.	a)	Outline about fiscal policy.	8 Marks	L4	CO2
	b)	Demonstrate about economic system and business environment.	8 Marks	L3	CO2
		(OR)			
5.	a)	Interpret economic planning.	8 Marks	L3	CO2
	b)	State new economic policy.	8 Marks	L1	CO2

MODULE-III

6.	a)	Analyze about changing dimensions of legal environment.	8 Marks	L4	CO3
	b)	Sketch about reasons for state intervention.	8 Marks	L3	CO3
		(OR)			
7.	a)	Interpret about Government business interface.	8 Marks	L3	CO3
	b)	State about rationale and extent of state intervention.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Analyze the impact of socio-cultural environment.	8 Marks	L4	CO4
	b)	Dramatize about socio-cultural environment.	8 Marks	L3	CO4
		(OR)			
9.	a)	Demonstrate about business ethics.	8 Marks	L3	CO4
	b)	State about the corporate governance.	8 Marks	L1	CO4

MODULE-V

10.	a)	Illustrate about FEMA.	8 Marks	L4	CO5
	b)	Analyze about foreign investment in India.	8 Marks	L3	CO5
		(OR)			
11.	a)	Demonstrate about strategies for going global.	8 Marks	L3	CO5
	b)	State about emerging challenges of global business.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

ENGINEERING CHEMISTRY

[Civil Engineering, Electrical and Electronics Engineering,

Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Recall the units of hardness.	2 Marks	L1	CO1
	b)	Define reverse osmosis.	2 Marks	L1	CO1
	c)	Give any two examples of natural biodegradable polymers.	2 Marks	L1	CO2
	d)	Write the structure of polycarbonate.	2 Marks	L1	CO2
	e)	What is a primary battery? Give an example.	2 Marks	L1	CO3
	f)	Write the applications of Teflon.	2 Marks	L1	CO3
	g)	List the various types of electronic transitions in UV spectroscopy.	2 Marks	L1	CO4
	h)	Distinguish between SEM and TEM.	2 Marks	L3	CO4
	i)	Define calorific value. Write its significance.	2 Marks	L1	CO5
	j)	What are flash point and fire point?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		Describe the Nalgonda deflouridation method and list its advantages and disadvantages.	16 Marks	L2	CO1

(OR)

3.	a)	What are boiler troubles? How they are caused? Explain various prevention methods for the removal of scales from the boilers.	10 Marks	L2	CO1
	b)	Discuss the desalination of brackish water by reverse osmosis	6 Marks	L2	CO1

MODULE-II

4.		Explain the mechanism of degradation of biodegradable polymers and list the practical applications of biodegradable polymers.	16 Marks	L2	CO2

(OR)

5.	a)	Nano-materials are the backbone of any technology. Justify	8 Marks	L4	CO2
	b)	Outline the electrical conductance in the conducting polymer by taking one example	8 Marks	L2	CO2

MODULE-III

6.		Discuss the construction and working of the lead-acid storage battery with a neat diagram and list its applications.	16 Marks	L2	CO3

(OR)

7.		Describe the construction, working, and applications of the solid-oxide fuel cell.	16 Marks	L2	CO3

MODULE-IV

8.		Describe the instrumentation and working of the IR spectrophotometer with a block diagram. Write its applications.	16 Marks	L2	CO4
		(OR)			
9.		Explain the instrumentation and working of UV-spectroscopy with a block diagram. Write its applications.	16 Marks	L2	CO4

MODULE-V

10.	a)	Describe the manufacture of gasoline by the Bergius process with a neat diagram.	10 Marks	L2	CO5
	b)	Calculate the gross and net calorific values of a coal sample containing 84% carbon, 1.5% sulphur, 0.6% nitrogen, 5.5% hydrogen, and 8.4% oxygen.	6 Marks	L3	CO5
		(OR)			
11.		Discuss the classification of lubricants.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

FUNDAMENTALS OF ELECTRICAL ENGINEERING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define lumped and distributed elements with examples.	2 Marks	L1	CO1
	b)	A 100 V, 60 W lamp is connected in series with a 100 V, 100 W lamp across 200 V supply. What will be the current drawn by the lamps? What will be the power consumed by each lamp and will such a combination work?	2 Marks	L3	CO1
	c)	In a RC series circuit excited by sinusoidal source the voltage across the resistance and capacitance are 60V and 80V respectively. What will be the supply voltage?	2 Marks	L3	CO2
	d)	Two impedances Z_1 and Z_2, having the same numerical value, are connected in series. If Z_1 has a pf of 0.866 lagging and Z_2 has a pf of 0.8 leading, calculate the pf of the series combination.	2 Marks	L3	CO2
	e)	Classify different types of single-phase induction motors.	2 Marks	L2	CO3
	f)	Suggest the suitable induction motor for the following applications. i) Ceiling fan ii) Wet Grinder	2 Marks	L2	CO3
	g)	What are the functions of Hall Sensors?	2 Marks	L2	CO4
	h)	Suppose the stepper motor is arranged to rotate 4 revolutions per cycle. What is the angle made by the stepper motor and mention the name of the operation?	2 Marks	L2	CO4
	i)	Why Transformer is rated in KVA, not in kW?	2 Marks	L2	CO2
	j)	What are the important points to be noted when the transformer on no-Load condition?	2 Marks	L2	CO2

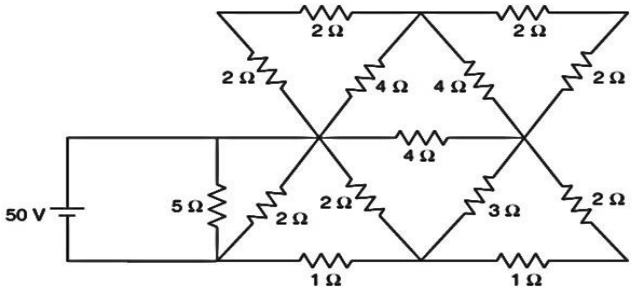
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

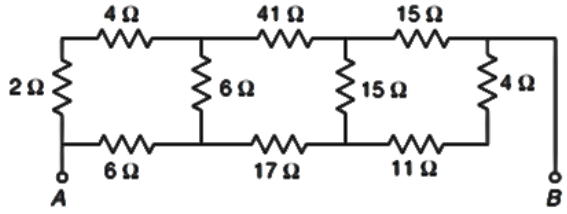
5 x 16 = 80 Marks

MODULE-I

2.	a)	Determine the Current I delivered by the source in the network.	8 Marks	L3	CO1

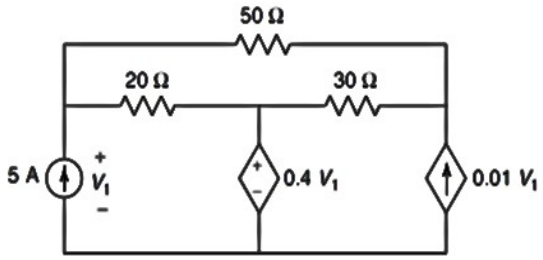


b) Using Suitable Transformation, Find an equivalent resistance between A and B in the network of Fig. — 8 Marks — L3 — CO1

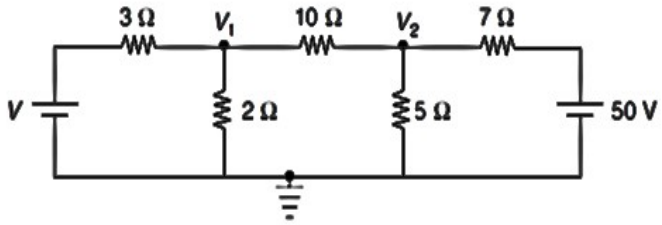


(OR)

3. a) Using Mesh Analysis, For the network shown in Fig., find the power supplied by the dependent voltage source. — 8 Marks — L3 — CO1



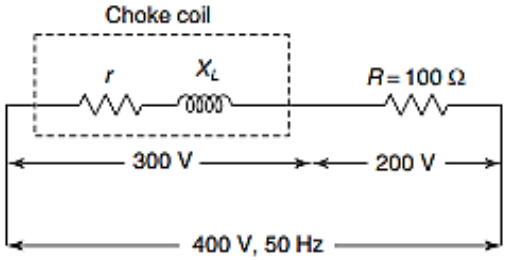
b) Using Nodal Analysis, Find the voltage V in the network shown in Fig. which makes the current in the 10 Ω resistor zero. — 8 Marks — L3 — CO1



MODULE-II

4. a) Analyze the various parameters for a series RC circuit when excited by a sinusoidal source. — 8 Marks — L3 — CO2

b) A 100 Ω resistor is connected in series with a choke coil as shown in Fig. When a 400 V, 50 Hz supply is applied to this combination, the voltages across the resistance and the choke coil are 200 V and 300 V respectively. Find the power consumed by the choke coil. Also, calculate the power factor of the choke coil and the power factor of the circuit. — 8 Marks — L3 — CO2



(OR)

5. a) A circuit consists of a pure resistor, a pure inductor, and a capacitor connected in series. When the circuit is supplied with 100 V, 50 Hz supply, the voltages across the inductor and resistor are 240 V and 90 V respectively. If the circuit takes a 10 A leading current, calculate i) value of inductance, resistance and capacitance, ii) power factor of the circuit, and iii) voltage across the capacitor. — 8 Marks — L3 — CO2

	b)	A series RLC circuit which resonates at 500 kHz has R = 25 Ω, L = 100 μH and C = 1000 pF. Determine the quality factor, new value of C required to resonate at 500 kHz when the value of L is doubled and the new quality factor.	8 Marks	L3	CO2

MODULE-III

6.	a)	Why single phase induction motor is not self-started? Explain the working of single phase induction motor with the help of double field revolving theory.	8 Marks	L2	CO3
	b)	With a neat sketch, explain the working of the capacitor start induction motor. Mention its applications.	8 Marks	L2	CO3

(OR)

7.	a)	Suggest a suitable induction motor that gives better efficiency and power factor. Explain the same with a neat sketch.	8 Marks	L2	CO3
	b)	Compare the capacitor Start and Capacitor Start and Run Induction Motor.	8 Marks	L2	CO3

MODULE-IV

8.	a)	With a neat sketch, Explain the construction of the PMBLDC motor Mention its applications.	8 Marks	L2	CO4
	b)	With a relevant switching sequence diagram, Explain the working principle of the BLDC motor.	8 Marks	L2	CO4

(OR)

9.		Define Stepper Motor. With a neat sketch, explain the construction and working of the Stepper motor. Mention its advantage, disadvantages and applications.	16 Marks	L2	CO4

MODULE-V

10.	a)	With neat sketch, Explain the construction and working of Single phase Transformer.	8 Marks	L2	CO2
	b)	A transformer has a primary winding of 800 turns and a secondary winding of 200 turns. When the load current on the secondary is 80 A at 0.8 power factor lagging, the primary current is 25 A at 0.707 power factor lagging. Determine graphically or otherwise the no-load current of the transformer and its phase with respect to the voltage.	8 Marks	L3	CO2

(OR)

11.	a)	In no-load test of single-phase transformer, the following test data were obtained : Primary voltage : 220 V ; Secondary voltage : 110 V ; Primary current : 0.5 A ; Power input : 30 W. Find the following : i) The turns ratio ii) the magnetizing component of no-load current iii) its working (or loss) component iv) the iron loss.	8 Marks	L3	CO2
	b)	With neat experimental setup, explain the concept of predetermination of efficiency and load regulation of single phase transformer.	8 Marks	L3	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

TELUGU

[Microbiology, Biotechnology , Bioinformatics and Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	ఇరుగు పొరుగుతో ఎలా ఉండాలి?	2 Marks	L1	CO1
	b)	ఉత్తమ వ్యక్తిత్వం ఎలా అలవడుతుంది?	2 Marks	L1	CO1
	c)	ఉత్తాన పాదుడి భార్యలు ఎవరు?	2 Marks	L1	CO2
	d)	నాడీజంఘుడు ఎవరు?	2 Marks	L2	CO2
	e)	పోతన భిరుదులు ఏవి?	2 Marks	L1	CO3
	f)	ధ్రువుని తల్లిదండ్రులు ఎవరు?	2 Marks	L1	CO3
	g)	కృషీవలుడు పాఠ్యభాగ రచయిత ఎవరు?	2 Marks	L2	CO4
	h)	నరుని శక్తి ఎలాంటిది?	2 Marks	L1	CO4
	i)	దేవేంద్రుడు – సంధికార్యము రాయండి	2 Marks	L1	CO5
	j)	త్రినేత్రుడు – విగ్రహ వాక్యము రాయండి ?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	ఎవడు అంధుడు కాడు ?	8 Marks	L3	CO1
	b)	వేటి వలన శాంతి లభించును ?	8 Marks	L3	CO1

(OR)

3.	a)	ఎటువంటి చదువు శాంతిని కలిగించదు?	8 Marks	L3	CO1
	b)	మూర్ఖులు దేనిని ఓర్చుకోలేరు ?	8 Marks	L3	CO1

MODULE-II

4.	a)	ఫలముల్ మెక్కెడివాడు తత్ఫల రసాస్వాద క్రియాలోలుఁడై పలుమాఱమ్మధురత్వము న్నుతుల సంభావింతురేగాని, త త్ఫల హేతుక్రమ వృక్షముందలపరెవ్వారైన, నట్లే రమా కలితుల్భోగములన్ భుజించుచు నినుంగన్నెత్తియుంజూతురే ప్రతిపదార్థం వ్రాయండి.	8 Marks	L2	CO2
	b)	గౌతముని వృత్తాంతాన్ని తెలియచేయండి ?	8 Marks	L3	CO2

(OR)

5.	a)	నా విని నారదుండు నరనాథువ కిట్లను నీ కుమారుడా దేవకిరీట రత్నరుచిదీపిత పాదపరోజుడైన రా జీవదళాక్ష రక్షితు డశేష జగత్పరికీర్తనీయ కీ ర్తీ విభవ ప్రశస్త సుచరిత్రుడు వానికి దు:ఖ మేటికిన్? ప్రతిపదార్థం వ్రాయండి	8 Marks	L2	CO2
	b)	నాడీ జంఘుని స్నేహశీలతను తెలియజేయండి?	8 Marks	L2	CO2

MODULE-III

6.	a)	'ధ్రువుడు విష్ణువును ఎలా కీర్తించాడో వివరించండి ?	10 Marks	L3	CO3
	b)	ఉత్తానపాదుని కుమారులు ఎందరు ? వారి పేర్లు ఏమి?	6 Marks	L2	CO3

(OR)

7.	a)	"హరి పరమాత్మ కేశవ చరాచర భూతశరీర ధారివై పరుగుదు వీవు, నిట్టులుగ బ్రాణనిరోధ మెఱుంగ మెందు ముం దిరవుగ దేవదేవ జగదీశ్వర! సర్వశరణ్య! నీ పదాం బురుహము లర్థిమై శరణు బొందెద మార్తి హరించి కావవే" ప్రతిపదార్థం వ్రాయండి?	10 Marks	L3	CO3
	b)	ధ్రువునికి నారదుడు ఏమని ఉపదేశించాడు?	6 Marks	L2	CO3

MODULE-IV

8.	a)	కర్షకుని జీవితాన్ని కవి ఎలా చిత్రించాడు.	8 Marks	L2	CO4
	b)	వానికి దు:ఖ మేటికిన్! నిందావాక్యములవ్వల్లరే! వీటికి సందర్భాలను వివరించండి?	8 Marks	L2	CO4

(OR)

9.	a)	దువ్వూరి రామిరెడ్డి జీవిత విశేషాలను తెలియజేయండి	8 Marks	L2	CO4
	b)	ప్రకృతి భావంబు నూత్నపథముగాదు సందర్భవాఖ్యం రాయండి.	8 Marks	L2	CO4

MODULE-V

10.	a)	ఏవేని నాలుగు తత్పురుష సమాసాలను వివరించండి?	8 Marks	L3	CO5
	b)	అనుప్రాసాలంకారాలను లక్షలక్షణ సమన్వయం చేయండి ?	8 Marks	L3	CO5

(OR)

11.	a)	మత్తేభం, శార్దూలం పద్యాల లక్షణాలు రాయండి ?	8 Marks	L3	CO5
	b)	సంస్కృత సంధులను వివరించండి?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

SANSKRIT

[Microbiology, Biotechnology , Bioinformatics and Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	श्रीरामः कीदृशं भरतं ददर्श ?	2 Marks	L1	CO1
	b)	वीरवरस्य पुत्रः कः?	2 Marks	L1	CO3
	c)	मनोरमा का?	2 Marks	L1	CO2
	d)	किंस्वित् गुरुतरं भूमेः? किंस्वित् उच्चतरं च खात्?	2 Marks	L1	CO1
	e)	श्रीरामः भरतं वीक्ष्य किमकरोत् ?	2 Marks	L1	CO1
	f)	चम्पूरामायणस्य कर्ता कः?	2 Marks	L1	CO2
	g)	श्रीरामः भरतं किं पप्रच्छ ?	2 Marks	L1	CO1
	h)	हितोपदेशस्य कर्ता कः?	2 Marks	L1	CO3
	i)	मृगः केन वञ्चितः?	2 Marks	L1	CO3
	j)	किंस्वित् प्रवसतो मित्रम्? किंस्वित् मित्रं गृहे सतः?	2 Marks	L1	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	आर्यपादुकाभिषेकः कथासारं लिखत?	8 Marks	L3	CO1
	b)	यक्षप्रश्नेषु वर्णितान् लौकिकधर्मान् वर्णयत?	8 Marks	L3	CO1
		(OR)			
3.	a)	आर्यपादुकाभिषेकः पाठ्यभागस्य सारांशं लिखत?	8 Marks	L3	CO1
	b)	पाण्डवान् उद्दिश्य वर्णयत?	8 Marks	L3	CO1

MODULE-II

4.	a)	भगीरथः किं निमित्तीकृत्य घोरं तपस्तेपे?	8 Marks	L3	CO2
	b)	मोहापनोदः कथां लिखत?	8 Marks	L3	CO2
		(OR)			
5.	a)	गङ्गावतरणं पाठं वर्णयत?	8 Marks	L3	CO2
	b)	सुनन्दायाः विषये लिखत?	8 Marks	L3	CO2

MODULE-III

6.	a)	श्रृगालः कथं लगुडेन मारितः विवृणत।	8 Marks	L3	CO3
	b)	वीरवरस्य राज्यक्तिं त्यागबुद्दि विशदयत।	8 Marks	L3	CO3
		(OR)			
7.	a)	काक मृगस्य मैत्री वर्णयत।	8 Marks	L3	CO3
	b)	शूद्रकवीरवर कथां प्रतिपादयत।	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	भारति कविरुद्दिश्य लिखत।	8 Marks	L3	CO4
	b)	शङ्कराचार्य विषये पूर्णतया प्रतिपादयत।	8 Marks	L3	CO4
		(OR)			
9.	a)	दण्डि महाकवेः उद्दिश्य वर्णयत।	8 Marks	L3	CO4
	b)	दण्डि महाकवि विषये सम्पूर्ण रूपेण लिखत।	8 Marks	L3	CO4
		MODULE-V			
10.	a)	ऋकारान्तः पुंलिङ्ग धातृ शब्दः।	8 Marks	L3	CO5
	b)	गो शब्दः सम्पूर्णतया लिखत।	8 Marks	L3	CO5
		(OR)			
11.	a)	इकारान्तः स्त्रीलिङ्गः मति शब्दः।	8 Marks	L3	CO5
	b)	देव शब्दः सम्पूर्णतया लिखत।	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

INTRODUCTION TO HEALTH CARE SYSTEM AND PHYSIOTHERAPY ROLE

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is organizational structure?	2 Marks	L2	CO1
	b)	Write four key functions of health system.	2 Marks	L1	CO1
	c)	What is naturopathy?	2 Marks	L3	CO2
	d)	What is Unani medicine?	2 Marks	L1	CO2
	e)	Define demography.	2 Marks	L3	CO2
	f)	What are vital events?	2 Marks	L1	CO2
	g)	What is communicable disease?	2 Marks	L2	CO1
	h)	Write the history of natural diseases.	2 Marks	L3	CO1
	i)	What is primary health care system.	2 Marks	L2	CO1
	j)	Define rehabilitation.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write in detail about the health care delivery system.	8 Marks	L2	CO1
	b)	Define primary health care. Discuss about the primary health care.	8 Marks	L3	CO1

(OR)

3.	a)	What is meant by community health care center? Mention about the functions community health care center?	8 Marks	L1	CO1
	b)	Describe the central council of health and family welfare.	8 Marks	L4	CO1

MODULE-II

4.	a)	Discuss about Naturopathy medicine.	8 Marks	L4	CO2
	b)	What is Ayurveda? Explain in detail about the Ayurveda.	8 Marks	L3	CO2

(OR)

5.	a)	What is the Yoga System of Medicine? Importance Yoga System of Medicine in Health Care.	8 Marks	L3	CO2
	b)	Explain in detail about the homeopathy medicine.	8 Marks	L1	CO2

MODULE-III

6.	a)	Illustrate the vital events of life and its impact on demography.	8 Marks	L4	CO3
	b)	Define urbanization. What are the causes of urbanization?	8 Marks	L3	CO3

(OR)

7.	a)	What is vital statistics? Describe in detail about the vital statistics.	8 Marks	L3	CO3
	b)	Evaluate the census and its impact of health care policy.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define epidemiology. Discuss the aims and concept of epidemiology,	8 Marks	L4	CO4
	b)	Explain the methods of epidemiological studies.	8 Marks	L3	CO4

(OR)

9.	a)	Describe the epidemiological communicable diseases. Describe the epidemiological non-communicable diseases.	8 Marks	L3	CO4
	b)	What is immunization? List out the vaccination schedule in India.	8 Marks	L1	CO4

MODULE-V

10.	a)	What is rehabilitation? What are the principles of rehabilitation?	8 Marks	L4	CO5
	b)	What is physiotherapy? Write in detail about the context "Physiotherapy as an educator".	8 Marks	L3	CO5

(OR)

11.	a)	Definition of Physiotherapy. Describe the Methods used in Physiotherapy.	8 Marks	L3	CO5
	b)	Discuss in detail about the Rehabilitation Team.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

ENVIRONMENTAL STUDIES

[Microbiology, Biotechnology , Bioinformatics & Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Wind energy	2 Marks	L1	CO1
	b)	Importance of Biogas	2 Marks	L1	CO1
	c)	Write about Eutrophication	2 Marks	L1	CO2
	d)	Write about green chemistry	2 Marks	L1	CO2
	e)	Effects of fertilizers	2 Marks	L1	CO3
	f)	Causes of overgrazing	2 Marks	L1	CO3
	g)	Write about nuclear accidents	2 Marks	L1	CO4
	h)	What is Acid rains	2 Marks	L1	CO4
	i)	Effects of modern agriculture	2 Marks	L1	CO5
	j)	Write about nuclear hazard	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain in detail about solar energy and wind energy	8 Marks	L2	CO1
	b)	Summarize about the importance of Renewable energy resources in the present scenario	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain in detail about Nonrenewal energy resources	8 Marks	L2	CO1
	b)	Briefly discuss about Wind energy and natural gas	8 Marks	L2	CO1

MODULE-II

4.	a)	Summarize about surface water and Ground water	8 Marks	L2	CO2
	b)	Summarize detail about waste water management	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain in detail about source of water	8 Marks	L2	CO2
	b)	Discuss about causes and effects of hardness of water	8 Marks	L2	CO2

MODULE-III

6.	a)	Summarize detail about effects of modern agriculture using fertilizer and pesticides	8 Marks	L2	CO3
	b)	Identify the causes and effects of Land pollution	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain about various disease caused polluted water.	8 Marks	L2	CO3
	b)	Summarize about the causes and effects of overgrazing	8 Marks	L2	CO3

MODULE-IV

8.	a)	Summarize detail about problems related climate changes	8 Marks	L2	CO4
	b)	Discuss about the problems related to water conservation	8 Marks	L2	CO4
		(OR)			
9.	a)	Summarize about the effects of radiation and nuclear hazard	8 Marks	L2	CO4
	b)	Describe different social issues on human development	8 Marks	L2	CO4

MODULE-V

10.	a)	Identify how green manufacturing system helps to control pollution	8 Marks	L2	CO5
	b)	Describe the importance of green chemistry and synthetic chemistry	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the tools of green chemistry.	8 Marks	L2	CO5
	b)	Identify the principles considered for the development of chemical products	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.C.A. I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

COMPUTER FUNDAMENTALS AND ORGANIZATION

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Under what circumstances are decimal numbers converted into binary numbers?	2 Marks	L2	CO2
	b)	What is the purpose of using a parity check bit?	2 Marks	L2	CO1
	c)	Write short notes on Plotters.	2 Marks	L1	CO1
	d)	Brief about Bar code. Where are bar codes used?	2 Marks	L2	CO3
	e)	Mention the role of a Processor.	2 Marks	L1	CO1
	f)	Perform binary addition for the following: i) 1110.1101+110101.01101 ii) 110111.11+11011101.0101	2 Marks	L2	CO3
	g)	Define Duality principle.	2 Marks	L1	CO2
	h)	What is an interrupt? Classify the types of interrupts.	2 Marks	L2	CO2
	i)	Write short notes on Arithmetic instructions of data manipulation.	2 Marks	L1	CO3
	j)	Give a brief note on Memory address map.	2 Marks	L1	CO2

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define an Algorithm. Design an algorithm to find the average number of Vowels in each sentence in an English passage.	8 Marks	L3	CO1
	b)	Design a Flowchart to find the highest marks obtained in a class and the corresponding Roll Number of the student obtained the highest marks (considering only one student obtains the highest marks).	8 Marks	L3	CO1

(OR)

3.	a)	Brief about the representation of integers in computers and find the decimal values of the following binary number: 1011010, 100001, 0101111	8 Marks	L3	CO1
	b)	Give the significance of error-detecting codes? Discuss.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is the advantage of an Inkjet printer compared to a Dot-Matrix printer? What is its disadvantage?	8 Marks	L3	CO2
	b)	What is a Memory Cell? What are the characteristics of a memory cell?	8 Marks	L1	CO2

(OR)

5.	a)	Discuss the Flat panel display technology.	8 Marks	L2	CO2
	b)	What is a Semiconductor Flip-flop? Describe the operation of the controlled switch with a neat sketch and tabulate various states of the flip-flop.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write short notes on Binary Addition and perform binary addition on the following: i) 1110.1101+110101.01101 ii) 110111.11+11011101.0101 iii) 1011011.111+1010110.1010	8 Marks	L2	CO2
	b)	Summarize the significance of precedence of operators in evaluating a Boolean expression. Illustrate the Precedence of operators.	8 Marks	L2	CO2

(OR)

7.	a)	Describe the Binary division using Long-hand division of decimal integers with an example.	8 Marks	L2	CO2
	b)	Design a Logic circuit for a Seven-segment display decoder and develop a truth table corresponding to the logic circuit.	8 Marks	L3	CO2

MODULE-IV

8.	a)	What is the role of Instruction codes? Describe in detail about Instruction codes.	8 Marks	L2	CO3
	b)	What is a program interrupt? With a neat sketch explain the flowchart for interrupt cycle.	8 Marks	L2	CO3

(OR)

9.	a)	Design the Control unit of basic computer and elaborate your views on timing and Control.	8 Marks	L3	CO3
	b)	What are the most common fields found in instruction formats? Discuss any two address instruction formats.	8 Marks	L2	CO3

MODULE-V

10.	a)	Design and explain the Memory connection to CPU.	8 Marks	L2	CO3
	b)	Explain the Match logic for one word of associative memory.	8 Marks	L3	CO3

(OR)

11.	a)	Summarize the significance of memory management software system. Demonstrate various Page replacement algorithms.	11 Marks	L2	CO3
	b)	Brief about Cache Initialization.	5 Marks	L1	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

ENGINEERING MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State law of transmissibility of forces.	2 Marks	L1	CO1
	b)	Differentiate between deficient and redundant frames.	2 Marks	L2	CO1
	c)	Define cone of friction.	2 Marks	L1	CO2
	d)	State the laws of friction.	2 Marks	L1	CO2
	e)	What is radius of gyration?	2 Marks	L1	CO3
	f)	Define polar moment of inertia.	2 Marks	L1	CO3
	g)	State Poisson's Ratio.	2 Marks	L1	CO4
	h)	Define modulus of rigidity.	2 Marks	L1	CO4
	i)	Differentiate between thin and thick cylinder.	2 Marks	L2	CO5
	j)	A Cylinder of 750 mm diameter contains a fluid under a pressure of 6 N/mm^2. If the permissible tensile stress is 280 N/mm^2, find the minimum thickness of the plate.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	State and prove parallelogram law.	8 Marks	L2	CO1
	b)	An eye bolt is being pulled from ground by three forces as shown in Fig.1. Determine the resultant.	8 Marks	L4	CO1

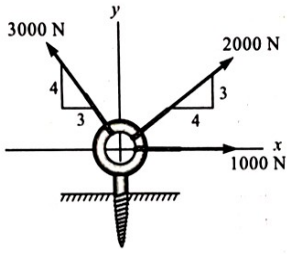

Fig.1

(OR)

3.		Determine the forces in all the members of a truss shown in Fig.2 using method of joints.	16 Marks	L4	CO1

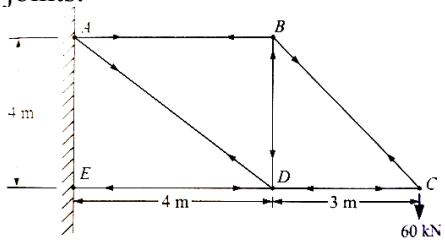

Fig.2

MODULE-II

4.	a)	Determine the frictional force developed on the block shown in the Fig.3. when P = 40 N. The coefficient of friction between block and floor is 0.3.	8 Marks	L4	CO2

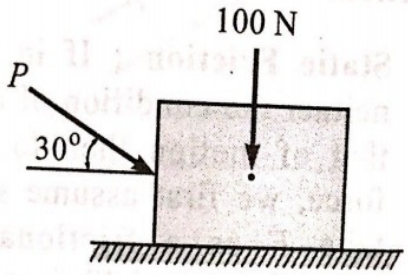

Fig.3

	b)	A ladder 5 m long and of 250 N weight is placed against a vertical wall in a position where its inclination to the vertical is 300. A man weighing 800 N climbs the ladder. At what position will he induce slipping? The co-efficient of friction for both the contact surfaces of the ladder with the wall and the floor is 0.2.	8 Marks	L4	CO2

(OR)

5.		A block weighing 1000 N rests over block B which weighs 2000 N as shown in the Fig.4. Block A is tied to wall with a horizontal string. If the coefficient of friction between blocks A and B is 0.25 and between B and floor is 0.3, what should be the value of P to move the block B if i) P is horizontal. ii) P acts at 30° upwards to horizontal.	16 Marks	L4	CO2

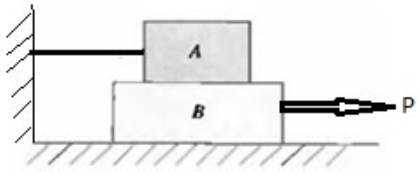

Fig.4

MODULE-III

6.	a)	State and prove the theorem of perpendicular axis.	8 Marks	L2	CO3
	b)	Find the centroid of the inverted T section shown in below Fig.5.	8 Marks	L4	CO3

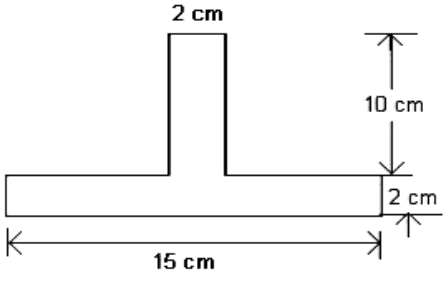

Fig.5

(OR)

7.		Determine the moment of inertia and the radius of gyration of the I - section shown in the Fig.6.	16 Marks	L4	CO3

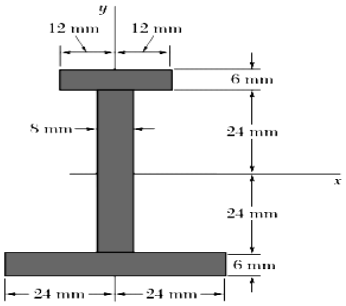

Fig.6

MODULE-IV

8.	a)	Derive the expression for the extension of the tapering rod with circular cross section.	8 Marks	L2	CO4
	b)	A rod of steel is 20 m long at a temperature of 20°C. Find the free expansion of the rod when the temperature rises to 65°C. Find the temperature stress produced i) when the expansion of the rod is prevented ii) when the rod is permitted to expand by 5.8 mm. Take $\alpha = 12 \times 10^{-6}$ per°C and $E = 2 \times 10^5$ N/mm^2.	8 Marks	L4	CO4

(OR)

9.	a)	Derive the relationship between Modulus of Elasticity and Modulus of rigidity.	8 Marks	L2	CO4
	b)	A copper bar shown in Fig.7. is subjected to a tensile load of 30 KN. Determine elongation of the bar if E=100 GPa. Also find maximum stress induced.	8 Marks	L4	CO4

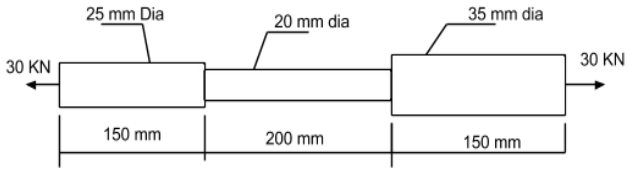

Fig.7

MODULE-V

10.	a)	Derive the change in dimension of thin cylindrical shell due to an internal pressure.	8 Marks	L2	CO5
	b)	A hollow cylindrical drum 600 mm in diameter has a thickness of 10 mm and length of 3 m. If the drum is subjected to an internal air pressure of 3 N/mm^2, determine the increase in volume of the drum. Take $E = 2 \times 10^5$ N/mm^2. Poisson's ratio 0.3.	8 Marks	L4	CO5

(OR)

11.	a)	A pipe of 200 mm internal diameter and 50 mm thickness carries a fluid at a pressure of 10 MN/m^2. Calculate the maximum and minimum intensities of circumferential stress across the section.	8 Marks	L4	CO5
	b)	Calculate the thickness of metal necessary for a cylindrical shell of internal diameter 160 mm to withstand an internal pressure of 25 MN/m^2 if maximum permissible tensile stress is 125 MN/m^2.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

PROGRAMMING FOR PROBLEM SOLVING

[Computer Science and Engineering,

Computer Science and Engineering (Artificial Intelligence and Machine Learning),

Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security), Electronics and Communication Engineering,

Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the Structure of C Program.	2 Marks	L1	CO1
	b)	With an example explain Ternary Operator.	2 Marks	L2	CO1
	c)	Differentiate between ghetch() and getche().	2 Marks	L2	CO1
	d)	Represent the notations of Flowchart.	2 Marks	L1	CO2
	e)	Define Recursion and how it is different from normal function call.	2 Marks	L2	CO3
	f)	List some of the character Manipulation functions.	2 Marks	L1	CO3
	g)	What is NULL Pointer?	2 Marks	L2	CO4
	h)	With example Write the arithmetic operations which are allowed on pointers.	2 Marks	L2	CO4
	i)	How enum is different from structure.	2 Marks	L2	CO5
	j)	List some of Random Access file functions.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain Formatted output function (printf) with neat syntax.	10 Marks	L1	CO1
	b)	Explain implicit and explicit Type Conversion.	6 Marks	L2	CO1

(OR)

3.	a)	Explain Logical and Relational operators with example.	8 Marks	L1	CO1
	b)	What is operator precedence and associatively. Explain.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write an algorithm and draw the flowchart for fining whether the given number is Odd or Even.	8 Marks	L2	CO2
	b)	Write a C program to find the Sum of individual digits of a given number.	8 Marks	L3	CO1

(OR)

5.	a)	Demonstrate the looping statements with a suitable example.	8 Marks	L2	CO1
	b)	Write a program to print the following pattern. 1 12 123 1234 12345	8 Marks	L3	CO1

MODULE-III

6.	a)	Write a C program to find the second largest number in a list of integers.	8 Marks	L3	CO3
	b)	Write a C program to generate the prime numbers between 1 and N. Define a separate function to generate prime numbers.	8 Marks	L3	CO3

(OR)

7.	a)	Compare and contrast automatic, external and static variables.	8 Marks	L2	CO3
	b)	Write a C program to insert a sub-string in to a main string at a given position.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Write a C program to count the number of vowels and consonants in a string using pointers.	8 Marks	L3	CO4
	b)	Write a C program to allocate the memory dynamically to an Array of length N. Write the necessary code to store and display N integer elements.	8 Marks	L3	CO4

(OR)

9.	a)	Write a C Program to Sort a list of Names using Array of Pointers.	8 Marks	L3	CO4
	b)	Differentiate Call by value and Call by Reference.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the structure declaration, initialization and accessing the members of structure with a neat syntax.	8 Marks	L2	CO5
	b)	Write a C program to store and retrieve the details include name, roll-no, branch, section and phone-no of N students.	8 Marks	L3	CO5

(OR)

11.	a)	Compare and contrast Structure and Union.	8 Marks	L2	CO5
	b)	Write a C program to merge two files into a new file.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

MATERIAL SCIENCE AND ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Sketch screw dislocation.	2 Marks	L2	CO1
	b)	What is an alloy?	2 Marks	L1	CO1
	c)	What are the objectives of Heat treatment?	2 Marks	L2	CO2
	d)	Sketch tempering process.	2 Marks	L1	CO2
	e)	What are Hadfield manganese steels?	2 Marks	L1	CO3
	f)	What are low alloy steels?	2 Marks	L1	CO3
	g)	What are Refractory metals?	2 Marks	L2	CO4
	h)	What are the applications of titanium alloys?	2 Marks	L1	CO4
	i)	What are the applications of Glass-ceramics?	2 Marks	L2	CO5
	j)	Classify composite materials.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe Burger's vector for the Edge and Screw Dislocation.	8 Marks	L2	CO1
	b)	List out different type's imperfections in crystals and briefly explain Schottkey, Frenkel defects, Edge and Screw dislocations.	8 Marks	L2	CO1

(OR)

3.	a)	Draw Iron-Iron-Carbide diagram neatly and explain cooling of steel from Liquid phase to room temperature for 0.4% C and 0.8% C.	8 Marks	L1	CO1
	b)	Explain the expression for the Gibb's Phase rule with suitable example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write short notes on surface hardening techniques. Explain any two methods with neat sketches.	8 Marks	L2	CO2
	b)	Define annealing and recall the types of annealing.	8 Marks	L2	CO2

(OR)

5.	a)	Differentiate the CCT and TTT diagram. Explain the construction method of TTT and CCT diagrams.	8 Marks	L3	CO2
	b)	Define carburizing and describe the types of carburizing in detail.	8 Marks	L1	CO2

MODULE-III

6.	a)	Classify the types of carbon steels with their specific features and applications.	8 Marks	L4	CO3
	b)	Explain the structure, properties and applications of White and Malleable cast iron.	8 Marks	L3	CO3

(OR)

7.	a)	Recall the designations of steels and mention the types, composition, properties and applications of tool steels.	8 Marks	L2	CO3
	b)	What is stainless steel? How they are classified and give their applications.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Compare brass and bronze materials.	8 Marks	L2	CO4
	b)	List the properties and applications of copper.	8 Marks	L2	CO4

(OR)

9.	a)	What is aluminium? Explain the types, properties and uses of aluminium alloys in detail.	8 Marks	L3	CO4
	b)	List the properties and applications of Nickel.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define composite materials. What unique properties have they, over the conventional materials?	8 Marks	L2	CO5
	b)	Discuss the properties and applications of particle reinforced composites, and fiber reinforced composites.	8 Marks	L3	CO5

(OR)

11.	a)	Write short notes on Metal Matrix composites and Ceramic-matrix composites.	8 Marks	L3	CO5
	b)	Describe properties and applications of polymers.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering (Artificial Intelligence and Machine Learning),

Computer Science and Engineering (Data Science),

Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write the negation of the following statements i) 2+3=5 ii) Baahubali was killed by kattappa.	2 Marks	L1	CO1
	b)	Find the truth values of the following statements i) 8>4 if and only if 8-4 is positive ii) If 4+5=9 then 3+1=6.	2 Marks	L1	CO1
	c)	Find A^2 for the set $A = \{1, 0, -1\}$.	2 Marks	L1	CO2
	d)	Determine the relation R for the following matrix $M_R = \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ 1 & 0 & 1 & 0 \end{bmatrix}$.	2 Marks	L3	CO2
	e)	Three persons enter into car, where there are 5 seats. In how many ways can they take up their seats.	2 Marks	L1	CO3
	f)	Construct the composition table for the set $G = \{1, w, w^2\}$ with respect to multiplication as a binary operation.	2 Marks	L3	CO3
	g)	Define generating function for the sequence $\langle a_r \rangle$.	2 Marks	L1	CO4
	h)	Define recurrence relation for the sequence.	2 Marks	L1	CO4
	i)	How many edges are there in a graph with 10 vertices each of degree 3.	2 Marks	L1	CO5
	j)	Define a spanning tree and give an example.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Let p, q, r denote the following sentences: p : Triangle ABC is isosceles q : Triangle ABC is equilateral r : Triangle ABC is Equiangular Translate each of the following into a statement of English. $(i)\ q \rightarrow p$ $(ii)\ (\sim p) \rightarrow \sim q$ $(iii)\ q \leftrightarrow r$ $(iv)\ r \rightarrow p$.	8 Marks	L2	CO1
	b)	Find the conjunctive normal form of $\sim(p \vee q) \leftrightarrow (p \wedge q)$.	8 Marks	L1	CO1

(OR)

3.	a)	Discuss the following connectives with an example. i) Conjunction ii) Disjunction iii) Conditional iv) Biconditional	8 Marks	L2	CO1
	b)	Construct the principal disjunctive normal form for $(\sim p \rightarrow r) \wedge (q \leftrightarrow p)$ without using the truth table.	8 Marks	L3	CO1

MODULE-II

4.	a)	For the poset $\{(6,8,12,18,27,48), /\}$, find i) Maximal elements ii) Minimal elements iii) Least upper bound of $\{6,8\}$, if it exists. iv) Greatest lower bound of $\{18,48\}$, if it exists	8 Marks	L2	CO2
	b)	Show that a mapping $f: R \rightarrow R$ defined by $f(x) = 2x + 1$ for $x \in R$ is a bijective map from R to R.	8Marks	L4	CO2

(OR)

5.	a)	Define : i) Irreflexive relation ii) Antisymmetric relation iii) Asymmetric relation iv) Transitive relation with an example.	8 Marks	L2	CO2
	b)	Let f and g be functions from R to R, where R is a set of real numbers defined by $f(x) = x^3$ and $g(x) = x^2 + 1$. Find the composition of functions: i) fof ii) gog iii) fog iv) gof	8 Marks	L2	CO2

MODULE-III

6.	a)	Use mathematical induction to show that $3^n - 1$ is divisible by 2 for all positive integers.	8 Marks	L3	CO3
	b)	Let f be a homomorphism from a group G_1 to a group G_2 then show that i) If e_1 is the identity in G_1 and e_2 is the identity in G_2 then $f(e_1) = e_2$. ii) $f(a^{-1}) = [f(a)]^{-1}$ for all $a \in G_1$.	8 Marks	L4	CO3

(OR)

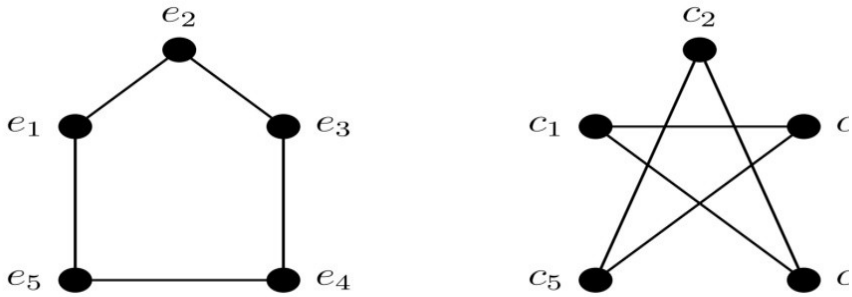
7.	a)	A computer password consists of a letter of the alphabet followed by 3 or 4 digits. Find i) The total number of passwords that can be created and ii) The number of passwords in which no digit repeats	8 Marks	L3	CO3
	b)	Define i) Group ii) Subgroup iii) Semi-group iv) Isomorphism with an example.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Find the coefficient of x^{10} in $\frac{(x^3 - 5x)}{(1-x)^3}$.	8 Marks	L3	CO4
	b)	Using the generating function method, solve the recurrence relation $a_{n+2} - 2a_{n+1} + a_n = 0,\ n \geq 0$ given $a_0 = 1,\ a_1 = 2$.	8 Marks	L3	CO4
		(OR)			
9.	a)	Find the generating functions for the following sequences: i) 1, 2, 3, 4,..... ii) 1, - 2, 3, - 4,..... iii) 0, 1, 2, 3,..... iv) 0, 1, - 2, 3, - 4,.....	8 Marks	L3	CO4
	b)	Solve the recurrence relation $a_n + a_{n-1} - 8a_{n-2} - 12a_{n-3} = 0,\ n \geq 3$ where $a_0 = 1,\ a_1 = 5, a_2 = 1$.	8 Marks	L3	CO4

MODULE-V

10.	a)	Check whether the below graphs are isomorphic or not.	8 Marks	L4	CO5



	b)	Explain Breadth First Search algorithm with an example.	8 Marks	L3	CO5
		(OR)			
11.	a)	Define the following with example: i) Graph ii) Multi graph iii) Complete graph iv) Connected graph.	8 Marks	L2	CO5
	b)	Define minimal spanning tree. Explain Krushkal's algorithm with an example.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Convert $(4BAC)_{16}$ to binary and Hexadecimal.	2 Marks	L2	CO1
	b)	Convert $(367.52)_8$ to binary.	2 Marks	L2	CO1
	c)	Simplify F(x, y, z) = x'yz'+xy'z+x'z'.	2 Marks	L2	CO1
	d)	Simplify F(x, y, z) = Σ(3, 4, 6, 7) using K-map.	2 Marks	L2	CO1
	e)	Write the sum and carry expression for half adder.	2 Marks	L2	CO2
	f)	Draw the block diagram of 2x4 decoder with enable input.	2 Marks	L1	CO2
	g)	Draw the logic diagram of SR NAND Latch.	2 Marks	L2	CO3
	h)	State Mealy and Moore state machines with its block diagrams.	2 Marks	L1	CO3
	i)	How many fuses were required for n inputs, k Product terms and m outputs of a typical PLA circuit?	2 Marks	L2	CO4
	j)	Define EPROM.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Perform BCD Addition of the two decimal numbers 679.6 and 536.8.	8 Marks	L2	CO1
	b)	Find compliment of the function, F = xy′z′ + xyz, using De-Morgan's theorem.	8 Marks	L2	CO1

(OR)

3.	a)	Let X = 74581 and Y = 43662. Perform X - Y using 9'S complement and 10'S complement.	10 Marks	L2	CO1
	b)	Minimize the following functions using Boolean algebra. i) y'z' + w'x'z' + w'xyz' + wyz' . ii) ABC + A'B'C + A'BC +ABC' + A'B'C' .	6 Marks	L3	CO1

MODULE-II

4.		Simplify the Boolean function using K-map. i) F (A.B, C, D) = A'B'C'+ B'CD'+ A'BCD'+AB'C'. ii) F (W,X,Y,Z) = Σm (0,6,8,13,14) + Σd (2,4,10).	16 Marks	L2	CO2

(OR)

5.	a)	Simplify the following Boolean function using K-map method. $F(w,x,y,z) = \sum_m (0,2,4,5,6,7,8,10,13,15)$.	8 Marks	L2	CO2
	b)	Minimize the function ; F(A, B, C, D)=∑m(0,4,6,8,9,10,12) +∑d (2,13). Implement the minimized function using only NOR gates.	8 Marks	L3	CO2

MODULE-III

6.	a)	Construct a 16×1 multiplexer with two 8×1 and one 2×1 multiplexers using block diagram representation.	10 Marks	L2	CO3
	b)	Design a circuit for 3x3 bit binary multiplier.	6 Marks	L3	CO3

(OR)

7.	a)	Construct a 4-to-16 line decoder with five 2-to-4 line decoders with enable.	8 Marks	L2	CO3
	b)	Demonstrate half adder and full adder using decoder and OR gates.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What is race-around problem in JK Flip-Flop? Explain how it is eliminated in Master Slave Flip-Flop with its neat logic diagram.	6 Marks	L2	CO3
	b)	Design Mod-10 Counter using T Flip-Flops.	10 Marks	L3	CO3

(OR)

9.	a)	Design of a synchronous BCD up counter using T Flip-Flop.	8 Marks	L3	CO3
	b)	Draw a 3 bit Johnson counter and explain.	8 Marks	L2	CO3

MODULE-V

10.	a)	Explain in detail about ROM.	6 Marks	L1	CO4
	b)	Implement the following Boolean functions using PAL with AND-OR structure. F1 (A,B,C,D)=∑m(2,12,13). F2 (A,B,C,D)=∑m(7,8,9,10,11,12,13,14,15). F3 (A,B,C,D)=∑m(0,2,3,4,5,6,7,8,10,11,15). F4 (A,B,C,D)=∑m(1,2,8,12,13).	10 Marks	L3	CO4

(OR)

11.	a)	Explain in detail about FPGA.	8 Marks	L1	CO4
	b)	Explain in detail about CPLD.	8 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

APPLIED PHYSICS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Draw the model structure of the optical fibers.	2 Marks	L1	CO1
	b)	Define the total internal reflection.	2 Marks	L1	CO1
	c)	State the reverberation time.	2 Marks	L3	CO2
	d)	List any two applications of ultrasonic waves.	2 Marks	L1	CO2
	e)	Differentiate the kinematics and kinetics.	2 Marks	L2	CO3
	f)	What is energy?	2 Marks	L1	CO3
	g)	Recall the modes of heat transfer.	2 Marks	L1	CO4
	h)	Name the method which is used to determine the conductivity of a bad conductor.	2 Marks	L1	CO4
	i)	List the applications of metallic glasses.	2 Marks	L1	CO5
	j)	Identify the applications of shape memory alloys.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Classify the optical fibers based on their refractive index profiles and explain the propagation of light waves through them.	10 Marks	L2	CO1
	b)	List the application of optical fibers.	6 Marks	L1	CO1

(OR)

3.	a)	Explain the fabrication of optical fiber by double crucible technique with a neat diagram.	10 Marks	L2	CO1
	b)	Describe the construction and working of an optical fiber temperature sensor.	6 Marks	L2	CO1

MODULE-II

4.	a)	Identify the factors affecting architectural acoustics and predict their remedies.	10 Marks	L3	CO2
	b)	Formulate Sabine's formula to determine the reverberation time and explain the terms in it.	6 Marks	L6	CO2

(OR)

5.	a)	Discuss the production of ultrasonic waves using the magnetostriction method.	8 Marks	L2	CO2
	b)	Summarize the production of ultrasonic waves using the piezoelectric method.	8 Marks	L2	CO2

MODULE-III

6.		Define instantaneous velocity. Explain with sketches the construction and uses of i) displacement–time graph, ii) velocity–time graph and iii) acceleration-time graph.	16 Marks	L2	CO3

(OR)

7.	a)	Define the terms work, energy and power with units.	8 Marks	L1	CO3
	b)	State and derive the work–energy principle.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Select any three modes of heat transfer and explain.	8 Marks	L2	CO4
	b)	Derive the expression for effective thermal conductivity through compound media in series.	8 Marks	L3	CO4

(OR)

9.	a)	Demonstrate and enumerate the thermal conductivity of poor conductors using Lee's disc method.	10 Marks	L2	CO4
	b)	Write the applications for poor conductors.	6 Marks	L3	CO4

MODULE-V

10.	a)	Describe the preparation of metallic glasses using RF Sputtering technique.	10 Marks	L2	CO5
	b)	Select a few applications of metallic glasses.	6 Marks	L3	CO5

(OR)

11.	a)	What is Shape Memory Alloy? Classify the Shape Memory Alloys with their characteristics.	10 Marks	L2	CO5
	b)	List a few applications of Shape Memory Alloys.	6 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

ENGINEERING PHYSICS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the differences between Interference and diffraction	2 Marks	L1	CO1
	b)	Summarize double refraction	2 Marks	L2	CO1
	c)	Define divergence of a electric field.	2 Marks	L1	CO2
	d)	What is critical angle and total internal reflection?	2 Marks	L1	CO2
	e)	State Hall effect	2 Marks	L1	CO3
	f)	Outline P-N Junction.	2 Marks	L2	CO3
	g)	Recall Dielectric breakdown.	2 Marks	L1	CO4
	h)	Define Hysteresis loop.	2 Marks	L1	CO4
	i)	State Meissner effect.	2 Marks	L1	CO5
	j)	Name the basic principle of Nanomaterials.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	How Newton's rings are formed? Derive an expression for the wavelength of source using Newton's ring experiment.	12 Marks	L3	CO1
	b)	The diameter of the 9^{th} dark ring in a Newton's rings experiment is 0.28 cm then estimates the diameter of the 16^{th} dark ring? Given that wavelength is 5500 Å.	4 Marks	L5	CO1

(OR)

3.	a)	Discuss the Fraunhoffer diffraction at a single slit. Explain the condition for principal maximum and minimum.	10 Marks	L2	CO1
	b)	Define polarization. List the differences between pol arized light and unpolarized light.	6 Marks	L1	CO1

MODULE-II

4.	a)	Identify the four Maxwell's field equations and explain their physical significance.	10 Marks	L2	CO2
	b)	Explain the physical significance of gradient, divergence and curl.	6 Marks	L2	CO2

(OR)

5.	a)	Summarize the classification of an optical fibre on the basis of refractive index profile and modes of propagation with neat sketches.	10 Marks	L2	CO2
	b)	List the applications of optical fibers in various fields of engineering.	6 Marks	L1	CO2

MODULE-III

6.	a)	Derive an expression for density of electrons in intrinsic semiconductors.	10 Marks	L3	CO3
	b)	Distinguish the direct and indirect band gap semiconductors.	6 Marks	L4	CO3

(OR)

7.	a)	Describe the construction and working of photodiode with neat diagram.	12 Marks	L2	CO3
	b)	Outline dark current in photodiode.	4 Marks	L2	CO3

MODULE-IV

8.	a)	Derive an expression for internal field of an atom in a dielectric material.	12 Marks	L3	CO4
	b)	List few applications of dielectrics.	4 Marks	L1	CO4

(OR)

9.	a)	State magnetic moment. Explain the origin of magnetic moment in an atom.	8 Marks	L2	CO4
	b)	Classify the materials as dia, para and ferro-magnetic.	8 Marks	L4	CO4

MODULE-V

10.	a)	What are Cooper pairs? Outline the BCS theory of superconductivity.	8 Marks	L2	CO5
	b)	Distinguish Type I and Type II superconductors.	8 Marks	L4	CO5

(OR)

11.	a)	Explain how the physical, optical and magnetic properties of a nanomaterial differ from that of the bulk material.	10 Marks	L2	CO5
	b)	List any three applications of nanomaterials.	6 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

INORGANIC AND PHYSICAL CHEMISTRY

[Microbiology, Biotechnology and Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Show the structure of dioborane.	2 Marks	L1	CO1
	b)	Recall the preparations of hydrazine.	2 Marks	L1	CO1
	c)	Relate the electronic configuration of d and f block elements.	2 Marks	L1	CO1
	d)	What are the consequences of lanthanide contraction?	2 Marks	L1	CO1
	e)	Label the bands of conductors and insulators.	2 Marks	L1	CO2
	f)	What are the properties of liquid crystals?	2 Marks	L1	CO3
	g)	What is CST of phenol-water system?	2 Marks	L1	CO3
	h)	Define an ideal solution.	2 Marks	L1	CO4
	i)	What are space lattice and unit cell?	2 Marks	L1	CO5
	j)	Define Bragg's law.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the preparations and uses of silicones.	10 Marks	L2	CO1
	b)	Describe pseudohalogens and structures of interhalogen compounds.	6 Marks	L2	CO1

(OR)

3.	a)	Explain boron nitrogen compounds.	8 Marks	L2	CO1
	b)	Show the structure of higher boranes (B_4H_{10} and B_5H_9).	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the magnetic properties of d-block elements.	9 Marks	L2	CO1
	b)	Discuss the d-block elements ability of to form complexes.	7 Marks	L2	CO1

(OR)

5.	a)	Explain the electron configuration and oxidation states of lanthanides.	8 Marks	L2	CO1
	b)	Interpret actinide contraction.	8 Marks	L2	CO1

MODULE-III

6.	a)	Explain free electron theory of metals.	6 Marks	L2	CO2
	b)	Elaborate conductors, semiconductors and insulators.	10 Marks	L2	CO2

(OR)

7.	a)	Outline the band theory of metals.	8 Marks	L2	CO2
	b)	Distinguish between valence bond theory and free electron theory of metals.	8 Marks	L4	CO2

MODULE-IV

8.	a)	List the structural differences between solids, liquids and gases.	9 Marks	L4	CO3
	b)	Discuss the applications of liquid crystals.	7 Marks	L2	CO3

(OR)

9.	a)	Interpret partially miscible liquids of phenol-water system.	8 Marks	L2	CO4
	b)	Explain Nernst Distribution law and its applications.	8 Marks	L2	CO4

MODULE-V

10.	a)	Develop the law of constancy of interfacial angles.	9 Marks	L3	CO5
	b)	Discuss the law of rationality of indices.	7 Marks	L2	CO5

(OR)

11.	a)	Summarize the law of symmetry in crystals.	7 Marks	L2	CO5
	b)	Explain lattice point, space lattice and unit cell.	9 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

PROGRAMMING WITH C

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the term programming language? Give the examples of such languages?	2 Marks	L1	CO1
	b)	List out the features of C language?	2 Marks	L1	CO1
	c)	What is need of Control structure in a programming language?	2 Marks	L2	CO2
	d)	Importances of keywords break and continue in C programming.	2 Marks	L2	CO2
	e)	In what way array is different from an ordinary variable?	2 Marks	L3	CO3
	f)	Recall different types of character functions in ctype.h?	2 Marks	L1	CO3
	g)	What is a function? What are its merits of using functions in C?	2 Marks	L1	CO4
	h)	Differentiate between a structure and array.	2 Marks	L2	CO4
	i)	What is a pointer variable? How is a pointer variable different from an ordinary variable?	2 Marks	L1	CO5
	j)	What is a file? Why do we need to store data in files?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain about algorithm and flow charts. What are their merits and demerits with an example?	8 Marks	L2	CO1
	b)	Write a short note on structured programming.	8 Marks	L2	CO1

(OR)

3.	a)	Discuss about structure of a C program with an example.	8 Marks	L2	CO1
	b)	Classify various data types that are available in C language with an example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Illustrate about various I/O functions in C with syntax.	8 Marks	L3	CO2
	b)	Demonstrate about decision control statements in C language with example.	8 Marks	L3	CO2

(OR)

5.	a)	Identify the importance of nested loops in C language with example.	8 Marks	L3	CO2
	b)	Discuss about switch statement and with example.	8 Marks	L4	CO2

MODULE-III

6.	a)	Briefly explain about declaration, initialization, accessing elements of the one dimensional arrays in C.	8 Marks	L4	CO3
	b)	How can two- dimensional arrays can be used for inter function communication: i. Passing individual elements. ii. Passing a row. iii. Passing the entire arrays	8 Marks	L4	CO3

(OR)

7.	a)	Build array of strings and demonstrate with an example.	8 Marks	L5	CO3
	b)	Explain different functions used to perform string input and output operations.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Distinguish the difference between user defined and pre-defined functions.	8 Marks	L4	CO4
	b)	Explain the usage and importance of recursion function with an example.	8 Marks	L4	CO4

(OR)

9.	a)	Briefly explain about structures and nested structures in C.	8 Marks	L4	CO4
	b)	Explain about unions in C language.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is a pointer? How pointer is declared and initialized in C with an example.	8 Marks	L3	CO5
	b)	Discuss about the address and indirection operators in C with example.	8 Marks	L4	CO5

(OR)

11.	a)	Design and develop a C program to demonstrate declaring a file pointer variable, opening a file, perform read and write operations and closing a file.	8 Marks	L5	CO5
	b)	Explain about command line arguments with an example.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

ENVIRONMENTAL SCIENCE

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What do you mean by eutrophication?	2 Marks	L2	CO1
	b)	Distinguish between metallic and non-metallic minerals.	2 Marks	L4	CO1
	c)	Define biological magnification.	2 Marks	L1	CO2
	d)	What are the major threats to biodiversity?	2 Marks	L2	CO2
	e)	Give an account of indoor pollution.	2 Marks	L2	CO3
	f)	List out the various sources of air pollution.	2 Marks	L1	CO3
	g)	What is meant by acid rain?	2 Marks	L1	CO4
	h)	Which are the agents responsible for ozone depletion?	2 Marks	L1	CO4
	i)	What do you mean by 'Doubling Time'?	2 Marks	L2	CO5
	j)	Explain the term 'zero population growth'.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write a brief note on multidisciplinary nature of Environment.	8 Marks	L1	CO1
	b)	How does the overgrazing contribute to environmental degradation?	8 Marks	L2	CO1

(OR)

3.	a)	Give a brief account of non-renewable energy resources.	8 Marks	L1	CO1
	b)	How can you as an individual conserve different natural resources?	8 Marks	L2	CO1

MODULE-II

4.	a)	Classify and explain the aquatic ecosystem.	8 Marks	L4	CO2
	b)	Explain in brief food chains and food webs, and their significance.	8 Marks	L2	CO2

(OR)

5.	a)	What are hotspots of biodiversity? Where these hotspots found in India? Discuss their salient features.	8 Marks	L1	CO2
	b)	Explain the in-situ and ex-situ conservation of biodiversity.	8 Marks	L2	CO2

MODULE-III

6.	a)	Give an account of the adverse effects of air pollution.	8 Marks	L1	CO3
	b)	Discuss adverse effects and control measures for water pollution.	8 Marks	L1	CO3

(OR)

7.	a)	Discuss various effects and control measures of thermal pollution.	8 Marks	L1	CO3
	b)	Write down the functions of National Disaster Management Authority.	8 Marks	L3	CO3

MODULE-IV

8.	a)	What is rainwater harvesting? What are the purposes served by it?	8 Marks	L1	CO4
	b)	Discuss in brief about various measures for wasteland reclamation and analyze its merits.	8 Marks	L2	CO4

(OR)

9.	a)	Explain briefly the major impacts of acid rain. List and brief the measures to be taken to control it?	8 Marks	L2	CO4
	b)	What are the different methods to propagate environmental awareness in the society?	8 Marks	L3	CO4

MODULE-V

10.	a)	What is meant by 'Population Explosion'? Discuss the Indian scenario.	8 Marks	L1	CO5
	b)	Discuss the family welfare and family planning programs in Indian context.	8 Marks	L2	CO5

(OR)

11.	a)	Briefly discuss about HIV/AIDS, mode of its spread and its effects on environment.	8 Marks	L2	CO5
	b)	What is the role of NMIS, ENVIS and GIS in dissemination of environmental information and environmental management?	8 Marks	L3	CO5

CODE No.: 22CE107603 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

RURAL TECHNOLOGY

[Computer Science and Engineering (Artificial Intelligence and Machine Learning),

Computer Science and Engineering (Data Science),

Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Distinguish between urban and rural areas.	2 Marks	L4	CO1
	b)	List any four schemes which are applicable to the rural area's development.	2 Marks	L1	CO1
	c)	Why is infrastructure important for rural development?	2 Marks	L2	CO1
	d)	Distinguish between non-conventional source and conventional source of energy.	2 Marks	L4	CO2
	e)	Define waste management.	2 Marks	L1	CO2
	f)	Define the term Totipotency.	2 Marks	L1	CO3
	g)	List the alternate materials for cement for low-cost housing.	2 Marks	L1	CO3
	h)	Give two reasons for rain water harvesting.	2 Marks	L4	CO4
	i)	Write any three employment generating technologies for rural people.	2 Marks	L1	CO4
	j)	Expand the term SAGY.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	State the objectives and functions of the NABARD.	8 Marks	L2	CO1
	b)	Contrast the role of science and technology in rural development. Suggest some initiatives to be taken by government for incorporating science and technology in rural areas.	8 Marks	L4	CO1
		(OR)			
3.	a)	Discuss about Rural Business Hubs and its achievements.	8 Marks	L2	CO1
	b)	Analyze the role of self-help groups in empowering rural women in India.	8 Marks	L4	CO1

MODULE-II

4.	a)	Sketch biogas digester plant. Discuss the need for harvesting the biogas as an alternate source of energy inthe view of sustainability.	8 Marks	L2	CO2
	b)	List the different forms of non-conventional energy. Compare and contrast various methods used for energy generation.	8 Marks	L4	CO2

		(OR)			
5.	a)	Explain the working principle of solar water pumps. How the implementation this technique in agriculture fields foster sustainability.	9 Marks	L2	CO2
	b)	Differentiate between reuse and recycle and explain how it helps in reducing the waste generation.	7 Marks	L4	CO2
		MODULE-III			
6.	a)	Discuss the role of food and agro based technologies in transforming the rural India. Mention at least one latest development in food and agro based technology.	8 Marks	L2	CO3
	b)	Justify the role of cottage industries in rural development.	8 Marks	L4	CO3
		(OR)			
7.	a)	Define tissue culture. Relate in detail how this technology helps in protecting the endemic or endangered plant species.	8 Marks	L1	CO3
	b)	Report the latest developments in building construction technologies that are feasible to implement in rural India.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Recognize the need for water conservation. Explain about rain water harvesting techniques in detail.	8 Marks	L2	CO4
	b)	What is meant by apiculture? Explain opportunities present in apiculture.	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the importance of bio-fertilizers and how they help in improving the fertility of soil.	8 Marks	L2	CO4
	b)	Differentiate pisciculture and aquaculture.	8 Marks	L3	CO4
		MODULE-V			
10.	a)	Discuss the need for technology, which would help to promote the growth in health and education sector in rural areas.	8 Marks	L2	CO5
	b)	Explain the role of corporate companies working on corporate social responsibilities according to the guidelines prescribed by GoI.	8 Marks	L4	CO5
		(OR)			
11.	a)	Explain how ICT is helpful to the people living in rural areas. List some of the ICT applications which can be used?	8 Marks	L1	CO5
	b)	Write short note on village adoption schemes in India.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

PROFESSIONAL ETHICS AND HUMAN VALUES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is meant by moral autonomy?	2 Marks	LI	CO1
	b)	What are the uses of ethical theory?	2 Marks	L2	CO1
	c)	Differentiate Morality and Ethics	2 Marks	LI	CO2
	d)	What is meant by moral leadership?	2 Marks	LI	CO2
	e)	List some of the importance of learning from the past topic of experimentation.	2 Marks	LI	CO3
	f)	What are the responsibilities of engineers to society?	2 Marks	L2	CO3
	g)	What is meant by whistle blowing?	2 Marks	LI	CO4
	h)	Define risk benefit analysis.	2 Marks	LI	CO4
	i)	Reproduce the competence in professional ethics.	2 Marks	LI	CO5
	j)	Recite the transition from the present state to Universal Human Order.	2 Marks	LI	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the gillian's theory for moral development.	8 Marks	L2	CO1
	b)	What are the different types of models of professional roles.	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss in detail about uses and limitation of ethical theories	8 Marks	L1	CO1
	b)	Write a brief note on the types of inquiries.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is meant by self-interest? Relate the term with ethical egoism with suitable example.	8 Marks	L1	CO2
	b)	Explain in detail about virtue.	8 Marks	L2	CO2
		(OR)			
5.	a)	What are all the different criteria may be applied for evaluating various ethical theories and deciding upon the best.	8 Marks	L1	CO2
	b)	Explain in detail about moral leadership.	8 Marks	L2	CO2

MODULE-III

6.	a)	Compare and contrast engineering experiments with standard experiments.	8 Marks	L3	CO3
	b)	Explain in briefly the roles of industrial standard.	8 Marks	L2	CO3

(OR)

7.	a)	Tabulate types of Industrial standards and their purposes with examples?	8 Marks	L2	CO3
	b)	Explain in detail challenger accident. What are the ethical problems involved in this.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain in detail about collegiality and loyalty.	8 Marks	L2	CO4
	b)	Define risk benefit analysis? Why is it conducted? What are the limitations of risk benefit analysis.	8 Marks	L1	CO4

(OR)

9.	a)	What is intellectual property rights(IPR).Explain any one essential element of IPR.	8 Marks	L1	CO4
	b)	Outline the Basics for Humanistic Education and Humanistic Constitution.	8 Marks	L2	CO5

MODULE-V

10.	a)	Review the case study Management Models and Production Systems.	8 Marks	L4	CO5
	b)	Analyze the importance of holistic technology in the current scenario with different examples.	8 Marks	L4	CO5

(OR)

11.	a)	Imagine that you have joined at middle management level in an organization where you find unethical practices prevalent. How will you proceed to promote ethics among your colleagues? Mention a few steps you may take to improve the situation without creating an atmosphere of opposition.	8 Marks	L2	CO5
	b)	Summarize the socially and ecologically responsible of engineers, technologists and managers.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

INTRODUCTION TO BIOLOGY

[Microbiology, Biotechnology and Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Robert Hooke famous for?	2 Marks	L1	CO1
	b)	Compare between biotic and abiotic systems.	2 Marks	L2	CO1
	c)	What is the function of Cilia and flagella?	2 Marks	L1	CO2
	d)	Write the difference between monocot and dicot.	2 Marks	L1	CO2
	e)	What is central dogma of molecular biology.	2 Marks	L1	CO3
	f)	What is the function of Euchromatin and Heterochromatin.	2 Marks	L1	CO3
	g)	Outline types of digestive enzymes.	2 Marks	L2	CO4
	h)	Define Blood and its components.	2 Marks	L1	CO4
	i)	What is the function of Plastids?	2 Marks	L1	CO5
	j)	Recall the function of Rubisco.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write an account on cell membrane and cell wall with neat labelled diagram of both prokaryotes and eukaryotes.	8 Marks	L1	CO1
	b)	Describe about the structure and functions of Cytoskeleton.	8 Marks	L2	CO1

(OR)

3.	a)	Describe about Mitochondria and chloroplast?	8 Marks	L2	CO1
	b)	Why they are called semi-autonomous organelles. Explain	8 Marks	L2	CO1

MODULE-II

4.	a)	Write the economic importance of plants.	8 Marks	L1	CO2
	b)	Write the life cycle of Bryophytes and Pteridophytes.	8 Marks	L1	CO2

(OR)

5.	a)	What is Pork tapeworm and what is its life cycle in humans.	8 Marks	L1	CO2
	b)	Explain the life cycle of *Ascaris.*	8 Marks	L2	CO2

MODULE-III

6.	a)	Structure and function of mRNA, rRNA and tRNA.	8 Marks	L1	CO3
	b)	Illustrate detailed structure of DNA with suitable diagram.	8 Marks	L2	CO3

(OR)

7.	a)	Prokaryotic and eukaryotic ribosomes.	8 Marks	L1	CO3
	b)	Steps in translation: Initiation, Elongation and termination of protein synthesis.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Give an account on the anatomy and physiology of Humans.	8 Marks	L2	CO4
	b)	Briefly discuss human level of organization.	8 Marks	L2	CO4

(OR)

9.	a)	What is Digestive system and draw its diagram.	8 Marks	L1	CO4
	b)	Explain the process of digestion and why the digestion is important.	8 Marks	L2	CO4

MODULE-V

10.	a)	Give a detailed account on Bacterial Photosynthesis and compare with plant photosynthesis.	10 Marks	L2	CO5
	b)	Write the difference between Oxygenic and Anoxygenic photosynthesis.	6 Marks	L2	CO5

(OR)

11.	a)	Discuss about C3 and C4 cycles.	8 Marks	L6	CO5
	b)	Explain about CAM Plants.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

DISCRETE MATHEMATICS FOR COMPUTER SCIENCE

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define proposition and give an example	2 Marks	L1	CO1
	b)	Write the truth tables for $p \vee q$ and $p \rightarrow q$.	2 Marks	L1	CO1
	c)	Define comparable sets and give one example.	2 Marks	L1	CO2
	d)	List the subsets of the set $\{a, b, c\}$.	2 Marks	L1	CO2
	e)	State Mathematical induction.	2 Marks	L1	CO3
	f)	Explain Pigeonhole principle.	2 Marks	L2	CO3
	g)	Find the inverse of the function $f : R \rightarrow R$, $f(x) = 3x - 3$.	2 Marks	L1	CO4
	h)	List the properties of the inverse functions.	2 Marks	L1	CO4
	i)	Define complete graph and give one example.	2 Marks	L1	CO5
	j)	Explain briefly about connected graphs.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain all connectives of the statement with suitable illustrations.	8 Marks	L1	CO1
	b)	Show that $((P \rightarrow Q) \rightarrow Q) \Rightarrow P \vee Q$.	8 Marks	L3	CO1

(OR)

3.	a)	Construct the truth tables for $i)[((\neg p \rightarrow q) \rightarrow \neg r) \rightarrow (p \vee q)]$ $ii)((p \vee q) \wedge (r)) \leftrightarrow q \wedge (p \vee r)$.	16 Marks	L3	CO1

MODULE-II

4.	a)	By using mathematical induction, prove that $\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \ldots\ldots + \frac{1}{n(n+1)} = \frac{n}{n+1}$	8 Marks	L2	CO2
	b)	List the all the partitions of the set {1, 2,3, 4}.	8 Marks	L3	CO2

(OR)

5.	a)	By using mathematical induction, prove that $1^3 + 2^3 + 3^3 + \ldots\ldots + n^3 = \frac{n^2(n+1)^2}{4}$.	8 Marks	L3	CO2
	b)	Enumerate proper and improper subsets of the set $\{a, b, c\}$.	8 Marks	L5	CO2

MODULE-III

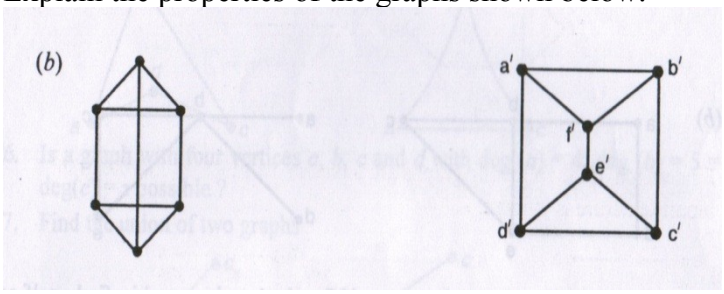
6.	a)	Describe all the special type functions.	8 Marks	L3	CO3
	b)	Explain partitions and equivalence classes.	8 Marks	L3	CO3
		(OR)			
7.	a)	Write a short note on one to one and onto functions.	8 Marks	L1	CO3
	b)	If R be a relation in the set of integers Z defined by $R = \{(x, y) : x - y \text{ is divisible by } 5\}$. Then proves that R is an equivalence relation.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe counting principles of techniques of counting.	8 Marks	L1	CO4
	b)	Explain generalized pigeonhole principle with suitable illustration.	8 Marks	L1	CO4
		(OR)			
9.	a)	State and prove principle of exclusion and inclusion.	8 Marks	L3	CO4
	b)	Using counting techniques, determine the number of primes between the numbers100 to 200.	8 Marks	L1	CO4

MODULE-V

10.	a)	Define the following with examples: i) Disconnected graph ii) Complete Graph iii) Regular Graph.	8 Marks	L1	CO5
	b)	Explain the properties of the graphs shown below.	8 Marks	L1	CO5



(OR)

11.		Explain the special types of graphs.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

ENGLISH FOR PROFESSIONALS

[Computer Science and Engineering (Artificial Intelligence and Machine Learning),

Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security) Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	***Complete the statement using suitable question tag.*** Rashid plays football very well, _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _?	2 Marks	L1	CO2
	b)	***Fill in the blank using the correct article.*** *What is _ _ _ difference in the meaning conveyed by 'a USB' and 'the USB'?*	2 Marks	L1	CO2
	c)	***Write the meaning of the following idiomatic expression.*** A little bird told me	2 Marks	L1	CO4
	d)	***Write the meaning of the following idiomatic expression.*** Black sheep	2 Marks	L1	CO4
	e)	***Write the meaning of the following idiomatic expression.*** In black and white	2 Marks	L1	CO4
	f)	***Write one-word substitute for the description.*** One who walks in sleep	2 Marks	L1	CO4
	g)	***Write one-word substitute for the description.*** Writing one's life story.	2 Marks	L1	CO4
	h)	***Fill in the blank using verbs in the correct tense.*** I _ _ _ _ _ a new bike last week. (buy)	2 Marks	L1	CO2
	i)	***Read the sentence below and make the necessary changes.*** Rahul went to school despite of having a fever.	2 Marks	L1	CO2
	j)	***Read the sentence below and make the necessary changes.*** The boy studied when his father came home from work.	2 Marks	L1	CO2

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	***Write the meaning of the following idiomatic expressions.*** 1) Pay an arm and a leg 2) Just beating around the bush 3) to make both ends meet 4) to fight tooth and nail 5) Hit the hay 6) See eye to eye 7) A piece of cake 8) By hook or by crook	8 Marks	L1	CO4

	b)	Write a review of a gadget of your choice. Ensure that your review covers: The description of the device (physical dimensions, appearance, portability, etc.); The benefits of the device and the conditions under which the device may not be very useful.	8 Marks	L1	CO5
		(OR)			
3.	a)	"Communication is the act of conveying messages." Justify the significance and relevance using verbal and non-verbal communication.	8 Marks	L2	CO1
	b)	Write an essay on the science behind success of superheroes.	8 Marks	L2	CO1
		MODULE-II			
4.	a)	***Write one-word substitutes for these descriptions.*** 1) Having a hole or an empty space inside - 2) Art related to ornate, good handwriting - 3) Study of collection of coins, tokens, paper money, etc. - 4) Generous, forgiving talk - 5) who knows a lot about good food and wine - 6) Expressive in the use of words - 7) Loud and confused - 8) A speech to oneself, alone -	8 Marks	L1	CO4
	b)	Describe your favourite teacher who inspired your life in your own words. (200-250 words)	8 Marks	L2	CO5
		(OR)			
5.	a)	Illustrate Vertical, horizontal and diagonal flow of communication in organisations with examples.	8 Marks	L2	CO1
	b)	Write how H. G. Well describes a Martian in "The Cylinder Opens."	8 Marks	L1	CO1
		MODULE-III			
6.	a)	Discuss how to do Skimming and Scanning Correctly in Academic Reading?	8 Marks	L2	CO4
	b)	***Fill in the blanks using verbs in the correct tense.*** 1) When I return home, my children _ _ _ _ _ (play). 2) He _ _ _ _ _ (drink) milk every day. 3) Sita _ _ _ _ _ (eat) raw mangoes every day. 4) Last week, we _ _ _ _ _ (open) a Cyber cafe. 5) One of my brother's _ _ _ _ _ (work) in Chennai. 6) At this time tomorrow, we _ _ _ _ _ (watch) Pakistan and India Cricket match. 7) You can telephone him when he _ _ _ _ _ (come) back. 8) I am _ _ _ _ _ (go) to the cinema to night.	8 Marks	L1	CO2
		(OR)			
7.	a)	Communication barriers attempt to impede successful completion of the communication process. Illustrate with examples.	8 Marks	L2	CO1
	b)	Why was Raman awarded the Nobel Prize?	8 Marks	L1	CO1
		MODULE-IV			
8.	a)	***Complete the following sentences using an appropriate verb form. Choose your answers from the given options.*** 1) I will come if I _ _ _ _ _ time. i) will have ii) had iii) have	8 Marks	L3	CO2

2) If you _ _ _ _ _ into Peter, tell him that he owes me a letter.
i) ran ii) run iii) had run
3) If he is late, we _ _ _ _ _ without him.
i) will start ii) would start iii) would have started
4) If you _ _ _ _ _ me, I would have told you.
i) asked ii) will ask iii) had asked
5) Will it be all right if I _ _ _ _ _ a friend tonight?
i) bring ii) brought iii) had brought
6) If he _ _ _ _ _ a bit faster, he could have won.
i) has run ii) had run iii) ran
7) If I hadn't been so tired, I _ _ _ _ _ up.
i) would not give ii) would not have given iii) will not give
8) If you _ _ _ _ _ to learn a musical instrument, you have to practice.
i) want ii) wants iii) wanted

	b)	Technology based communication has effectively invaded every part of our life, allowing for newer, quicker, and better ways to connect, access data, network, and learn. Explain	8 Marks	L2	CO1

(OR)

9.	a)	Write a description of the process of booting up a computer for an elderly neighbour who has never worked on one.	8 Marks	L1	CO5
	b)	Social media increases the risk of eating disorders - to what extent you agree or disagree?	8 Marks	L1	CO1

MODULE-V

10.	a)	***Fill in the blanks in the following sentences by using appropriate modals.*** i) _ _ _ _ _ you please tell me the direction to the hotel? ii) You _ _ _ _ _ pay in cash. They do not accept credit cards. iii) I _ _ _ _ _ come home from the office today. iv) _ _ _ _ _ I help you? v) You _ _ _ _ _ clean your room. vi) We _ _ _ _ _ keep the lights and fans switched off when they are not in use. vii) We _ _ _ _ _ improve the existing education system. viii) _ _ _ _ _ you have a wonderful day!	8 Marks	L1	CO2
	b)	What are the factors that helped make Ms Zhou successful?	8 Marks	L1	CO1

(OR)

11.	a)	You want to organise an event in your college on the occasion of Independence Day. Write a proposal for this.	8 Marks	L1	CO5
	b)	Imagine that you are planning to sell your laptop online. Write a short description in about 250-300 words	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

PHYSICS FOR COMPUTING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the condition for sustained interference.	2 Marks	L1	CO1
	b)	Illustrate the negative crystals.	2 Marks	L2	CO1
	c)	Calculate the wavelength associated with an electron, which has been accelerated from rest on application of a potential of 100V.	2 Marks	L3	CO2
	d)	Recall the probability of occupancy of electrons at the finite temperature from the Fermi Dirac distribution function.	2 Marks	L1	CO2
	e)	Formulate the wave function of the particle, which is moving in a 3D potential box.	2 Marks	L3	CO3
	f)	Predict the K values of the first Brillouin zone.	2 Marks	L3	CO3
	g)	Illustrate the direct band gap of semiconductors.	2 Marks	L2	CO4
	h)	Find the wavelength of GaAs laser associated with E_g= 1.44 eV.	2 Marks	L1	CO4
	i)	Recall the basic principle involved in the optical fiber to propagate the light signal.	2 Marks	L1	CO5
	j)	What is the sensor?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the formation of Newton's rings. Determine the wavelength of the monochromatic light source by using Newton's rings experiment.	10 Marks	L3	CO1
	b)	Distinguish between Interference and diffraction of light.	6 Marks	L4	CO1
		(OR)			
3.	a)	Describe the Fraunhofer diffraction at a single slit. Develop the conditions of principle maxima, minima and secondary maxima.	10 Marks	L2	CO1
	b)	Demonstrate quarter and half wave plates.	6 Marks	L2	CO1

MODULE-II

4.	a)	Derive the expression for de Broglie's wavelength of an electron.	8 Marks	L3	CO2
	b)	Analyze Davison and Germer's experiment to verify the existence of matter waves.	8 Marks	L4	CO2
		(OR)			
5.	a)	Derive Schrödinger's time-independent wave equation. Give its physical significance of wave function.	9 Marks	L3	CO2
	b)	Explain the Fermi Dirac distribution function along with its temperature dependence.	7 Marks	L2	CO2

MODULE-III

6.	a)	Show that eigenvalues of an electron are in the ratio of 1 : 4 : 9 : 16 : ….. , when the electron moves in a one-dimensional potential box of width 'L' along with its eigen function.	12 Marks	L2	CO3
	b)	An electron is bound in a one-dimensional box of width 2 $x10^{-10}$m. Find its lowest energy and first excited state energy.	4 Marks	L1	CO3
		(OR)			
7.	a)	Describe the Kronig-Penny model to understand the behavior of an electron in a periodic potential.	8 Marks	L2	CO3
	b)	Summarize the origin of band formation in solids.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the drift and diffusion processes in semiconductors and derive the expression for them.	8 Marks	L2	CO4
	b)	Differentiate direct and indirect band gaps of semiconductors	8 Marks	L4	CO4
		(OR)			
9.	a)	State Hall effect. Derive an expression for the Hall coefficient	8 Marks	L3	CO4
	b)	Describe the construction and working mechanism of the semiconductor diode laser.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define acceptance angle and numerical aperture. Derive an expression for the acceptance angle and numerical aperture of an optical fiber.	10 Marks	L3	CO5
	b)	The refractive indices of the core and the cladding regions of an optical fiber are 1.543 and 1.495 respectively. Determine the following i) numerical aperture ii) acceptance angle iii) critical angle	6 Marks	L3	CO5
		(OR)			
11.	a)	Describe the various optical fibers on the basis of refractive index profile and modes of propagation with a neat diagram	10 Marks	L2	CO5
	b)	Explain the construction and working mechanism of a temperature sensor.	6 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc I Semester Fasttrack (MBU-22) Regular Examinations, April – 2024

BIOMOLECULES

[Microbiology, Biotechnology and Bioinformatics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Anomerism and Epimerism.	2 Marks	L1	CO1
	b)	Recall the structures of Glucose and Fructose.	2 Marks	L1	CO1
	c)	Define P_I value and its significance.	2 Marks	L1	CO2
	d)	What happens when proteins get denatured?	2 Marks	L1	CO2
	e)	Define Micelle and Liposome.	2 Marks	L1	CO3
	f)	What is Iodine Value?	2 Marks	L1	CO3
	g)	Recall the components of Nucleoside.	2 Marks	L1	CO4
	h)	List different Purines in the DNA and RNA.	2 Marks	L1	CO4
	i)	What is Phorphobilinogen.	2 Marks	L1	CO4
	j)	Show the structure of porphyrinogen.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Classify Carbohydrates.	8 Marks	L2	CO1
	b)	Explain the reactions of carbohydrates.	8 Marks	L2	CO1

(OR)

3.	a)	Illustrate structure and function of Maltose and Lactose.	8 Marks	L2	CO1
	b)	Outline the functions of Glycosaminoglycans.	8 Marks	L2	CO1

MODULE-II

4.	a)	Classify amino acids based on different characters.	9 Marks	L2	CO2
	b)	Analyze Peptide bond properties.	7 Marks	L4	CO2

(OR)

5.	a)	Outline the structural organization of Proteins.	10 Marks	L2	CO2
	b)	Explain the structure of Hemoglobin.	6 Marks	L2	CO2

MODULE-III

6.	a)	Classify the Lipids and give examples for different classes.	8 Marks	L2	CO3
	b)	Discuss different Sphingolipids.	8 Marks	L6	CO3

(OR)

7.	a)	Summarize the structure and function of Prostaglandins.	10 Marks	L2	CO3
	b)	List the lipoproteins and explain their functions.	6 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the double helical structure of DNA.	8 Marks	L2	CO4
	b)	Distinguish different RNA's.	8 Marks	L4	CO4

(OR)

9.	a)	Define following: a) Hyperchromic effect b) Tm value	6 Marks	L1	CO4
	b)	Discuss the functions of different nucleases	10 Marks	L6	CO4

MODULE-V

10.	a)	Summarize the structure and functions of Heme.	8 Marks	L2	CO4
	b)	Outline the synthesis of Porphyrins.	8 Marks	L2	CO4

(OR)

11.	a)	Identify the methods for the detection of Chlorophyll and other pigments.	8 Marks	L3	CO4
	b)	Explain the structure and function of Cytochromes.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M. Pharmacy II Semester (SOP-MPH-23) Regular Examinations, July – 2024

MOLECULAR PHARMACEUTICS

[Pharmaceutics]

Time: 3 hours **Max. Marks: 75**

PART - A

Answer any SIX Question.
All Questions Carry Equal Marks

6 x 5 = 30 Marks

1.	a)	What are the ideal properties of a carrier?	5 Marks	L6	CO1
	b)	What are the limitations of drug targeting to tumour?	5 Marks	L6	CO1
	c)	What the factors affecting drug transport across the BBB?	5 Marks	L1	CO2
	d)	Explain the drug release mechanism from microspheres?	5 Marks	L1	CO2
	e)	Write a note on preparation of Monoclonal antibodies?	5 Marks	L6	CO3
	f)	Give a brief note on invivo gene therapy	5 Marks	L4	CO3
	g)	Explain the Microencapsulation by co acervation phase separation technique.	5 Marks	L1	CO4
	h)	Explain in detail about Gene therapy.	5 Marks	L1	CO4

PART - B

Answer any THREE Question.
All Questions Carry Equal Marks

3 x 15 = 45 Marks

MODULE-I

2.		Explain the basic concept of target oriented drug delivery system. Write note on Tumour targeting.	15 Marks	L1	CO1
3.		Explain the principle and techniques of formulating Nanoparticles.	15 Marks	L1	CO1
4.		Explain in detail about types, preparation and evaluation of Intra Nasal Route Delivery System.	15 Marks	L1	CO2
5.	a)	Explain about two phase and three phase aerosol systems.	7 Marks	L6	CO4
	b)	Explain various filling techniques. Give the quality control tests for aerosols.	8 Marks	L6	CO4
6.		Discuss the types, preparation, problems and evaluation of pulmonary drug delivery systems.	15 Marks	L1	CO4

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M. Pharmacy II Semester (SOP-MPH-23) Regular Examinations, July – 2024

ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS

[Pharmaceutics]

Time: 3 hours **Max. Marks: 75**

PART - A

Answer any SIX Question.
All Questions Carry Equal Marks

6 x 5 = 30 Marks

1.	a)	What is exsorption? Explain its importance in drug absorption.	5 Marks	L5	CO1
	b)	Write theories explaining drug dissolution.	5 Marks	L6	CO1
	c)	Write about different invitro dissolution testing models.	5 Marks	L6	CO2
	d)	Describe in detail the assumptions of two compartment model.	5 Marks	L4	CO3
	e)	Under what circumstances is the value of Ka computed from method of residuals incorrect? What are the merits and demerits of Wagner-Nelson method in computing Ka?	5 Marks	L5	CO3
	f)	What should be the duration of washout period between any two bioavailability studies in the same subject? Why?	5 Marks	L1	CO3
	g)	Write about the Targeted Drug Delivery Systems.	5 Marks	L6	CO3
	h)	Write about Biotechnological Products.	5 Marks	L6	CO3

PART - B

Answer any THREE Question.
All Questions Carry Equal Marks

3 x 15 = 45 Marks

MODULE-I

2.	Write the physicochemical properties influencing drug absorption.	15 Marks	L6	CO1
3.	Write about biopharmaceutic factors affecting drug absorption.	15 Marks	L6	CO2
4.	Write the method of determination of Ka by method of residuals with its advantages and disadvantages.	15 Marks	L6	CO3
5.	Write about *in-vitro, in-vivo* methods of permeability.	15 Marks	L6	CO3
6.	Write the pharmacokinetics of Biotechnological Products.	15 Marks	L6	CO3

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M. Pharmacy II Semester (SOP-MPH-23) Regular Examinations, July – 2024

COMPUTER AIDED DRUG DELIVERY SYSTEMS

[Pharmaceutics]

Time: 3 hours **Max. Marks: 75**

PART - A

Answer any SIX Question.
All Questions Carry Equal Marks

6 x 5 = 30 Marks

1.	a)	Define descriptive modelling. Explain about descriptive modelling.	5 Marks	L1	CO1
	b)	Summarize confidential regions in computational modelling.	5 Marks	L2	CO1
	c)	Summarize intestinal permeation.	5 Marks	L2	CO2
	d)	Explain about OATP.	5 Marks	L1	CO2
	e)	Summarize response surface methodology.	5 Marks	L1	CO3
	f)	Explain about development of emulsions using computers.	5 Marks	L1	CO3
	g)	Explain about biowaver considerations.	5 Marks	L1	CO4
	h)	Explain in short about automation used in pharmaceutical industries.	5 Marks	L2	CO5

PART - B

Answer any THREE Question.
All Questions Carry Equal Marks

3 x 15 = 45 Marks

2.	a)	Explain the history of computers in pharmaceutical research and development.	10 Marks	L1	CO1
	b)	Summarize descriptive and mechanistic modelling.	5 Marks	L1	CO1
3.	a)	Illustrate various *insilico* modelling techniques for drug disposition.	8 Marks	L2	CO2
	b)	Explain the various parameters involving in drug distribution .	7 Marks	L1	CO2
4.	a)	Summarize development of emulsions and microemulsions.	10 Marks	L2	CO3
	b)	Explain about legal protection of innovations.	5 Marks	L1	CO3
5.		Summarize GI simulation modelling and simulation strategy.	15 Marks	L2	CO4
6.		Summarize the role of computational fluid dynamics in pharmaceutical industry.	15 Marks	L2	CO1

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M. Pharmacy II Semester (SOP-MPH-23) Regular Examinations, July – 2024

COSMETICS AND COSMECEUTICALS

[Pharmaceutics]

Time: 3 hours **Max. Marks: 75**

PART - A

Answer any SIX Question.
All Questions Carry Equal Marks

6 x 5 = 30 Marks

1.	a)	Explain about roles of different layers of skin.	5 Marks	L1	CO2
	b)	Define and classify Perfumes used in Cosmetics.	5 Marks	L2	CO3
	c)	Write about commonly used house hold ingredients for sun protection.	5 Marks	L6	CO3
	d)	What are challenges in formulating herbal cosmetics?	5 Marks	L1	CO4
	e)	Write about information required for label as per D&C Act.	5 Marks	L6	CO1
	f)	Write a note on home remedies for beauty care for hand and feet.	5 Marks	L6	CO2
	g)	Briefly explain about herbal hair growth oil.	5 Marks	L1	CO4
	h)	Is soap considered as cosmetic? Defend your answer.	5 Marks	L5	CO1

PART - B

Answer any THREE Question.
All Questions Carry Equal Marks

3 x 15 = 45 Marks

2.		Write about building blocks for toothpaste.	15 Marks	L6	CO3
3.	a)	Describe about common dental problems.	7 Marks	L1	CO2
	b)	Write a note on treating body odour.	8 Marks	L6	CO2
4.		Explain briefly about herbs that are useful in treating common oral problems.	15 Marks	L1	CO4
5.	a)	Explain about formulation for treating acne.	8 Marks	L1	CO3
	b)	Explain about prickly heat powder.	7 Marks	L1	CO3
6.	a)	Write about requirements of factory premises for manufacturing of cosmetics.	7 Marks	L6	CO1
	b)	Explain briefly about offences and penalties of cosmetics regulations.	8 Marks	L1	CO1

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, July – 2024

INNOVATIONS AND INTELLECTUAL PROPERTY RIGHTS

[Machine Design]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the significance of novelty in any innovation?	2 Marks	L2	CO1
	b)	Distinguish between innovation and invention.	2 Marks	L2	CO1
	c)	What are the types of Intellectual Property Rights?	2 Marks	L1	CO2
	d)	Distinguish between trademark and service mark.	2 Marks	L2	CO2
	e)	List two geographical indications tagged products in India.	2 Marks	L1	CO1
	f)	List any two Agencies and treaties related to Intellectual Property.	2 Marks	L1	CO1
	g)	Compare patentable and non patentable inventions.	2 Marks	L2	CO3
	h)	What is Unfair competition?	2 Marks	L1	CO4
	i)	Explain the international developments in trade secrets law.	2 Marks	L1	CO5
	j)	What are the new developments in patent Law?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Distinguish between innovation and invention. Elucidate various types of innovations	8 Marks	L2	CO1
	b)	What is a "generic" geographical indication? Why do geographical indications need protection?	8 Marks	L1	CO1
		(OR)			
3.	a)	Define creativity and novelty giving few examples.	8 Marks	L1	CO1
	b)	Explain the different types of intellectual property rights.	8 Marks	L1	CO1

MODULE-II

4.	a)	Distinguish between Trade mark and Trade secret.	8 Marks	L2	CO2
	b)	Define the uses of acquisition of Trademark rights.	8 Marks	L1	CO2
		(OR)			
5.	a)	Explain the process involved in trademark selection and evaluation.	8 Marks	L1	CO2
	b)	Explain how the trade mark will protect the particular industry.	8 Marks	L1	CO2

MODULE-III

6.	a)	What is copyright? Why should copyright be protected?	8 Marks	L1	CO3
	b)	Compare patentable and non patentable inventions? Give two examples of Non – Patentable inventions	8 Marks	L2	CO3
		(OR)			

7.	a)	What types of inventions are not patentable in India?	8 Marks	L1	CO3
	b)	Write in detail about copy right law. Explain ownership issues in transfer of copy rights and moral rights of the author.	8 Marks	L1	CO3

MODULE-IV

8.	a)	State and explain the trade secret Law. Explain the liability for misappropriations of trade secrets.	8 Marks	L2	CO4
	b)	Explain about the remedies for misappropriation in Trade Secrets.	8 Marks	L1	CO4
		(OR)			
9.	a)	Discuss the legalities involved in protecting against unfair competition.	8 Marks	L2	CO4
	b)	Discuss about false advertising. Explain briefly with an example.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain about international – trade mark law in detail. What are the new developments in Trade mark Law?	8 Marks	L2	CO5
	b)	Explain about International patent protection.	8 Marks	L1	CO5
		(OR)			
11.	a)	What are the Intellectual Property issue areas? Explain them in detail and also explain the International IPR laws.	8 Marks	L2	CO5
	b)	Explain in detail about the international development in trade secrets law.	8 Marks	L1	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, July – 2024

ADVANCED MACHINE DESIGN

[Machine Design]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define the following terms: i)Transient creep ii) Stress Relaxation	2 Marks	L1	CO1
	b)	Explain the design considerations in product design.	2 Marks	L1	CO1
	c)	Discuss R-curve for ductile material and brittle material.	2 Marks	L2	CO2
	d)	Define fatigue life, enlist the various fatigue life methods.	2 Marks	L1	CO2
	e)	Explain maximum distortion strain energy theory of yielding.	2 Marks	L1	CO3
	f)	Write short notes on Fatigue failure models.	2 Marks	L1	CO3
	g)	Enlist the various theories of failures in design.	2 Marks	L2	CO4
	h)	Define stress concentration and write its equation.	2 Marks	L1	CO4
	i)	Explain types of lubrication using Stribeck curve.	2 Marks	L2	CO5
	j)	Define Wear and discuss different mechanism of wear.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	i) What do you mean by Creep? How do you measure it? ii) Discuss hydrogen embattlement in machine components.	8 Marks	L2	CO1
	b)	A machine component is subjected to a flexural stress which fluctuates between +300 MN/m 2 and -150 MN/m^2.Determine the value of minimum ultimate tensile strength according to: i) Soderberg relation. ii) Gerber relation. Take Yield point = 0.55 ultimate tensile strength, endurance limit = 0.5 ultimate tensile strength, factor of safety = 2.	8 Marks	L2	CO1

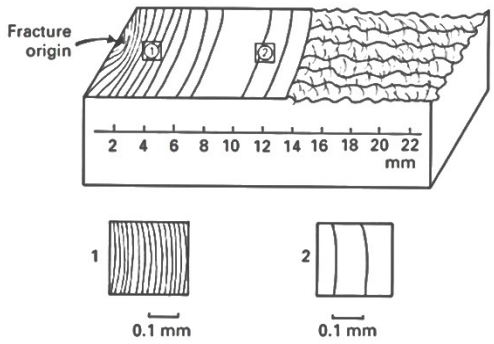
(OR)

3.	a)	What are causes of stress concentration and illustrate the methods of reducing stress concentration?	8 Marks	L2	CO1
	b)	What are the factors to be considered for the selection of materials for the design of machine elements?	8 Marks	L2	CO1

MODULE-II

4.	a)	The load on a bolt consists of an axial pull of 10kN together with a transverse shear force of 5kN.find the diameter of bolt required according to; i) Maximum principal stress theory ii) Maximum shear stress theory iii) Maximum strain energy theory. Take permissible tensile stress at elastic limit = 100 MPa and poisson's ratio = 0.3.	8 Marks	L4	CO2

	b)	Write in details the design case study on Bracket.	8 Marks	L3	CO2
		(OR)			
5.	a)	Define the following terms: i) Transient creep ii) Steady state creep iii) Stress Relaxation	8 Marks	L3	CO2
	b)	Explain Sherby-Dorn and Larson-Miller Parameters for creep deformation.	8 Marks	L1	CO2
		MODULE-III			
6.	a)	Graphical Representation and Experimental Verification of Rankine, Tresca, and von Mises Criteria theories in detail.	8 Marks	L4	CO3
	b)	A transmission shaft of cold drawn steel having σut=500 N/mm^2 and σ_{yt}= 300 N/mm^2 is subjected to a fluctuating torque which varies from -100 N.m to +400 N.m. The factor of safety is 2 and the expected reliability is 90%. Neglecting the effect of stress concentrations, determine the diameter of shaft. Assume the distortion energy theory of failure.	8 Marks	L3	CO3
		(OR)			
7.	a)	A mild steel shaft of 50 mm diameter is subjected to a bending moment of 2000 N-m and a torque T. Take factor of safety is 1. If the yield point of steel in tension is 200 MPa, find the maximum value of this torque without causing yielding of the shaft according to 1. Maximum Principle stress theory 2. Maximum shear stress theory 3. Maximum distortion strain energy theory of yielding.	8 Marks	L3	CO3
	b)	Describe the failure of brittle materials under static loading – using Modified-Mohr Theory	8 Marks	L3	CO3
		MODULE-IV			
8.		The fatigue crack markings shown in Figure. were found in a fractured part. Determine the time to rupture of this part if the loading frequency is 10 Hz, the maximum stress applied to the part is 300 MPa, and the minimum stress is zero. The initiation stage of the flaw is 50% of the life of the part.	16 Marks	L4	CO4



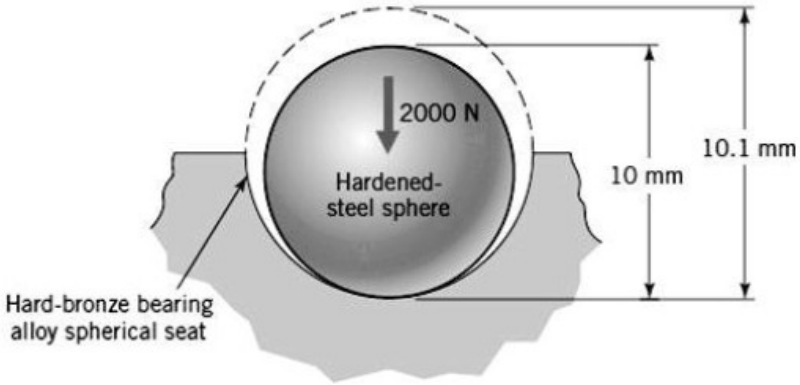
		(OR)			
9.	a)	Describe in detail the following terms i) Effect of Mean Stress on Fatigue Life ii) Cumulative Damage and Life Exhaustion iii) Effect of Frequency	6 Marks	L3	CO4
	b)	Explain the effect on fatigue life of the following design and environmental factors: i) A high polish surface finish. ii) A rivet hole. iii) Increasing the mean stress but keeping the range constant. iv) A corrosive atmosphere.	10 Marks	L3	CO4

MODULE-V

10.	a)	Explain the terms: i) Hydrostatic lubrication ii) Hydrodynamic lubrication iii) Elastohydro dynamic lubrication.	6 Marks	L4	CO5
	b)	The following data is given for a 3600 hydrodynamic bearing: Length to diameter ratio=1; Journal speed=1350 rpm; Journal diameter =100 mm; Diametral clearance = 100 μm; External load = 9 kN; Sommerfeld number (S) = 0.0828; The value of minimum film thickness variable is 0.3. Find the viscosity of oil that need be used.	10 Marks	L2	CO5

(OR)

11.	a)	Discuss effect of roughness, velocity and lubrication on friction	6 Marks	L1	CO5
	b)	i) Explain curved surface contact stresses in brief. ii) The ball and socket joint at the end of a rocker arm is shown in figure. What maximum contact stress will result from a load of 2000 N? For steel ball material; E = 207 GPa and ν = 0.30 For Bronze material; E = 110 GPa and ν = 0.33	10 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, July – 2024

EXPERIMENTAL STRESS ANALYSIS

[Machine Design]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define the terms sensitivity and range.	2 Marks	L2	CO1
	b)	What is Rosette analysis?	2 Marks	L2	CO1
	c)	What are the types of brittle coating?	2 Marks	L2	CO2
	d)	State the relation between stresses in coating and specimen.	2 Marks	L2	CO2
	e)	What is the role of morie fringes in photo elasticity?	2 Marks	L2	CO3
	f)	What are the applications of moire fringes?	2 Marks	L2	CO3
	g)	What is mean by coating sensitivity?	2 Marks	L2	CO4
	h)	List some coating materials.	2 Marks	L2	CO4
	i)	What is mean by Isoclinics?	2 Marks	L2	CO5
	j)	What are the photo elastic materials?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	Describe the various methods of calibration and the materials used for strain gauges.	16 Marks	L2	CO1
	(OR)			
3.	What do you understand by a strain rosette? List the different types of strain rosette configuration currently in use. Discuss their uses and limitations.	16 Marks	L2	CO1

MODULE-II

4.	State and explain any two failure theories of brittle coating.	16 Marks	L2	CO2
	(OR)			
5.	Discuss the crack patterns which can be obtained in a brittle coating under various combinations of stresses. Illustrate your answer by giving sketches.	16 Marks	L2	CO2

MODULE-III

6.	Describe Moiré methods of strain analysis.	16 Marks	L2	CO3
	(OR)			
7.	Discuss the out-of-plane displacement measurement using Moire's technique.	16 Marks	L2	CO3

MODULE-IV

8.	a)	Briefly explain the use of birefringent coating for stress analysis.	8 Marks	L2	CO4
	b)	Explain 'Poisson's Ratio mismatch' with reference to birefringent coating.	8 Marks	L2	CO4

(OR)

9.	Show that the difference in principal stresses in a birefringent coating is linearly related to the difference in principal stresses acting on the surface of a loaded machine part.	16 Marks	L2	CO4

MODULE-V

10.	Describe the interpretation of fringe pattern of isoclinic and isochromatic photo elasticity.	16 Marks	L2	CO5

(OR)

11.	How the interpretation of fringe pattern is done? Explain about compensation and separation-techniques in detail.	16 Marks	L2	CO5

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M.Tech II Semester (MBU-22) Regular Examinations, July – 2024

ADVANCED OPTIMIZATION TECHNIQUES

[Machine Design]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is a branch-and-bound method?	2 Marks	L2	CO1
	b)	Define integer programming.	2 Marks	L2	CO1
	c)	Differentiate between single and multi variable optimization.	2 Marks	L2	CO2
	d)	What do you mean by a gradient of a function?	2 Marks	L2	CO2
	e)	What is the working principle involved in genetic algorithm?	2 Marks	L2	CO3
	f)	State any two Principles of genetic programming.	2 Marks	L1	CO3
	g)	What is multi-objective genetic algorithm?	2 Marks	L1	CO4
	h)	Mention the applications of multi objective problems.	2 Marks	L1	CO4
	i)	What is a four bar mechanism?	2 Marks	L2	CO5
	j)	Define cantilever beam.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2. Solve the problem using branch and bound method — 16 Marks | L3 | CO1

Max $Z=3x_1+2x_2$

Subjected to

$$x_1 + x_2 \le 3.5$$

$$x_1 \le 2,\ x_2 \le 2$$

$$x_1 \text{ and } x_2 \ge 0 \text{ and integers}$$

(OR)

3. Convert the following integer programming problem into an equivalent Zero- one programming problem — 16 Marks | L3 | CO1

$$\text{Minimize } f = 6x_1 - x_2$$

$$\text{Subjected to } 3x_1 - x_2 \ge 4$$

$$2x_1 + x_2 \ge 3$$

$$-x_1 - x_2 \ge -3$$

$$x_1 \text{ and } x_2 \text{ are non integers}$$

MODULE-II

4.		Using Kuhn–Tucker conditions, Solve the following $Max\ Z = -x_1^2 - x_2^2 - x_3^2 + 4x_1 + 6x_2$ Subjected to $x_1 + x_2 \leq 2$ $2x_1 + 3x_2 \leq 12$ $x_1\ and\ x_2 \geq 0$	16 Marks	L3	CO2
		(OR)			
5.		Minimize $f(x_1, x_2) = x_1 - x_2 + x_1^2 + 2x_1x_2 + x_2^2$ starting from the point X_1=(0,0) using Steepest descent method method.	16 Marks	L3	CO2

MODULE-III

6.		Explain the concept of genetic programming (GP) and write the procedure and equations using GP.	16 Marks	L1	CO3
		(OR)			
7.	a)	Explain different cross over operations performed in GA.	10 Marks	L1	CO3
	b)	Differentiate genetic algorithm verses traditional algorithm.	6 Marks	L1	CO3

MODULE-IV

8.		A manufacturing firm produces two types of products A and B whose unit profit are Rs.70 and Rs30 respectively. The goal of the firm is to earn a total profit of exactly Rs 800 in the next week. Formulate goal programming model and mention how to solve it.	16 Marks	L3	CO4
		(OR)			
9.		Explain in detail about Analytical hierarchical process.	16 Marks	L1	CO4

MODULE-V

10.		Describe the general optimization model of a machining process? Explain with a suitable example.	16 Marks	L1	CO5
		(OR)			
11.		Explain the general procedure for optimization of path synthesis of a four-bar mechanism.	16 Marks	L2	CO5

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M.Tech II Semester (MBU-22) Regular Examinations, July – 2024

MECHANICAL MEASUREMENTS AND CONTROLS

[Machine Design]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is accuracy and precision?	2 Marks	L1	CO1
	b)	Define error. List important types of errors.	2 Marks	L2	CO1
	c)	What are the uses of capacitive transducers?	2 Marks	L1	CO2
	d)	State the working principle of infrared pyrometers.	2 Marks	L1	CO2
	e)	What are applications of bulk modulus gauge?	2 Marks	L1	CO3
	f)	What is a variable area flow meters, given one application?	2 Marks	L1	CO3
	g)	What is the importance of Gage factor?	2 Marks	L1	CO4
	h)	State the conditions of wheat stone bridge.	2 Marks	L1	CO4
	i)	Give two examples of open control systems.	2 Marks	L1	CO5
	j)	What is Mason's gain formula (MGF)?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the propagation of Uncertainty with an example.	8 Marks	L2	CO1
	b)	Define calibration. How it is important in any measurement take one example and explain in detail?	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain treatment of uncertainties propagation of uncertainty.	8 Marks	L1	CO1
	b)	Classify the errors and explain the single test data, variable sample and replicated test data.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the principle and applications of sliding resistive Transducer.	12 Marks	L2	CO2
	b)	Brief the function of photo electric transducers measurement of temperature.	4 Marks	L2	CO2
		(OR)			
5.	a)	Write note on: i) Optical pyrometers ii) Infrared pyrometers	8 Marks	L2	CO2
	b)	What are the fundamental laws of thermocouple explain in detail?	8 Marks	L1	CO2

MODULE-III

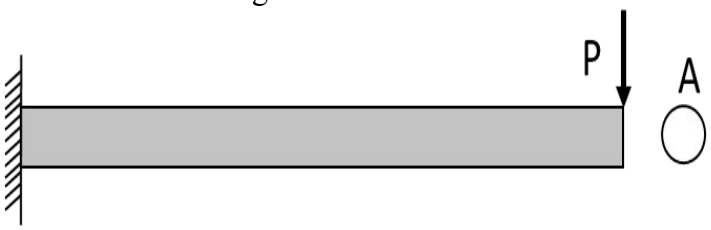
6.	a)	Write note on : i) Cylindrical tube strain gauge pressure cell. ii) Electrical resistance pressure gauge.	10 Marks	L2	CO3
	b)	What is a Diaphragm? Draw and brief about corrugated diaphragms.	6 Marks	L2	CO3

(OR)

7.	a)	What is the principle of Pirani pressure gauge? Explain its operation with neat sketch.	8 Marks	L2	CO3
	b)	Explain ultrasonic flow meters with near diagram.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the selection, installation procedure of strain gage in strain measurement of below figure.	12 Marks	L2	CO4



	b)	What the influential parameters on the strain gage sensitivity?	4 Marks	L2	CO4

(OR)

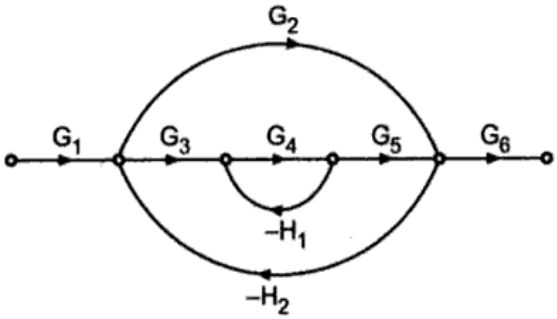
9.	a)	What are the possible configurations of strain gauge are possible? Explain all the possible option with necessary diagrams.	10 Marks	L2	CO4
	b)	Draw Orsat apparatus and state its applications.	6 Marks	L2	CO4

MODULE-V

10.	a)	Write a note on servo mechanism and regulating system.	8 Marks	L2	CO5
	b)	Explain the importance of control system in mechanical systems and states possible impact on the advancement of industry.	8 Marks	L2	CO5

(OR)

11.	a)	Find overall T.F by using Mason's gain formula for SFG.	10 Marks	L3	CO5



	b)	How to find the stability of control system? Brief the conditions?	6 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, July – 2024

PRODUCT DESIGN

[Machine Design]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State the importance of IPPD.	2 Marks	L2	CO1
	b)	What is the need of behavior analysis?	2 Marks	L2	CO1
	c)	Name the hints used for generating concepts.	2 Marks	L2	CO2
	d)	Draw the flow chart for concept selection.	2 Marks	L2	CO2
	e)	What is meant by slot modular architecture?	2 Marks	L2	CO3
	f)	Write down the significance for component standardization.	2 Marks	L2	CO3
	g)	Define conceptualization.	2 Marks	L2	CO4
	h)	Name few examples of technology driven products.	2 Marks	L2	CO4
	i)	What is the purpose of prototyping?	2 Marks	L2	CO5
	j)	How to calculate the manufacturing cost of a product?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Differentiate the competitor and customer in IPPD.	8 Marks	L2	CO1
	b)	Explain the management approach in IPPD.	8 Marks	L2	CO1
		(OR)			
3.	a)	What is the strategic importance of product development in terms of competing with other companies?	8 Marks	L2	CO1
	b)	How can customer behavior analysis be used to gain a competitive advantage in product development?	8 Marks	L2	CO1

MODULE-II

4.	a)	Why is it important to reflect on the solutions and processes used during concept generation?	8 Marks	L2	CO2
	b)	What is concept selection and how does it fit into the product design process?	8 Marks	L2	CO2
		(OR)			
5.	a)	What are some benefits of using a structured approach to concept selection in product design?	8 Marks	L2	CO2
	b)	How can concept selection be used to ensure the success of a new product launch?	8 Marks	L2	CO2

MODULE-III

6.	a)	What are the considerations for manufacturability in product architecture design?	8 Marks	L2	CO3
	b)	What is industrial design and how is the need for it assessed in product development?	8 Marks	L2	CO3
		(OR)			
7.	a)	How does industrial design impact the overall product design process?	8 Marks	L2	CO3
	b)	What are the benefits of integrating industrial design into the product development process?	8 Marks	L2	CO3

MODULE-IV

8.	a)	What are the benefits of using QFD in the development of engineering specifications?	8 Marks	L2	CO4
	b)	How can the engineering team ensure that the developed specifications meet customer needs?	8 Marks	L2	CO4
		(OR)			
9.	a)	How can the engineering team verify that the developed specifications are feasible and can be implemented?	8 Marks	L2	CO4
	b)	What are the key considerations in the development of engineering specifications for complex products?	8 Marks	L2	CO4

MODULE-V

10.	a)	What is robust design and how can it be used in product evaluation?	8 Marks	L2	CO5
	b)	How can sensitivity analysis be used in product evaluation to identify potential design weaknesses?	8 Marks	L2	CO5
		(OR)			
11.	a)	What is the importance of cost estimation in product design and how can it be used in product evaluation?	8 Marks	L2	CO5
	b)	What is design for reliability and how can it be integrated into the product evaluation process?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations May – 2024

BUSINESS LAW

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Should consideration be adequate?	2 Marks	L1	CO1
	b)	In what way does dishonor of a bill by non-acceptance takes place.	2 Marks	L1	CO1
	c)	Define a condition in a contract of sale.	2 Marks	L1	CO2
	d)	Difference Between The Dissolution Of Partnership And Dissolution Of Firm?	2 Marks	L1	CO2
	e)	What are the consequences of non-registration?	2 Marks	L1	CO3
	f)	Define Promoter?	2 Marks	L1	CO3
	g)	What Constitutes a Complaint.	2 Marks	L1	CO4
	h)	Explain the Structure of a complaint.	2 Marks	L1	CO4
	i)	Define Class Meeting.	2 Marks	L1	CO5
	j)	Define Quorum.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	"Consideration is a necessary element of a binding contract". Discuss.	8 Marks	L1	CO1
	b)	"Parties to a contract must be competent to contract". Explain.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define Negotiable Instruments. Explain briefly Different Parties to Negotiable Instruments.	8 Marks	L1	CO1
	b)	State the cases where notice of dishonor is not necessary.	8 Marks	L3	CO1

MODULE-II

4.	a)	Under what circumstances can a breach of condition are treated as a breach of Warranty.	8 Marks	L1	CO2
	b)	When the seller of goods deemed to be an unpaid seller What are the rights against the goods and the buyer personally.	8 Marks	L1	CO2
		(OR)			
5.	a)	Define Partnership Explain briefly different modes of dissolution of the partnership firm.	8 Marks	L1	CO2
	b)	"Can a Minors Admitted To The Benefits Of Partnership" Discuss.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain briefly different Types Of Companies.	8 Marks	L1	CO3
	b)	Explain briefly Promotion And Formation Of A Company.	8 Marks	L1	CO3
		(OR)			
7.	a)	Explain briefly the procedure of Articles Of Association.	8 Marks	L1	CO3
	b)	Explain Briefly Qualifications Of Directors in a company.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain briefly the Procedure for Filing the Appeal.	8 Marks	L1	CO4
	b)	Explain briefly the Procedure for file a Complaint.	8 Marks	L1	CO4
		(OR)			
9.	a)	Explain briefly the Provisions in TRI.	8 Marks	L1	CO4
	b)	Discuss different state Consumer grievances reprisals.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain briefly the duties of the chairman under board.	8 Marks	L1	CO5
	b)	Explain briefly the Voting and Demand for Poll under board meeting.	8 Marks	L1	CO5
		(OR)			
11.	a)	Explain briefly different Resolutions under board meeting?	8 Marks	L1	CO5
	b)	Explain briefly procedure of winding up of accompany?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations May – 2024

FINANCIAL MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the relationship between risk and return?	2 Marks	L1	CO1
	b)	Define the compounding technique in time value of money.	2 Marks	L1	CO1
	c)	What is the net operating income approach?	2 Marks	L1	CO2
	d)	What is the risk factor in leverage?	2 Marks	L1	CO2
	e)	How do you select a capital budgeting technique for a project?	2 Marks	L1	CO3
	f)	What are the traditional methods of capital budgeting?	2 Marks	L1	CO3
	g)	How is working capital classified?	2 Marks	L1	CO4
	h)	Define cash management.	2 Marks	L1	CO4
	i)	What is Linter's model of dividend policy?	2 Marks	L1	CO5
	j)	Write about irrelevant theory.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is the nature and scope of financial management, and how does it relate to the overall goals of a business?	8 Marks	L1	CO1
	b)	Explain the concept of risk and return trade-off in financial management.	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss the compounding techniques used in financial management.	8 Marks	L2	CO1
	b)	Suppose someone promises to give you □1,000 three years hence. What is the present value of this amount if the interest rate is 10 per cent?	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss the different theories of capital structure, including the net income approach, net operating income approach, traditional approach, and Modigliani and Miller approach.	8 Marks	L2	CO2
	b)	Analyze the differences between operating leverage and financial leverage, and discuss how they impact a company's profitability.	8 Marks	L3	CO2

(OR)

5. ABC company has an all-equity capital structure consisting of 15000 equity share of Rs.100 each. The management is planning to raise another Rs.25 lakh to finance a major program of expansion and is considering three alternatives of finance. 16 Marks L4 CO2

a) To issue 25000 equity share of Rs.100 each
b) To issue 25000 8% debentures of Rs.100 each
c) To issue 25000 8% preference share of Rs.100 each

The company's expected earnings before interest and taxes will be Rs.8 lakh. Assuming a corporate tax rate of 50%, determine the earning per share in each alternative and comment which alternative is best and why?

MODULE-III

6. a) Explain the traditional capital budgeting techniques, including payback period and accounting rate of return, and analyze their strengths and weaknesses. 8 Marks L1 CO3

b) Explain the concept of profitability index, and discuss how it is used to evaluate investment opportunities. 8 Marks L2 CO3

(OR)

7. a) A company is considering investment in a project the cost Rs.2 lakh and its expected life of 5 years. There is no scrap value for the project. The company using straight line method of depreciation and tax rate is 40%. 16 Marks L4 CO3

Year	Earnings before Depreciation and Tax	PV @ 10%
1	70000	.909
2	80000	.826
3	120000	.751
4	90000	.683
5	60000	.620

You are required to calculate Net Present Value @10% PV and advice the company.

MODULE-IV

8. a) Explain the different components of working capital, including current assets and current liabilities, and analyze how they affect a company's financial position. 8 Marks L1 CO4

b) Discuss the different classifications of working capital, and analyze how they are used to manage a company's cash flows. 8 Marks L3 CO4

(OR)

9. Prepare an estimate of working capital requirement from the following information of a trading concern. 16 Marks L4 CO4

a) Project annual sales – 1,00,000 Units
b) Selling price - Rs.8 per unit
c) % of net profit on sales– 25
d) Average credit period allowed to customers – 8 weeks
e) Average credit period allowed by suppliers – 4 weeks
f) Average stock holding in terms of sales requirement– 12weeks
g) Allow 10% for contingencies.

MODULE-V

10.	a)	What are the different factors that influence the dividend decision of a company? How do these factors affect the value of the firm?	8 Marks	L1	CO5
	b)	Discuss the relationship between dividend decision and the valuation of the firm.	8 Marks	L3	CO5

(OR)

11		The details regarding three companies are given below.	16 Marks	L4	CO5

A Ltd.	B Ltd.	C Ltd.
EPS = Rs.40	EPS = Rs.40	EPS = Rs.40
Ke = 10%	Ke = 10%	Ke = 10%
r = 12%	r = 10%	r = 8%

Compute the value of an equity share of each of these companies applying Walter's equation when dividend pay-out ratio is:

a) 0%
b) 20%
c) 60% and
d)100%

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations May – 2024

HUMAN RESOURCE MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Discuss four importance of HRM.	2 Marks	L1	CO1
	b)	Illustrate the meaning of HRP.	2 Marks	L4	CO1
	c)	State four the advantages of internal source of recruitment.	2 Marks	L1	CO2
	d)	Define Job Description.	2 Marks	L1	CO2
	e)	Relevance of career development initiative.	2 Marks	L2	CO3
	f)	Illustrate the importance of On-the-Job training.	2 Marks	L4	CO3
	g)	Define employee remuneration.	2 Marks	L1	CO4
	h)	State the meaning of employee's incentive.	2 Marks	L1	CO4
	i)	Define employees' grievances.	2 Marks	L1	CO5
	j)	State two ethical issues in HRM.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	Evaluate the functions of HRM and discuss how personnel policies and principles contribute to effective HRM practices.	16 Marks	L4	CO1
	(OR)			
3.	Assess the importance of human resource planning (HRP) in an organization. Discuss the objectives and process of HRP, highlighting the role of assessing current human resources.	16 Marks	L2	CO1

MODULE-II

4.	Analyze the process of job analysis and its significance in HRM. Compare and contrast different methods of job analysis, emphasizing their uses in organizational contexts	16 Marks	L4	CO2
	(OR)			
5.	Evaluate the factors that affect job design and discuss different approaches to job design. Assess the Hackman & Oldham's Job Characteristics Model and its implications for job enrichment	16 Marks	L4	CO2

MODULE-III

6.	Critically evaluate the elements of career planning and their impact on employee development. Discuss the initiatives that organizations can take to promote career development and enhance employee commitment.	16 Marks	L4	CO3

(OR)

7.	Assess the nature and importance of training and development as a source of competitive advantage. Evaluate the training process, including various methods and their effectiveness.	16 Marks	L2	CO3

MODULE-IV

8.	Analyze the objectives, process, and methods of performance appraisal.	16 Marks	L5	CO4

(OR)

9.	Critically evaluate the different methods of job evaluation and their significance in compensation management. Discuss how an ideal compensation system is important and factors influencing employee remuneration.	16 Marks	L4	CO4

MODULE-V

10.	Evaluate the causes of indiscipline in the workplace and discuss the kinds of punishments/penalties organizations can impose. Assess the forms of misconduct and the procedure for disciplinary action, highlighting the principles of maintaining discipline.	16 Marks	L4	CO5

(OR)

11.	Analyze the causes of grievances in organizations and evaluate the grievance handling procedure. Assess the advantages of an effective grievance procedure and its role in maintaining employee satisfaction.	16 Marks	L5	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations May – 2024

MARKETING MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is selling concept?	2 Marks	L2	CO1
	b)	Define positioning.	2 Marks	L1	CO1
	c)	What is product line stretching?	2 Marks	L2	CO2
	d)	Define brand equity.	2 Marks	L1	CO2
	e)	What is predatory pricing?	2 Marks	L2	CO3
	f)	What is logistics management?	2 Marks	L2	CO3
	g)	Define advertising.	2 Marks	L1	CO4
	h)	What are the objectives of sales promotion?	2 Marks	L2	CO4
	i)	What is holistic marketing?	2 Marks	L2	CO5
	j)	Define market audit.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the scope of marketing.	8 Marks	L2	CO1
	b)	Marketing environment is the combination of external and internal factors and forces which affect the company's ability to serve customers- Justify.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the importance of marketing research.	8 Marks	L2	CO1
	b)	How do you segment the market for ready to cook organic food products?	8 Marks	L3	CO1

MODULE-II

4.	a)	Elucidate the classifications of product.	8 Marks	L2	CO2
	b)	Describe the importance of labeling.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the marketing strategies based on the stages in product life cycle.	8 Marks	L3	CO2
	b)	Discuss the stages in new product development process.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the objectives of pricing.	8 Marks	L2	CO3
	b)	How do you decide the pricing of new product?	8 Marks	L3	CO3
		(OR)			
7.	a)	'You can eliminate the middlemen but not the functions'- explain.	8 Marks	L4	CO3
	b)	How do you design the distribution channels for 'food for pet animals'?	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain different types of promotional methods.	8 Marks	L2	CO4
	b)	Discuss about integrated marketing communications.	8 Marks	L2	CO4
		(OR)			
9.	a)	Differentiate advertising and sales promotion.	8 Marks	L3	CO4
	b)	Explain the steps in personal selling process.	8 Marks	L2	CO4

MODULE-V

10.	a)	If you are the marketing manager, how do you introduce 'powdered face wash' product in Indian market?	8 Marks	L3	CO5
	b)	'Holistic marketing recognizes that a personalized, integrated perspective is necessary to attain trust'- Discuss.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the marketing evaluation techniques.	8 Marks	L2	CO5
	b)	Describe the characteristics of marketing audit.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2024

PRODUCTION AND OPERATIONS MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Work Measurement.	2 Marks	L1	CO1
	b)	Write the concept of productivity.	2 Marks	L1	CO1
	c)	What are Replacement Policies?	2 Marks	L1	CO2
	d)	Define breakdown.	2 Marks	L1	CO2
	e)	What is job Sequencing?	2 Marks	L2	CO3
	f)	List the key differences between level strategy and chase strategy.	2 Marks	L2	CO3
	g)	What is Store Management?	2 Marks	L1	CO4
	h)	Why is forecasting important in PPC?	2 Marks	L1	CO4
	i)	What is Project Duration?	2 Marks	L1	CO5
	j)	What is a Gantt Chart used for?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Narrate the role and relevance of Production and Operations Management contributions in the present business scenario.	8 Marks	L2	CO1
	b)	Discuss the Method Study Technique for productivity improvement.	8 Marks	L2	CO1
		(OR)			
3.	a)	What are the techniques of Work Measurement	8 Marks	L1	CO1
	b)	What is aggregate production planning? What is the purpose of doing it?	8 Marks	L2	CO1

MODULE-II

4.	a)	Define Replacement Policies. Explain the different forms of replacement.	8 Marks	L1	CO2
	b)	Explain the reasons for global or foreign location.	8 Marks	L1	CO2
		(OR)			
5.	a)	State the importance and types of maintenance. What is spare part management? Explain.	8 Marks	L1	CO2
	b)	The location for setting up a hospital in Delhi is to be identified among the two given locations, using the factor rating method to identify the most suitable location.	8 Marks	L1	CO2

S. No	Location Factor	Factor Rating	Rating	
			Location 1	Location 2
1	Facility Utilisation	8	3	5
2	Total patients per month	5	4	3
3	Average time per trip	6	4	5
4	Land and construction cost	3	1	2
5	Employee preference	5	5	3

MODULE-III

6. a) What are the charts for attributes? How are they useful? Explain the purpose and method of construction of np charts. — 8 Marks — L1 — CO3

b) Jobs Processing Time Due Date (Days) — 8 Marks — L3 — CO3

A	6	8
B	2	6
C	8	18
D	3	15
E	9	23

Refer to the above jobs and calculate their 1. Average Completion Time and 2. Average lateness for FCFS and SPT sequencing

(OR)

7. Assuming an assembly unit works for a single shift eight-hour workday, — 16 Marks — L3 L4 — CO3

a) Compute the cycle time needed to obtain an output of 400 units per day.

b) Draw the precedence diagram with the help of information given in the Table, determine the minimum number of workstations required, and assign the task to the workstation.

c) Determine the minimum number of workstations required.

d) Compute idle time and efficiency of the system.

Task	Immediate predecessor	Task Time (in minutes)
A	-	0.2
B	A	0.2
C	-	0.8
D	C	0.6
E	B	0.3
F	D, E	1.0
G	F	0.4
H	G	0.3

MODULE-IV

8. a) How will you control the inventories of a manufacturing organization? Discuss the various inventory costs. — 8 Marks — L1 — CO4

b) FLEX Company has estimated sales will be 25000 units for the next year. The ordering cost is Rs 200 per order, and the carrying cost per unit per year is 10% of the purchase price per unit. The purchase price per unit is Rs 25. Compute; E.O.Q, Number of orders per year and Time between successive orders. — 8 Marks — L3 L4 — CO4

(OR)

9. a) Explain Producer's risk, Consumer's risk, Average Total Inspection (ATI) and Lot Tolerance Percent Defective (LTPD). — 8 Marks — L1 — CO4

b) Discuss the advantages of using deterministic inventory models in inventory control. — 8 Marks — L1 — CO4

MODULE-V

10. a) What are the different times estimates in the program evaluation review technique (PERT)? Give their formula also? — 8 Marks — L2 — CO5

b) You have been appointed as a project manager of a construction project. Discuss the tools and techniques you will need while handling the project. — 8 Marks — L2 — CO5

(OR)

11. a) Discuss the difference between project management versus functional management. — 8 Marks — L1 — CO5

b) What are the advantages and limitations of PERT? List out some applications of PERT/CPM. — 8 Marks — L2 — CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2024

OPERATIONS RESEARCH

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the limitations of LPP?	2 Marks	L1	CO1
	b)	Explain feasible region.	2 Marks	L1	CO1
	c)	Explain the conversion of unbalanced to balanced with an example.	2 Marks	L1	CO2
	d)	Explain the procedure for North West Corner method.	2 Marks	L1	CO2
	e)	How to convert maximization to minimization in transportation problem.	2 Marks	L1	CO3
	f)	Distinguish between assignment and transportation problem.	2 Marks	L1	CO3
	g)	What is mixed strategy in game theory?	2 Marks	L1	CO4
	h)	Explain the rules of dominance in game theory.	2 Marks	L1	CO4
	i)	What is critical path?	2 Marks	L1	CO5
	j)	Explain crashing of activities in networking.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain various applications of LPP.	6 Marks	L1	CO1
	b)	A firm produces three products. These products are processed on three different machines. The time required to manufacture one unit of each of the three products and the daily capacity of the three machines are given in the table below:	10 Marks	L3	CO1

Machine	Time per Unit (in Minutes)			Machine Capacity (Minutes per day)
	Product 1	Product 2	Product 3	
M1	2	3	2	440
M2	4	-	3	470
M3	2	5	-	430

It is required to determine the daily number of units to be manufactured for each product. The profit per unit for product 1, 2 and 3 is Rs. 4, Rs.3 and Rs.6 respectively. It is assumed that all the amounts produced are consumed in the market. Formulate the mathematical (L.P.) model that will maximize the daily profit.

(OR)

3. a) Explain the process of simplex method. 8 Marks L1 CO1

b) Solve the following LPP using Graphical Method 8 Marks L4 CO1

Maximize $Z = 5X + 6Y$

Subject to Constraints

$X + Y \leq 5$

$2X + 3Y \leq 12$

$X, Y \geq 0$

MODULE-II

4. a) A company manufactures a type of product in three different production plants: P1, P2 and P3. Each of these production plants can produce up to 1500 units per month. The company supplies four customers who require each 1000, 1000, 1500 and 1000 units per month. 16 Marks L3 CO2

The unit transportation costs from each production plant to each customer are displayed below:

	1	2	3	4	Supply
P1	80	100	85	90	1500
P2	95	85	80	100	1500
P3	90	80	95	90	1500
Demand	1000	1000	1500	1000	

Find the initial cost using i) North West Corner Method ii) Least Cost Method and iii) Vogel's Approximation Method.

(OR)

5. a) A company has three warehouses A, B and C located at different places supplies products to four customers P, Q, R and S. Transportation Cost per unit from warehouses to customers is given below: 16 Marks L3 CO2

	P	Q	R	S	Supply
A	80	100	85	90	85
B	95	85	80	100	65
C	90	80	95	90	50
Demand	40	55	75	30	200

Find minimum total transportation cost.

MODULE-III

6. a) Four building companies have presented their projects to a competition called to build buildings A, B, C and D. Each builder must be assigned the construction of a building. The following table shows the time each building company needs to build each of the buildings. The objective is to assign the construction of a building to each building company so that the total building time is minimized. 10 Marks L3 CO3

	P	Q	R	S
A	58	58	60	54
B	66	70	70	78
C	106	104	100	95
D	52	54	64	54

b) Explain Hungarian Procedure. 6 Marks L1 CO3

(OR)

7. a) A travelling salesman has to visit five cities. He wishes to start from a particular city, visit each city once and then return to his starting point. The travelling cost (in '000 Rs) of each city from a particular city is given below: — 16 Marks — L3 — CO3

From \ To	A	B	C	D	E
A	-	2	5	7	1
B	6	-	3	8	2
C	8	7	-	4	7
D	12	4	6	-	5
E	1	3	2	8	-

What should be the sequence of visit of the salesman so that the cost is minimum?

MODULE-IV

8. a) Solve the following game theory and find optimum strategies and value of the game: — 8 Marks — L3 — CO4

	B1	B2
A1	5	3
A2	2	4

b) Solve the following game theory using graphical method: — 8 Marks — L2 — CO4

	B1	B2	B3
A1	4	1	3
A2	3	4	5

(OR)

9. a) A company management and the labor union are negotiating a new three-year settlement. Each of these has 4 strategies: I: Hard and aggressive bargaining II: Reasoning and logical approach III: Legalistic strategy IV: Conciliatory approach. — 10 Marks — L3 — CO4

The costs to the company are given for every pair of strategy choice:

Union / Company	I	II	III	IV
I	20	15	12	35
II	25	14	8	10
III	40	2	10	5
IV	-5	4	11	0

What strategy will the two sides adopt? Also determine the value of the game using dominance property.

b) Explain Pure Strategy with an example. — 6 Marks — L1 — CO4

MODULE-V

10. An assembly is to be made from two parts X and Y. Both parts must be turned on a lathe. Y must be polished whereas X need not be polished. The sequence of activities, together with their predecessors, is given below. — 16 Marks — L4 — CO5

Activity	A	B	C	D	E	F	G	H
Predecessor	-	A	A	B	B, C	E	D, F	G
Time (Days)	4	9	5	3	4	1	3	5

Draw the network. Find earliest and latest time and also find critical path and project length.

(OR)

11. A small project involves 7 activities, and their time estimates are listed in the following table. Activities are identified by their beginning i) and ending j) node numbers. 16 Marks L3 CO5

Activity	1-2	1-3	1-4	2-5	3-5	4-6	5-6
Optimistic Time	1	1	2	1	2	2	3
Most Likely Time	1	4	2	1	5	5	6
Pessimistic Time	7	7	8	1	14	8	15

a) Draw the network diagram of the activities in the project.
b) Find the expected duration and variance for each activity. What is the expected project length?
c) Calculate the variance and standard deviation of the project length. What is probability that the project will be completed:

i) at least 4 weeks earlier than expected time.
ii) no more than 4 weeks later than expected time.

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Supplementary Examinations, January – 2024

BUSINESS LAW

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	When does an offer come to an end?	2 Marks	L1	CO1
	b)	Differentiate between coercion and Undue influence.	2 Marks	L1	CO1
	c)	What is misrepresentation	2 Marks	L1	CO2
	d)	Write different types of Partners in partnership.	2 Marks	L1	CO2
	e)	Define company as per Companies Act 1956.	2 Marks	L1	CO3
	f)	Who are disqualified to become Directors as per Companies Act.	2 Marks	L1	CO3
	g)	Write a short note on The consumer Dispute Redressal Agencies.	2 Marks	L1	CO4
	h)	When did the Right to Information Act, 2005 come into force?	2 Marks	L1	CO4
	i)	What are the consequences of winding up?	2 Marks	L1	CO5
	j)	Who is Official Liquidator?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	State briefly the law relating to competence of parties to a contract..	8 Marks	L1	CO1
	b)	What is an acceptance? What are the conditions must be fulfilled to convert a proposal into a promise?	8 Marks	L1	CO1
		(OR)			
3.	a)	Under what circumstances a banker can dishonor the cheque in the bank.	8 Marks	L1	CO1
	b)	Explain different types of Negotiable Instruments.	8 Marks	L1	CO1

MODULE-II

4.	a)	What is contract of Sale? Distinguish between Sale and Agreement to sell?	8 Marks	L1	CO2
	b)	What are attitudes? Explain the functions of attitudes.	8 Marks	L1	CO2
		(OR)			
5.	a)	Distinguish between LLP and Partnership firm	8 Marks	L2	CO2
	b)	Explain what are the Rights of an Unpaid seller?	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain important characteristics of a company.	8 Marks	L1	CO3
	b)	What are the contents of articles of Association?	8 Marks	L1	CO3
		(OR)			
7.	a)	Discuss the legal effect of Memorandum and Articles of Association.	8 Marks	L2	CO3
	b)	List out the various powers of Directors in the company.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What are the objects of the consumer protection Act, 1986?.	8 Marks	L1	CO4
	b)	What are objects of the Central Consumer Protection Council?	8 Marks	L1	CO4
		(OR)			
9.	a)	Explain the importance of ESG in Corporate Business.	8 Marks	L1	CO4
	b)	What are the obligations of public authorities under RTI Act, 2005.	8 Marks	L1	CO4

MODULE-V

10.	a)	What do you mean by the winding up of a company? When can a company be wound up by the court?	8 Marks	L1	CO5
	b)	What are the provisions applicable to creditors in voluntary winding up.	8 Marks	L1	CO5
		(OR)			
11.	a)	What are different types of meetings conducted by Directors in BOD?	8 Marks	L1	CO5
	b)	Explain what are the general powers of the Tribunal to facilitate to windup a company.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Supplementary Examinations, January – 2024

FINANCIAL MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is Financial Management.	2 Marks	L2	CO1
	b)	Explain Compounding Technique.	2 Marks	L4	CO1
	c)	What is the Time Value of Money?	2 Marks	L2	CO1
	d)	Define Financial Leverage.	2 Marks	L1	CO2
	e)	What is Capital Structure.	2 Marks	L4	CO2
	f)	Identify two differences between NI and NOI approaches.	2 Marks	L1	CO3
	g)	Define Capital Budgeting.	2 Marks	L1	CO3
	h)	Explain the procedure for calculating NPV.	2 Marks	L2	CO3
	i)	List out different forms of dividend.	2 Marks	L2	CO4
	j)	How to evaluate the dividend under Gordon Model.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is Financial Management? Explain the Nature and Scope of Financial Management.	8 Marks	L1	CO1
	b)	What do you understand by Profit maximization? How it is differ from wealth maximization?	8 Marks	L2	CO1

(OR)

3.	a)	What are the basic financial decisions? How do they involve risk-return trade-offs?	8 Marks	L2	CO1
	b)	Explain the concept of the Time Value of Money with examples.	8 Marks	L1	CO1

MODULE-II

4.	a)	What is the Cost of Capital and explain the factors affecting the cost of capital?	8 Marks	L1	CO2
	b)	The company's share is currently quoted in marketatRs.60. It pays dividends.3 per share and investors expect a growth rate of 10% per year. **Calculate:** i) The company's cost of equity capital. ii) The indicated market price per share, if the anticipated growth rate is 12%. iii) The market price, if the company's cost of equity capital is12%, the anticipated growth rate is 10%p.a., and a dividend of Rs. 3 per share is to be maintained.	8 Marks	L2	CO2

(OR)

5.	a)	Define Capital Structure. What are the factors determining Capital structure? Discuss in detail.	8 Marks	L1	CO2
	b)	Calculate operating leverage, under situations 1 and 2 in financial plans A & B from the following information relating to the operation and capital structure of	8 Marks	L2	CO2

a company: Installed capacity – 2,000 units Actual production and sales – 50% of the capacity Selling price Rs.20 per unit Variable Cost Rs.10 per unit.
Fixed Cost: Under Situation, I Rs. 4,000 Under Situation II Rs. 5,000,

MODULE-III

6.	a)	Briefly explain the techniques of Capital budgeting.	8 Marks	L2	CO3
	b)	The initial investment in both projects is Rs. 10,00,000. Project A has an even inflow of Rs. 1,00,000 every year. Project B has uneven cash flows as follows: -> Year 1 – Rs. 2,00,000 -> Year 2 – Rs. 3,00,000 -> Year 3 – Rs. 4,00,000 -> Year 4 – Rs. 1,00,000 Calculate the Payback period method.	8 Marks	L1	CO3

(OR)

7.	a)	Hypothetical Ltd., is contemplating the introduction of a new machine. From the following information given to you determine the profitability of the project assuming 10% as the cost of capital:	8 Marks	L1	CO3

Year	0	1	2	3	3	5
Cash outflows (at year-end)	40000	-	-	30000	-	-
Net cash inflows (at year-end)	-	20000	20000	-	40000	80000

	b)	Differentiate between NPV and IRR?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define the term 'Working Capital'. What are the determinants of Working Capital? Explain?	8 Marks	L1	CO4
	b)	Briefly explain the techniques of Inventory Management.	8 Marks	L2	CO4

(OR)

9.	a)	Prepare an estimate of working capital requirement from the following information of a trading concern:	8 Marks	L5	CO4

Project Annual sales	1,00,000
units selling Price	8 per unit
Percentage of net profit on sales	25%
Average credit period allowed to customers	8 Weeks
Average credit period allowed by suppliers	4 Weeks
Average stockholding in terms of sales requirements	12 Weeks

Allow 10 % for contingencies.

	b)	Summarize the Advantages and Disadvantages of Receivable Management.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is Dividend and what are the factors influencing Dividend Decisions?	8 Marks	L2	CO5
	b)	Write notes on Walter, MM Models, and Linter's Models.	8 Marks	L2	CO5

(OR)

11.	a)	The following information is available in respect of ABCD Ltd., Capitalization rate = 10%; Earning per share Rs.40. The assumed rate of return on investments: i) 12%, ii) 10% and iii) 8% Show the effect of dividend policy on the market price of shares by applying Walter's formula when the dividend payout ratio is a) 0%, b) 50% and c) 100%	8 Marks	L1	CO5
	b)	How did you Assess Dividend valuation is increasing the value of a firm?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Supplementary Examinations January – 2024

HUMAN RESOURCE MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Summarize the Scope of HRM.	2 Marks	L2	CO1
	b)	List any four functions of HR Manager.	2 Marks	L1	CO1
	c)	Define Selection	2 Marks	L1	CO2
	d)	Explain any two Techniques of Job Analysis.	2 Marks	L2	CO2
	e)	Write a short note on Development.	2 Marks	L1	CO3
	f)	Recall different types of Transfers.	2 Marks	L2	CO3
	g)	Define Incentive and its Types	2 Marks	L1	CO4
	h)	Explain Minimum wage and Living Wage	2 Marks	L1	CO4
	i)	Define Grievance	2 Marks	L1	CO5
	j)	State any three methods of Fringe Benefits	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define HRM Describe the Significance of HRM with Examples.	8 Marks	L1	CO1
	b)	Explain the factors of Human Resource planning on Assessing on Current Trend.	8 Marks	L2	CO1
		(OR)			
3.	a)	Illustrate the Role of HR Manager in business organizations with Service Functions.	8 Marks	L2	CO1
	b)	Mention the Significance of Management and how it interconnected to HR department. Explain	8 Marks	L2	CO1

MODULE-II

4.	a)	Mention the Significance of Job Specification concept.	8 Marks	L1	CO2
	b)	Explain various types of selection with examples.	8 Marks	L2	CO2
		(OR)			
5.		Describe the Internal and External Factors affecting Selection.	16 Marks	L2	CO2

MODULE-III

6.	a)	Explain in detail the concept of Career Planning and its objectives.	8 Marks	L2	CO3
	b)	Why the companies implemented different Methods in Transfers. Comment.	8 Marks	L1	CO3
		(OR)			
7.	a)	What are the considerations for Employee Demotions in Organizations.	8 Marks	L1	CO3
	b)	Elucidate various Techniques of on-the-job training.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Determine the Perquisites of Incentive Compensation in Organizations.	8 Marks	L2	CO4
	b)	Elucidate the Significance of Wage System in India.	8 Marks	L4	CO4
		(OR)			
9.	a)	Infer various Compensation strategies followed in Other Countries.	8 Marks	L2	CO4
	b)	Illustrate merits rating and its advantages.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define the concept of Employee Safety and how it will impact the working conditions.	8 Marks	L1	CO5
	b)	What are the reasons for Women Grievances Cell in organization.	8 Marks	L1	CO5
		(OR)			
11.	a)	Explain the concept of HRM Challenges and how it differs to various firms.	8 Marks	L2	CO5
	b)	The Grievance Mechanism in Organization will affect employee morale. Comment.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Supplementary Examinations, January - 2024

MARKETING MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is Market & Marketing.	2 Marks	L1	CO1
	b)	What is Consumer behaviour.	2 Marks	L1	CO1
	c)	Tell about Test Marketing.	2 Marks	L2	CO1
	d)	what is Brand Equity .	2 Marks	L1	CO2
	e)	Write about Product Strategy.	2 Marks	L3	CO2
	f)	Tell about the meaning of Brand Positioning.	2 Marks	L2	CO2
	g)	define Price Strategy.	2 Marks	L2	CO3
	h)	Why Promotion Strategy is Needed in Marketing.	2 Marks	L1	CO4
	i)	Define Marketing Audit.	2 Marks	L2	CO5
	j)	How do you define Marketing Implementation.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is Marketing Management and explain its Nature and Scope.	8 Marks	L1	CO1
	b)	Define Market Segmentation and explain its types.	8 Marks	L2	CO1
		(OR)			
3.	a)	Write notes on Indian Marketing Environment with suitable examples .	8 Marks	L2	CO1
	b)	What do you mean by the term 'Consumer behavior'?	8 Marks	L1	CO1

MODULE-II

4.	a)	Discuss the Stages in the Product Life cycle. What are the Implications of the product life cycle?	8 Marks	L1	CO2
	b)	Describe the stages in New Product development.	8 Marks	L2	CO2
		(OR)			
5.	a)	What are the marketing advantages of branding? How branding enables buyer behavior?	8 Marks	L1	CO2
	b)	How can Warranty and service after-sale enhance Product Sales?	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the various internal and external forces that influence the pricing Strategy of a firm.	8 Marks	L2	CO3
	b)	Compare Skimming and Penetration Pricing Strategies with examples.	8 Marks	L1	CO3
		(OR)			

7.	a)	Define a Channel of distribution. Indicate the relative importance of different channels.	8 Marks	L1	CO3
	b)	Determine the different types of retailers.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain the Process of Communication in Marketing.	8 Marks	L1	CO4
	b)	What are the objectives of Promotion? What are the basic kinds of Promotion Strategies?	8 Marks	L1	CO4

(OR)

9.	a)	Assess 'Promotion is more beneficial for marketers than for either consumers or Society 'Do you agree?	8 Marks	L5	CO4
	b)	Write notes on Pull and Push Strategies in Promotion.	8 Marks	L2	CO4

MODULE-V

10.	a)	Summarize the New Market offerings with suitable examples.	8 Marks	L2	CO5
	b)	Demonstrate Managing a holistic marketing organization.	8 Marks	L2	CO5

(OR)

11.	a)	How do you define Marketing Implementation?	8 Marks	L1	CO5
	b)	Deliberate Marketing Audit? How is its impact on a firm?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Supplementary Examinations, January – 2024

PRODUCTION AND OPERATIONS MANAGEMENT

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State the term Method Study.	2 Marks	L1	CO1
	b)	Define Work Measurement.	2 Marks	L1	CO1
	c)	Enlist the plant Maintenance Methods.	2 Marks	L2	CO2
	d)	What is Replacement Policies?	2 Marks	L1	CO2
	e)	Define Production Controlling.	2 Marks	L1	CO3
	f)	What is job Sequencing?	2 Marks	L2	CO3
	g)	Define Materials Management.	2 Marks	L1	CO4
	h)	What is Store Management?	2 Marks	L1	CO4
	i)	Define Project Management.	2 Marks	L2	CO5
	j)	What is Project Duration?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe all the functions of Production and Operations Management that are responsible for controlling the cost of production and increasing profitability.	8 Marks	L2	CO1
	b)	Narrate the role and relevance of Production and Operations Management contributions in the present business scenario.	8 Marks	L2	CO1

(OR)

3.	a)	An industrial engineer has obtained the following data in connection with a time study on the lines of the Hawthorne studies, taking for different elements and five cycle of the job.	10 Marks	L3	CO1

Element	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Performance Rating
A	1.246	1.328	1.298	1.306	90
B	0.972	0.895	0.798	0.919	100
C	0.914	1.875	1.964	1.972	100
D	2.121	2.198	2.146	2.421	110

i) Calculate the normal time for the job based on the above data.
ii) Calculate the standard time for the job, if the permissible allowance is 25% of the normal time.

	b)	What are the techniques of Work Measurement	6 Marks	L1	CO1

MODULE-II

4.	a)	Explain the principles of 'plant layout' and functional aspects of a factory building. What is the effect of a bad layout?	8 Marks	L2	CO2
	b)	Define Replacement Policies. Explain the different forms of replacement.	8 Marks	L1	CO2

(OR)

5.	a)	Explain the various factors which you will consider while locating a new plant?	8 Marks	L2	CO2
	b)	State the importance and types of maintenance? What is spare part management? Explain.	8 Marks	L1	CO2

MODULE-III

6. Find best sequence and total elapsed time for the following when the process is A to B. — 16 Marks — L3 — CO3

Job	1	2	3	4	5	6
Machine A	4	8	3	6	7	5
Machine B	6	3	7	2	8	4

(OR)

7. The following table gives the number of missing rivets noted in a newly fabricated bus. Construct a C-chart — 16 Marks — L3 — CO3

Bus no	1	2	3	4	5	6	7	8	9	10
No. of missing rivets	14	13	26	20	9	25	15	11	14	13

MODULE-IV

8.	a)	Explain the Techniques of Inventory management models.	8 Marks	L2	CO4
	b)	Calculate the EOQ from the following data i) Consumption during the year 600 units ii) Ordering cost Rs16/- per order iii) Carrying cost 10% iv) Price per unit Rs 25/-	8 Marks	L3	CO4

(OR)

9.	a)	Enumerate the major factors that influence the quality of inventory to be maintained.	8 Marks	L2	CO4
	b)	Explain which decisions materials manager can make using EOQ model. State the benefits of EOQ model.	8 Marks	L2	CO4

MODULE-V

10. Given the following information — 16 Marks — L3 — CO5

Activity	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Time (in hrs)	2	8	10	6	3	3	7	5	1	8

Construct the network diagram and find the Critical Path Find the Total Float and Free Float

(OR)

11. Following table gives activities and relevant important of project. Draw a network diagram, Calculate Project completion time, Identify Critical Path — 16 Marks — L3 — CO5

Activity	1-2	1-3	2-3	2-4	3-4	4-5	4-6	5-6
Optimistic Time	30	8	1	2	8	14	3	6
Most likely Time	44	12	2	3	10	22	7	9
Pessimistic Time	54	16	3	5	12	25	11	18

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Supplementary Examinations, January – 2024

OPERATIONS RESEARCH

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Give the applications of Operations Research.	2 Marks	L1	CO1
	b)	What are the models by behavior?	2 Marks	L1	CO1
	c)	Represent the standard simplex table.	2 Marks	L2	CO2
	d)	Explain the modified LPP for Big M.	2 Marks	L1	CO2
	e)	Define the Assignment problem.	2 Marks	L1	Co3
	f)	Describe the concept of an unbalanced assignment problem.	2 Marks	L2	CO3
	g)	What is a Pure Strategy?	2 Marks	L1	CO4
	h)	Define the Value of the Game.	2 Marks	L2	CO4
	i)	State the meaning of Project Crashing.	2 Marks	L1	CO5
	j)	Describe optimistic, most likely, and pessimistic times.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the application of operations research with examples.	8 Marks	L2	CO1
	b)	Write the procedure for solving an LPP using the Simplex Method.	8 Marks	L2	CO1

(OR)

3.	a)	Solve the below LPP using Simplex Method Max $\boldsymbol{Z} = 3\boldsymbol{x}_1 - \boldsymbol{x}_2$ Such that $2\boldsymbol{x}_1+\boldsymbol{x}_2 \geq 2$ $\boldsymbol{x}_1+3\boldsymbol{x}_2 \leq 3$ $\boldsymbol{x}_2 \leq 4$	8 Marks	L2	CO1
	b)	Discuss the importance of operations research in business.	8 Marks	L1	CO1

MODULE-II

4.	a)	Solve the below transportation problem for IBFS.	10 Marks	L3	CO2

	I	II	III	IV	Supply
A	95	105	80	15	12
B	115	180	40	30	7
C	195	180	95	70	5
Demand	5	4	4	11	

	b)	Explain the steps in the North-West corner method of solving the transportation problem.	6 Marks	L2	CO2

(OR)

5. a) Calculate the IBFS and test its optimality. 16 Marks L4 CO2

	I	II	III	IV	Supply
A	5	3	6	2	19
B	4	7	9	1	37
C	3	4	7	5	34
Demand	16	18	31	25	

MODULE-III

6. a) Define the Assignment Problem. State its mathematical form. 8 Marks L2 CO3
   b) Explain the steps in dealing with Assignment problems. 8 Marks L2 CO3

(OR)

7. a) Solve the following problem using Hungarian Assignment Method. 8 Marks L4 CO3

	I	II	III	IV	V
A	20	15	18	20	25
B	18	20	12	14	15
C	21	23	25	27	25
D	17	18	21	23	20
E	18	18	16	19	20

   b) Define the Assignment Problem. State its mathematical form. 8 Marks L2 CO3

MODULE-IV

8. a) Describe the importance of studying Game Theory. 8 Marks L1 CO4
   b) Explain the procedure of solving a game problem using graphical method. 8 Marks L2 CO4

(OR)

9. a) Find out the value of the game and optimum strategies for both players. 10 Marks L4 CO4

	I	II
A	1	2
B	5	4
C	-7	9
D	-4	-3
E	2	1

   b) Explain the steps in solving a game problem by graphical method. 6 Marks L2 CO4

MODULE-V

10. a) State the conditions for drawing a network diagram in PERT. 8 Marks L1 CO5
    b) Write the importance of project evaluation and review technique. 8 Marks L2 CO5

(OR)

11. Draw the network and find the critical path. 16 Marks L4 CO5

Activity	1-2	2-3	2-4	2-5	3-6	4-6	4-5	5-7	6-7	7-8
Duration	5	6	8	12	8	10	0	6	4	4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

STRATEGIC MANAGEMENT

[Business Analytics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the term Mission statement.	2 Marks	L1	CO1
	b)	Describe the term Internal environment Analysis?	2 Marks	L2	CO1
	c)	Name Five Forces of SWOT analysis	2 Marks	L1	CO2
	d)	Define Stars in BCG Matrix.	2 Marks	L1	CO2
	e)	Define the term learning curve.	2 Marks	L1	CO3
	f)	Describe the term Stability strategy.	2 Marks	L2	CO3
	g)	Name the four types of strategy alternatives.	2 Marks	L1	CO4
	h)	What is Horizontal integration?	2 Marks	L2	CO4
	i)	What is strategic surveillance, and why is it important in strategy evaluation?	2 Marks	L1	CO5
	j)	Define strategic audit.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the role of Environmental scanning for strategy formulation.	8 Marks	L2	CO1
	b)	Describe the strategic management process and stages in detail.	8 Marks	L1	CO1
		(OR)			
3.		What is the concept of core competence, and how does it relate to competitive advantage?	16 Marks	L2	CO1

MODULE-II

4.	a)	Explain how the Internet is changing businesses around the world.	8 Marks	L3	CO2
	b)	According to Michael Porter, what are the five competitive forces that create vital opportunities and threats for organizations? Which force do you feel is most important in the computer industry today? Why?	8 Marks	L2	CO2
		(OR)			
5		Do you agree? Before closing any unit, it is vital to do a strategic review and make important decisions.	16 Marks	L2	CO2

MODULE-III

6.		A fit between structure and strategy is important for corporate success. Justify this statement.	16 Marks	L2	CO3

		(OR)			
7.		How do functional strategies differ from corporate and business strategies?	16 Marks	L2	CO3
		MODULE-IV			
8.	a)	Critically evaluate the tailoring strategy to fit specific industry and company situations.	8 Marks	L1	CO4
	b)	Explain the importance of resource allocation as a vital part of strategy.	8 Marks	L1	CO4
		(OR)			
9.	a)	Describe the advantages of planning systems for effective strategy implementation.	8 Marks	L2	CO4
	b)	List some guidelines for when related diversification would be a particularly good strategy to pursue.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Distinguish strategic control from operating control. Give an example for each.	8 Marks	L1	CO5
	b)	Discuss at least five potential advantages to initiating, continuing, and/or expanding international operations.	8 Marks	L2	CO5
		(OR)			
11.		Why are budgets, schedules and key success factors essential to operation control & evaluation?	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

INERNATIONAL FINANCIAL MANAGEMENT

[Marketing/HR/Finance]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is International Monetary System?	2 Marks	L1	CO1
	b)	Define International Financial System.	2 Marks	L1	CO1
	c)	What is Foreign Exchange rate?	2 Marks	L1	CO2
	d)	Can a foreign exchange trade be rich?	2 Marks	L1	CO2
	e)	Define FDI.	2 Marks	L1	CO3
	f)	What is Horizontal Foreign Direct Investment?	2 Marks	L1	CO3
	g)	What is meant by netting?	2 Marks	L1	CO4
	h)	Define country risk.	2 Marks	L1	CO4
	i)	Define Currency market.	2 Marks	L1	CO5
	j)	What is euro dollar market?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	Discuss the evolution of International Monetary system.	16 Marks	L2	CO1
	(OR)			
3.	How is the exchange rate determined under bimetallism and gold standard? What are the limitations of gold standard?	16 Marks	L3	CO1

MODULE-II

4.	Explain the structure of the foreign exchange market in detail.	16 Marks	L2	CO2
	(OR)			
5.	Who are the participants in the foreign exchange market? What are their motives?	16 Marks	L2	CO2

MODULE-III

6.	Define Foreign Direct Investment; discuss the motives of foreign direct investment.	16 Marks	L2	CO3
	(OR)			
7.	Discuss the types of Foreign Direct Investment with suitable examples.	16 Marks	L2	CO3

MODULE-IV

8.	What are future contracts, and how do they work in the financial markets?	16 Marks	L3	CO4
	(OR)			
9.	What are swaps, and how do they work in Foreign exchange market?	16 Marks	L3	CO4

MODULE-V

10.	Define euro currency market. Discuss the features and objectives of euro currency market.	16 Marks	L2	CO5
	(OR)			
11.	What is euro currency market? Discuss the participants and Borrowing instruments under euro currency market.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

FINANCIAL DERIVATIVES

[Business Analytics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define derivatives.	2 Marks	L1	CO1
	b)	List out the elements of derivatives?	2 Marks	L1	CO1
	c)	What is the meaning of forwards?	2 Marks	L1	CO2
	d)	List out the characteristics of forwards.	2 Marks	L1	CO2
	e)	Define options.	2 Marks	L1	CO3
	f)	List out the salient features of options.	2 Marks	L1	CO3
	g)	List out the trading strategies.	2 Marks	L1	CO4
	h)	Write about bullish.	2 Marks	L1	CO4
	i)	What is the meaning of swaps?	2 Marks	L1	CO5
	j)	List out the features of swaps.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	Elaborate evaluate financial derivatives market.	16 Marks	L2	CO1
	(OR)			
3.	Discuss the Growth and developments of derivatives in the Indian context.	16 Marks	L2	CO1

MODULE-II

4.	what is forwards contract? How is forwards contract different from futures contract?	16 Marks	L2	CO2
	(OR)			
5.	Discuss various features of forwards contracts?	16 Marks	L2	CO2

MODULE-III

6.	What is options contract? Explain its features?	16 Marks	L2	CO3
	(OR)			
7.	what are various types of Options contacts? Explain.	16 Marks	L2	CO3

MODULE-IV

8.	How do you create a Bullish Spread Strategy? How does ot work?	16 Marks	L2	CO4
	(OR)			
9.	How do you create a Bearish Spread Strategy? How does to work?	16 Marks	L2	CO4

MODULE-V

10.	Define the term Swap Contract? Who are the parties involved in a swap?	16 Marks	L2	CO5
	(OR)			
11	Briefly elaborate on the evolution of swap dealings?	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

INTERNATIONAL HUMAN RESOURCE MANAGEMENT

[Business Analytics, Marketing/HR/Finance]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define IHRM.	2 Marks	L1	CO1
	b)	List any four functions of IHRM.	2 Marks	L1	CO1
	c)	Define Global Leadership.	2 Marks	L1	CO2
	d)	State any three Objectives of IHRM.	2 Marks	L1	CO2
	e)	State any three Methods of Global Staffing.	2 Marks	L1	CO3
	f)	Define Geocentric Method.	2 Marks	L1	CO3
	g)	State any three Methods of Career Planning.	2 Marks	L1	CO4
	h)	Define Development.	2 Marks	L1	CO4
	i)	Define Perks.	2 Marks	L1	CO5
	j)	State any three Methods of Incentives.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	Explain the importance of IHRM in present day context.	16 Marks	L2	CO1
	(OR)			
3.	Elaborate the challenges associated with IHRM in Indian Companies.	16 Marks	L2	CO1

MODULE-II

4.	Discuss the process involved in Global Leadership with Examples.	16 Marks	L2	CO2
	(OR)			
5.	Describe the Internal & External Sources of Global Managers.	16 Marks	L2	CO2

MODULE-III

6.	Discuss the process involved in Selection. How does it differ from recruitment? Briefly explain the methods of Selection.	16 Marks	L2	CO3
	(OR)			
7.	Explain the Induction process and why each company follow different strategies in Induction. Comment.	16 Marks	L2	CO3

MODULE-IV

8.	Training Programs are helpful to avoid Personal obsolescence. Discuss various needs and importance of training in an industrial organization.	16 Marks	L2	CO4

(OR)

9.	What is Career Planning and explain the stages involved in Career Planning?	16 Marks	L2	CO4

MODULE-V

10.	What are the external factors influence employee compensation and how it will affect the work?	16 Marks	L2	CO5

(OR)

11.	Debate causes of employee indiscipline and write the kinds of punishments and penalties.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

ORGANIZATIONAL CHANGE AND DEVELOPMENT

[Business Analytics, Marketing/HR/Finance]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is organizational Change? Explain the different parties involved in it.	2 Marks	L1	CO1
	b)	Explain the concept and characteristics of organizational development.	2 Marks	L1	CO1
	c)	Explain briefly the three stages of Lewin's change model.	2 Marks	L1	CO2
	d)	What are the strengths of the McKinsey 7S model?	2 Marks	L1	CO2
	e)	Why measuring organizational effectiveness is important?	2 Marks	L1	CO3
	f)	Explain the concept and nature of organizational development.	2 Marks	L1	CO3
	g)	What are interventions?	2 Marks	L1	CO4
	h)	What are cross-functional teams?	2 Marks	L1	CO4
	i)	Mention any four issues related to the consultant and client relationship.	2 Marks	L1	CO5
	j)	What is Microcosm?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the different types of change with examples.	8 Marks	L2	CO1
	b)	Discuss the different forces of change.	8 Marks	L2	CO1
		(OR)			
3.	a)	Why are organizational changes often resisted by individuals and groups within the organization? How can such resistance be prevented or overcome?	8 Marks	L2	CO1
	b)	Discuss the causes of both human and organizational resistance to change.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the advantages and disadvantages of Lewin's Change Model with examples.	8 Marks	L2	CO2
	b)	How to Use the McKinsey 7-S Model for Strategic Planning?	8 Marks	L2	CO2
		(OR)			
5.	a)	How to implement change with Kotter's 8-step change model?	8 Marks	L2	CO2
	b)	Explain Burke-Litwin model in the context of Organization Development with the help of an example.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain six box model of organizational development.	8 Marks	L2	CO3
	b)	Explain concept, value, process and characteristics of organizational development?	8 Marks	L2	CO3

(OR)

7.	a)	Explain Action-Research model of OD in detail.	8 Marks	L2	CO3
	b)	"The future of OD is bright, but only if the field continues to evolve." Discuss the statement.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What are some of the challenges in implementing team- building interventions? What issues can team-building interventions help solve?	8 Marks	L1	CO4
	b)	Explain different OD techniques. Explain six box model of organizational development.	8 Marks	L2	CO4

(OR)

9.	a)	What are the purposes of team building? Explain the features of an effective team.	8 Marks	L2	CO4
	b)	Explain in brief various kinds of organizational structure interventions. Read the following case and answer the questions. XYZ clinic has been providing health services to the local community for the last ten years and had good patronage from the people. It had grown considerably over the years. The medical director in the past few years realized that there was some difficulty in internal working due to which the following problems were being encountered- • Adverse effect on patient care leading to a no. of complaints • Lack of cooperation between different units • Sagging morale of employees • Rapidly increasing cost The medical director approached a specialist in behavior sciences & found- • Lack of coordination between director & clinic administrator • Problems in leadership conflict resolution & decision process • Role conflict between certain members of medical staff • Leadership style of medical director resulted in his putting off decisions leading to confusion & inaction • Lack of appropriate communication between administrative, medical & field staff. The behavior scientist suggested that the situation warranted certain O.D. interventions Discuss the following : i) Kindly discuss the benefits of O.D. interventions in the given situation of the organization ii) Briefly discuss the role of the consultant and top management in interventions and issues involved iii) Briefly entail the method of diagnosis that can be deployed to understand the key issues involved iv) If you were the consultant kindly suggest the interventions that you propose to bring about better coordination and efficiency in working of the organization.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the steps in implementing OD interventions.	8 Marks	L2	CO5
	b)	Discuss the Obstacles in OD development.	8 Marks	L2	CO5

(OR)

11.	a)	What are the efforts behind the struggle to change in OD?	8 Marks	L1	CO5
	b)	Describe the conditions for failure and success in O.D.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

INTEGRATED MARKETING COMMUNICATION

[Marketing/HR/Finance]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Integrated Marketing Communication.	2 Marks	L1	CO1
	b)	List out the Promotional tools used in IMC.	2 Marks	L1	CO1
	c)	Define Advertising.	2 Marks	L1	CO2
	d)	What is Outdoor Advertising?	2 Marks	L1	CO2
	e)	What is Media planning.	2 Marks	L1	CO3
	f)	Name two types of media commonly used in advertising.	2 Marks	L1	CO3
	g)	Define Sales Promotion.	2 Marks	L1	CO4
	h)	What is Flash sale?	2 Marks	L1	CO4
	i)	Define Publicity.	2 Marks	L1	CO5
	j)	What is Media Relation?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	Explain the significance of Integrated Marketing Communication in modern marketing.	16 Marks	L2	CO1
	(OR)			
3.	What are the various Integrated Marketing Communication tools and how is each one of them important for the overall Marketing Communication function.	16 Marks	L3	CO1

MODULE-II

4.	How will you Classify Advertising?	16 Marks	L2	CO2
	(OR)			
5.	How will you select the Advertisement agency and remuneration offered to advertisement agency?	16 Marks	L3	CO2

MODULE-III

6.	Explain the methods of evaluating effectiveness of advertising?	16 Marks	L2	CO3
	(OR)			
7.	What are the essentials of a good advertising appeal? Explain the different types of appeals used in advertising.	16 Marks	L3	CO3

MODULE-IV

8.	What is online sales promotion and explain its advantages and disadvantages.	16 Marks	L3	CO4
	(OR)			
9.	Discuss the sales promotion techniques.	16 Marks	L2	CO4

MODULE-V

10.	How will you measure the effectiveness of public relation?	16 Marks	L3	CO5
	(OR)			
11.	Explain the various methods of publicity commonly used by businesses and organizations and discuss their effectiveness in generating brand awareness and influencing public perception.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

PRODUCT AND BRAND MANAGEMENT

[Business Analytics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define product.	2 Marks	L1	CO1
	b)	Describe about the four dimensions of product mix.	2 Marks	L1	CO1
	c)	Brand image in service sector.	2 Marks	L1	CO2
	d)	Define Market penetration.	2 Marks	L1	CO2
	e)	Describe the types of products?	2 Marks	L1	CO3
	f)	What is meant by packaging?	2 Marks	L1	CO3
	g)	Define the concept of testing.	2 Marks	L1	CO4
	h)	Brand personality.	2 Marks	L1	CO4
	i)	Discuss about the brand awareness?	2 Marks	L1	CO5
	j)	Give examples for Reputed brands in Retail sector.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is a product? Explain the characteristics of a product?	8 Marks	L2	CO1
	b)	Briefly discuss types of consumer products with suitable examples.	8 Marks	L3	CO1
		(OR)			
3.	a)	What are the factors that affect Product Management Decisions?	8 Marks	L2	CO1
	b)	Define roles and responsibilities of a product manager.	8 Marks	L3	CO1

MODULE-II

4.	a)	Brief about New product development process in detail.	8 Marks	L2	CO2
	b)	Explain importance of Packaging in product management.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain different stages in product life cycle.	8 Marks	L2	CO2
	b)	Explain importance of Packaging in product management.	8 Marks	L3	CO2

MODULE-III

6.	a)	Define brand. What are the functions of brand in market?	8 Marks	L3	CO3
	b)	Describe brand valuation methods?	8 Marks	L2	CO3
		(OR)			
7.	a)	Define brand awareness? Explain in detail about the importance of brand awareness?	8 Marks	L3	CO3
	b)	Define brand extension? Explain about the advantages and disadvantages of brand extension?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the factors for new brand failures? Example.	8 Marks	L3	CO4
	b)	What do you understand by Brand Equity? Explain various methods of calculating Brand Equity.	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss briefly about the Brand Revitalization and find out some ways of brand revitalization?	8 Marks	L3	CO4
	b)	Discuss the Aaker's brand personality framework with examples.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is service sector? Explain some brands in service sector.	8 Marks	L2	CO5
	b)	Explain branding in Industrial sector with examples.	8 Marks	L3	CO5
		(OR)			
11.	a)	Write a short note on branding in Banking sector?	8 Marks	L2	CO5
	b)	Develop innovative methods for branding in Retail sector?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

MARKETING ANALYTICS

[Business Analytics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Marketing Data?	2 Marks	L1	CO1
	b)	State any example for qualitative market data.	2 Marks	L2	CO1
	c)	What is a Graph?	2 Marks	L1	CO2
	d)	What insights a graph can provide?	2 Marks	L1	CO2
	e)	What is the primary purpose of the T-test in comparing sales performance?	2 Marks	L1	CO3
	f)	How does ANOVA differ from T-test in the context of evaluating sales performance?	2 Marks	L1	CO3
	g)	What is the primary purpose of item exploration in the context of statistical analysis?	2 Marks	L2	CO4
	h)	How does Exploratory Factor Analysis differ from Confirmatory Factor Analysis?	2 Marks	L1	CO4
	i)	How does regression analysis contribute to measuring consumer satisfaction, loyalty, and trust in the context of product evaluation?	2 Marks	L2	CO5
	j)	What role does Structure Equation Modeling (SEM) play in understanding the complex relationships between consumer satisfaction, loyalty, and trust?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	Explain the Quantitative type of research in marketing with an example.	16 Marks	L2	CO1
	(OR)			
3.	Describe the nature and importance of understanding consumer demographics.	16 Marks	L2	CO1

MODULE-II

4.	Illustrate the components in summarizing the data for decision-making.	16 Marks	L3	CO2
	(OR)			
5.	Describe the steps involved in creating frequency tables in SPSS.	16 Marks	L3	CO2

MODULE-III

6.	How does ANOVA differ from T-TEST in terms of its application in sales performance analysis?	16 Marks	L2	CO3
	(OR)			
7.	Explain how ANOVA is suitable for comparing sales performance across more than two groups.	16 Marks	L2	CO3

MODULE-IV

8.	What is the primary purpose of item exploration in research, and how does it contribute to the overall data analysis process?	16 Marks	L2	CO4
	(OR)			
9.	Explain the concept of Exploratory Factor Analysis (EFA) and provide an example of a research scenario where EFA would be particularly useful.	16 Marks	L3	CO4

MODULE-V

10.	How does regression analysis contribute to the measurement of consumer satisfaction, loyalty, and trust in the context of marketing research?	16 Marks	L1	CO5
	(OR)			
11.	Can you elaborate on the role of Structural Equation Modeling (SEM) in assessing and understanding the intricate relationships between consumer satisfaction, loyalty, and trust	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2024

DATA ANALYSIS WITH R

[Business Analytics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Why is it needed to analyze data?	2 Marks	L1	CO1
	b)	What is Data in Business Analytics?	2 Marks	L1	CO1
	c)	Write R command to print 5^{th} value in X where X= c (13,4,2,6,7,2,3,4,5,7,8,9).	2 Marks	L2	CO2
	d)	Define an array.	2 Marks	L2	CO2
	e)	Describe the process of creating a box plot in R.	2 Marks	L1	CO3
	f)	How can you generate a bar chart using R?	2 Marks	L1	CO3
	g)	What is the significance of cross tables in statistical analysis?	2 Marks	L1	CO4
	h)	Explain the role of the Psych package in conducting parametric tests in R.	2 Marks	L2	CO4
	i)	What distinguishes simple linear regression from multiple linear regression in terms of variables involved?	2 Marks	L1	CO5
	j)	How does multi-collinearity affect the reliability of linear regression models, and how can it be addressed?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	In what ways does structured data differ from semi-structured data, and how do these differences affect data analytics methodologies?	16 Marks	L2	CO1

(OR)

3.	Can you outline some specific applications of data analytics in different industries and sectors?	16 Marks	L2	CO1

MODULE-II

4.	Discuss the importance of functions in R. How are functions defined, and what role do they play in R programming?	16 Marks	L2	CO2

(OR)

5.	What is a package in R, and how do you install and load packages? Provide an example of a popular R package and its usage.	16 Marks	L1	CO2

MODULE-III

6.	Describe the process of creating a bar chart in R and provide an example dataset where a bar chart would be an appropriate visualization.	16 Marks	L2	CO3

(OR)

7.	How do you create a line graph in R, and what type of data is best suited for representing trends using this visualization technique?	16 Marks	L2	CO3

MODULE-IV

8.	How can you create a cross-table (contingency table) in R to analyze the relationship between two categorical variables?	16 Marks	L1	CO4

(OR)

9.	Discuss the advantages and disadvantages of using frequency tables in statistical analysis.	16 Marks	L2	CO4

MODULE-V

10.	What is text analytics, and how is it applied in natural language processing (NLP)?	16 Marks	L1	CO5

(OR)

11.	Explain the term "tf-idf" and its significance in text analytics.	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations May – 2024

DATA MINING

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Data Mining?	2 Marks	L1	CO2
	b)	What kinds of patterns can be mined in data mining?	2 Marks	L2	CO2
	c)	List the types of OLAP	2 Marks	L1	CO1
	d)	Differentiate between base cuboid and apex cuboid	2 Marks	L2	CO1
	e)	Where are decision trees mainly used?	2 Marks	L2	CO3
	f)	List the advantage of Bayesian classification?	2 Marks	L1	CO3
	g)	What do you meant by Hierarchical Clustering	2 Marks	L2	CO3
	h)	Difference between K-Means and K-Medoids Algorithms	2 Marks	L2	CO3
	i)	List out the types of data mining	2 Marks	L1	CO4
	j)	What is meant by text mining	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	List out Major issues in Data Mining and explain in detail.	8 Marks	L2	CO2
	b)	List and explain the main steps involved in data pre-processing.	8 Marks	L1	CO2
		(OR)			
3.	a)	List and describe the main steps involved in the data mining process.	8 Marks	L1	CO2
	b)	Compare and contrast data integration and data transformation in the context of data pre-processing.	8 Marks	L2	CO2

MODULE-II

4.	a)	Define data cube technology and explain its role in data mining.	8 Marks	L1	CO1
	b)	How can we further improve the efficiency of Apriori-based mining?	8 Marks	L2	CO1
		(OR)			
5.	a)	Explain the concept of multidimensional data analysis and its significance in data mining.	8 Marks	L2	CO1
	b)	List out draw backs of Apriori Algorithm? Explain about FP Growth Concept in Detail?	8 Marks	L1	CO1

MODULE-III

6.	a)	Write short notes on Bayesian Belief Networks?	8 Marks	L2	CO3
	b)	Write and explain about Classification by Back propagation Algorithm with example.	8 Marks	L3	CO3
		(OR)			

7.	a)	Describe the process of attribute selection measures in classification mining.	8 Marks	L2	CO3
	b)	Illustrate general approach to classification with example.	8 Marks	L3	CO3

MODULE-IV

8.	a)	List out the major tasks in the evaluation of clustering.	8 Marks	L2	CO3
	b)	What are outliers? Discuss the methods adopted for outlier detection.	8 Marks	L2	CO3

(OR)

9.	a)	What is the goal of clustering? How does partitioning methods achieve.	8 Marks	L2	CO3
	b)	List out requirements for cluster analysis.	8 Marks	L2	CO3

MODULE-V

10.	a)	Define time series forecasting and explain its importance in various domains.	8 Marks	L3	CO4
	b)	Discuss in detail about Data mining Applications.	8 Marks	L2	CO4

(OR)

11.	a)	Analyze the current trends and challenges in data mining research, highlighting their implications for future advancements.	8 Marks	L3	CO4
	b)	Explain in detail about spatial data mining.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations May – 2024

COMPUTER NETWORKS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is multicasting?	2 Marks	L1	CO1
	b)	State the key features of a protocol.	2 Marks	L2	CO1
	c)	List any two error-correcting codes	2 Marks	L1	CO2
	d)	Interpret the two kinds of Ethernet.	2 Marks	L1	CO2
	e)	Mention any two desirable properties in a routing algorithm.	2 Marks	L2	CO3
	f)	Recall peering.	2 Marks	L1	CO3
	g)	What is retransmission timeout?	2 Marks	L1	CO4
	h)	Specify about Jitter.	2 Marks	L2	CO4
	i)	What is quantization noise?	2 Marks	L1	CO5
	j)	What is name resolution?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Summarize the uses of Computer Networks in business applications and mobile users.	8 Marks	L3	CO1
	b)	Interpret the types of guided transmission media.	8 Marks	L4	CO1
		(OR)			
3.	a)	Illustrate the functions of various layers of the TCP/IP reference model with a neat diagram.	8 Marks	L3	CO1
	b)	Illustrate how the spectrum can be used for wireless transmission.	8 Marks	L2	CO1

MODULE-II

4.	a)	Illustrate the working of bridges and switches.	8 Marks	L3	CO2
	b)	Discuss Bluetooth architecture.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the need for Framing in data transmission	8 Marks	L1	CO2
	b)	List the error-detecting codes in the data link layer and explain any one in detail.	8 Marks	L1	CO2

MODULE-III

6.	a)	Illustrate about distance vector routing algorithm in the network layer.	8 Marks	L2	CO3
	b)	Explain the technique of traffic management at the network layer.	8 Marks	L3	CO3

(OR)

7.	a)	Describe the header of the IP version-4 protocol.	8 Marks	L2	CO3
	b)	Illustrate about broadcast routing algorithm in the network layer.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Draw and explain the UDP header.	8 Marks	L2	CO4
	b)	Summarize the salient features of TCP in the transport layer.	8 Marks	L3	CO4

(OR)

9.	a)	Compare and present the differences between UDP and TCP protocols.	8 Marks	L2	CO4
	b)	Demonstrate the steps in making a remote procedure call.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss DNS queries and responses.	8 Marks	L1	CO5
	b)	Explain the architecture of the email system.	8 Marks	L1	CO5

(OR)

11.	a)	Illustrate characteristic features of the hypertext transfer protocol.	8 Marks	L1	CO5
	b)	Discuss streaming stored media in the application layer.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations May – 2024

CLOUD PRACTITIONER

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is an AWS Regions?	2 Marks	L1	CO1
	b)	Write about Zones and Availability	2 Marks	L2	CO1
	c)	How do you access AWS Command Line Interface?	2 Marks	L2	CO2
	d)	What is Cloud Watch Alarms?	2 Marks	L1	CO2
	e)	Abbreviate the EC2.	2 Marks	L1	CO3
	f)	Explain about the Instance.	2 Marks	L1	CO3
	g)	What is S3?	2 Marks	L1	CO4
	h)	Write about DynamoDB.	2 Marks	L2	CO4
	i)	What is a VPN?	2 Marks	L2	CO5
	j)	How do we launch a template?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	How can we have a Secured Infrastructure in the cloud?	8 Marks	L2	CO1
	b)	Explain about Service Endpoint, Regionally Based Services and Metered Payment Model.	8 Marks	L1	CO1

(OR)

3.	a)	Explain in Detail about AWS Global Infrastructure.	12 Marks	L1	CO1
	b)	Describe Regional Edge Cache Locations, Edge Locations and Cloud Front in brief.	4 Marks	L2	CO1

MODULE-II

4.	a)	Describe the Cloud Watch Metrics, Cloud Watch Dashboards, and Cloud Watch Logs.	8 Marks	L2	CO2
	b)	In what way Event History will be helpful to a user? Explain the Trails and Log File Integrity Validation.	8 Marks	L1	CO2

(OR)

5.	a)	What is meant by a Resource Group? Describe about API and Non-API Events.	8 Marks	L1	CO2
	b)	What are Tag Editor and the Tagging Strategies? How do we configure them?	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the Amazon Machine Images. How to create an EC2 Instance given an example.	8 Marks	L3	CO3
	b)	Write about the Deploying Container and Serverless Workloads	8 Marks	L1	CO3

(OR)

7.	a)	How to Deploy the Amazon Elastic Compute Cloud Server? Explain in detail with an example.	8 Marks	L2	CO3
	b)	Write about Amazon Lightsail, and AWS Elastic Beanstalk.	8 Marks	L1	CO3

MODULE-IV

8.	a)	How does a file gateway work in AWS Storage Gateway? What are its use cases? What are the key features and use cases of volume gateways in AWS Storage Gateway?	8 Marks	L1	CO4
	b)	How does multi-AZ (Availability Zone) deployment enhance high availability in Amazon RDS? What backup and recovery options are available for databases in Amazon RDS?	8 Marks	L3	CO4

(OR)

9.	a)	Can you explain the concept of object lifecycle configurations in Amazon S3? How can it be used to optimize storage costs? What is Amazon S3 Glacier, and how does it differ from the standard S3 storage class?	8 Marks	L2	CO4
	b)	Can you explain the key concepts of Amazon DynamoDB, such as items and tables? How can you scale horizontally in Amazon DynamoDB to handle increased workloads?	8 Marks	L3	CO4

MODULE-V

10.	a)	What is a Virtual Private Cloud (VPC), and how does it provide networking capabilities in AWS? How are VPC CIDR blocks used to define IP address ranges within a VPC?	8 Marks	L2	CO5
	b)	When automating AWS workloads, what are the key considerations and challenges in achieving idempotency and ensuring consistent state management across multiple resources, especially in complex, distributed architectures?	8 Marks	L4	CO5

(OR)

11.	a)	What are hosted zones in AWS, and how are they used in DNS management? Can you describe different routing policies used in AWS Route S3 for managing DNS traffic?	8 Marks	L2	CO5
	b)	In the context of AWS security automation, how can you implement a comprehensive and effective security posture, taking into account continuous monitoring, threat detection, and incident response, while maintaining scalability and minimizing false positives/negatives in security automation workflows?	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations May – 2024

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Provide the syntax for two dimensional Array with example.	2 Marks	L2	CO1
	b)	Describe constructors.	2 Marks	L2	CO1
	c)	Illustrate method overriding with example in java?	2 Marks	L4	CO1
	d)	Describe interfaces?	2 Marks	L2	CO1
	e)	Differentiate between Iterator and List Iterator.	2 Marks	L2	CO2
	f)	Describe Array List class.	2 Marks	L3	CO2
	g)	What is the use of finally block in exception handling?	2 Marks	L1	CO3
	h)	Describe about synchronized method in multithreading.	2 Marks	L2	CO3
	i)	What are the advantages of Applets?	2 Marks	L1	CO4
	j)	List out the methods in JText Field.	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	List and elaborate Object Oriented Principles with example.	8 Marks	L2	CO1
	b)	Brief about the following: i) this ii) constructor overloading	8 Marks	L2	CO1
		(OR)			
3.		Design a class to represent a Student details include the Student ID, Name of the Student, Branch, year, location and college. Assign initial values using Constructor. Calculate average of marks of 6 subjects and calculate attendance percentage.	16 Marks	L3	CO1

MODULE-II

4.	a)	Demonstrate the usage of Packages.	8 Marks	L3	CO1
	b)	Differentiate between abstract class and interface.	8 Marks	L2	CO1
		(OR)			
5.	a)	Identify the relevance of super keyword to access a member of a parent class.	8 Marks	L2	CO1
	b)	Illustrate different types of inheritance with syntax.	8 Marks	L2	CO1

MODULE-III

6.	a)	Brief out the following keywords: i) try ii) catch iii) finally iv) throw	8 Marks	L1	CO2
	b)	Consider two integers x and y as input and compute the value of x/y. Implement a class which raise an exception if x and y are not signed integers or if y is zero.	8 Marks	L3	CO2
		(OR)			
7.	a)	Develop a multi thread java program by extending Thread Class.	8 Marks	L3	CO2
	b)	Illustrate different types of exceptions. And write a java program to handle Array Index Out of Bounds Exception.	8 Marks	L2	CO2

MODULE-IV

8.	a)	What is Set in Java Collections framework and list out its various implementations?	8 Marks	L2	CO3
	b)	Write a java program to store set of telephone holder names as keys and telephone numbers as values in HashMap and retrieve specific persons telephone number based on his name.	8 Marks	L3	CO3
		(OR)			
9.		Build a Stack collection with double values and do the following operations. a) Push the element into stack b) pop the element from the stack c) search the element in the stack d) display all elements in the stack using Iterator.	16 Marks	L4	CO3

MODULE-V

10.	a)	Discuss the hierarchy of Swing components.	8 Marks	L2	CO4
	b)	Illustrate about JRadio Button and JCheck box with example.	8 Marks	L2	CO4
		(OR)			
11.	a)	Write a java program to find factorial of a number using Swings.	8 Marks	L2	CO4
	b)	Develop a bio-data application using windows application.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations, May – 2024

TECHNICAL REPORT WRITING

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Discuss about the importance of report.	2 Marks	L1	CO1
	b)	Define about technical report.	2 Marks	L1	CO1
	c)	Are tables needed in report writing? - justify.	2 Marks	L2	CO2
	d)	What is the need of introduction?	2 Marks	L1	CO2
	e)	Is citation needed?-justify.	2 Marks	L2	CO3
	f)	Discuss the Important steps of Scientific journals writings.	2 Marks	L2	CO3
	g)	Define Referencing.	2 Marks	L1	CO4
	h)	What is bibliographical data?	2 Marks	L2	CO4
	i)	How to analyze a presentation?	2 Marks	L2	CO5
	j)	How to answer intermediate questions?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss about the selection process of Report title.	8 Marks	L2	CO1
	b)	Discuss different types of reports.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss about the components of technical report.	8 Marks	L2	CO1
	b)	Discuss about the language use in Report Writing.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss about the methods of writing .	8 Marks	L1	CO2
	b)	Discuss about how to prepare tables in report writing.	8 Marks	L2	CO2
		(OR)			
5.	a)	What is the importance of Discussion in report justify.	8 Marks	L2	CO2
	b)	Discuss about how to present findings in a report.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the importance of Graphs in publication.	8 Marks	L2	CO3
	b)	Discuss about the citing and arranging References-I.	8 Marks	L2	CO3
		(OR)			
7.	a)	Write the steps of preparing effective Graphs.	8 Marks	L1	CO3
	b)	Discuss the Graphs affects the writing a scientific publication .	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define copyright and discuss about the law of copyrights.	8 Marks	L2	CO4
	b)	Discuss about the page layouts in the documentation.	8 Marks	L2	CO4

(OR)

9.	a)	Discuss about the reasons of literature citation.	8 Marks	L2	CO4
	b)	Does Cross-referencing is needed justify.	8 Marks	L2	CO4

MODULE-V

10.	a)	Is pointing needed in presentation? - justify.	8 Marks	L2	CO5
	b)	Discuss about the tips of rhetoric.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss about the dealing of Intermediate questions.	8 Marks	L2	CO5
	b)	Do we need a review of the presentation? - justify.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations May – 2024

MATHEMATICAL FOUNDATIONS FOR COMPUTER APPLICATIONS

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define a disjunctive normal form.	2 Marks	L1	CO1
	b)	Explain modus ponens.	2 Marks	L1	CO1
	c)	Describe Hasse diagram.	2 Marks	L2	CO2
	d)	Describe the Karnaugh map.	2 Marks	L2	CO2
	e)	State Euclidean algorithm.	2 Marks	L1	CO3
	f)	Explain division algorithm.	2 Marks	L2	CO3
	g)	How do you calculate coefficients of a generating function?	2 Marks	L1	CO4
	h)	State the principle of superposition in solving linear recurrence relations.	2 Marks	L2	CO4
	i)	List some applications of trees.	2 Marks	L1	CO5
	j)	Draw any two differences between the depth first search and breadth first search.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Prove that the statement "For all real numbers x, if x is irrational, then x^2 is irrational" is true.	8 Marks	L3	CO1
	b)	List the rules for the construction of well-formed formula and explain with an example the construction of well-formed formula.	8 Marks	L2	CO1

(OR)

3.	a)	Use the rules of inference to prove the following argument: Premise 1: $\forall x\ (P(x) \rightarrow Q(x))$; Premise 2: $\forall x\ (Q(x) \rightarrow R(x))$;Conclusion: $\forall x\ (P(x) \rightarrow R(x))$.	8 Marks	L3	CO1
	b)	Prove by contradiction that there are infinitely many prime numbers.	8 Marks	L3	CO1

MODULE-II

4.	a)	Consider the set A = {4, 5, 6, 7}. Let R be the relation ≤ on A. Draw the directed graph and the Hasse diagram of R.	8 Marks	L2	CO2
	b)	Minimize the boolean function.	8 Marks	L3	CO2

Y=(A'+B'+C+D)(A+B'+C+D)(A+B+C+D')(A+B+C'+D')
(A'+B+C+D')(A+B+C'+D).

(OR)

5.	a)	Explain Hasse diagram and explain with an example how a poset can be converted into an Hasse diagram?	8 Marks	L2	CO2
	b)	Explain Karnaugh map simplification for a SOP expression for a 4-variable map and explain don't care conditions with an example.	8 Marks	L2	CO2

MODULE-III

6.	a)	Define Groups, Subgroups, Monoids, Homomorphism, and Isomorphism with suitable examples.	10 Marks	L2	CO3
	b)	Show that {0,1} is a group under addition modulo 2.	6 Marks	L3	CO3

(OR)

7.	a)	Consider G be an abelian group of order 60. Show that G must contain a normal subgroup of order 10.	10 Marks	L3	CO3
	b)	Using the division algorithm to prove that the cube of any integer is of the form 9k, 9k+1, or 9k+8 for some integer k.	6 Marks	L3	CO3

MODULE-IV

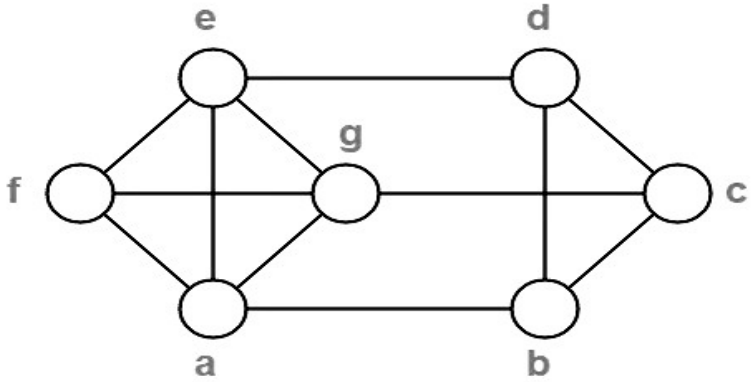
8.	a)	Solve the recurrence relation $a_n = 2a_{n-1} + 1$ for $n \geq 1$ by substitution.	8 Marks	L3	CO4
	b)	Explain the methods of characteristic roots with an example.	8 Marks	L2	CO4

(OR)

9.	a)	A vending machine dispenses books of stamps and accepts only dollar coins, $1 bills, and $5 bills. How many ways are there to deposit $10 for a book of stamps, where the order in which the coins and bills are deposited matters?	10 Marks	L3	CO4
	b)	Solve the recurrence relation using the method of characteristic roots $a_n = 3\,a_{n-1} - 2a_{n-2}$ for $n \geq 2$ given $a_0 = 1$ and $a_1 = 2$.	6 Marks	L3	CO4

MODULE-V

10.	a)	Using graph coloring algorithm color, the following graph using only 4 colors. Explain the process using greedy approach.	8 Marks	L3	CO5



	b)	Prove that the minimum spanning tree of a connected graph is unique if and only if the edge weights are all distinct.	8 Marks	L3	CO5

(OR)

11.	a)	Prove that a connected graph G has a Eulerian circuit if and only if every vertex of G has even degree.	8 Marks	L3	CO5
	b)	Discuss the limitations of Breadth-First Search and Depth-First Search algorithms and how they can be overcome using other graph traversal algorithms.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

P, A & HCS I Semester (MBU-22) Regular Examinations (September) – 2023

(RESEARCH METHODOLOGY FOR BIOSTATISTICS)

[Masterof Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

			Marks		
1.	a)	What is meant by Scientific research?	2M		
	b)	What is Research approach?	2M		
	c)	Define Research design.	2M		
	d)	List types of Correlation.	2M		
	e)	Define Hypothesis.	2M		
	f)	Define Sampling distribution.	2M		
	g)	What are the basic requirements of research?	2M		
	h)	What is the need of research?	2M		
	i)	Define research Problem.	2M		
	j)	What is meant by ANOVA?	2M		

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the Significance of a Research.	8M		
	b)	What are the different steps involved in research process.	8M		
		(OR)			
3.	a)	Extend in detail about sources of Research.	8M		
	b)	Explain Basic Principles of Experimental designs. Randomization. Replication. Local Control.	 3M 3M 2M		

MODULE-II

4.	a)	Explain the difference between collection of data through questionnaires and schedules. Questionnaire. Schedules.	 4M 4M		
	b)	Explain data collection methods. Primary data Methods. Secondary data Methods.	 4M 4M		
		(OR)			

5.	a)	Compare Primary and Secondary data collection methods. Comparison.	8M		
	b)	Categorize in detail about Components of a research problem.	8M		
		MODULE-III			
6.	a)	Explain the importance of study of Statistics.	8M		
	b)	Compare health and Vital Statistics. Health Statistics. Vital Statistics.	4M 4M		
		(OR)			
7.	a)	Illustrate Inferential Statistics in health Sciences.	8M		
	b)	Explain the role of Biostatistics in Paramedical Sciences.	8M		
		MODULE-IV			
8.	a)	Explain the basic principles of ANOVA.	8M		
	b)	Explain the Procedures of Sampling and Sampling designs. Sampling. Sampling designs.	4M 4M		
		(OR)			
9.	a)	Explain a short note on paired student's t-test.	8M		
	b)	Explainthe differences between Correlation & Regression.	8M		
		MODULE-V			
10.	a)	How do you write a report on scientific investigation on the various methods of data?	8M		
	b)	Explain the types of Reports in detail.	8M		
		(OR)			
11.	a)	Extend adetailed note on mechanics of writing a Scientific Research reports & journals.	8M		
	b)	Explain the precautions taken while writing a Research report.	8M		

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. I Semester (MBU-22) Regular Examinations, June – 2024

PRINCIPLES OF PHYSIOTHERAPY PRACTICE

[Neurology, Cardio Vascular and Pulmonary, Orthopeadics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Classify the rules and regulations of physiotherapy practice.	2 Marks	L2	CO1
	b)	State budget procedure in physiotherapy.	2 Marks	L1	CO1
	c)	Simplify the research and academics.	2 Marks	L3	CO2
	d)	Write the types of abuse.	2 Marks	L1	CO2
	e)	Classify how to develop patient communication.	2 Marks	L3	CO3
	f)	List the medical legal aspects.	2 Marks	L1	CO3
	g)	Evaluate patient confidentiality.	2 Marks	L2	CO4
	h)	Write the leadership qualities in physiotherapy.	2 Marks	L3	CO4
	i)	Detail about the definition of intelligence.	2 Marks	L2	CO5
	j)	Design the lesson plan.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the improvement of the standards and future challenges of physiotherapy practice.	8 Marks	L2	CO1
	b)	Determine the clinical research academics and administration.	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe legal issues in physiotherapy.	8 Marks	L1	CO1
	b)	Explain ethical issues in the practice of physiotherapy.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain about assessment of various tests and scales in physiotherapy.	8 Marks	L4	CO2
	b)	Illustrate the characteristics of leadership required in the physiotherapy profession.	8 Marks	L3	CO2
		(OR)			
5.	a)	Demonstrate budget policy procedures and quality assurance.	8 Marks	L3	CO2
	b)	Utilize the characteristics of leadership required in the physiotherapy profession.	8 Marks	L1	CO2

MODULE-III

6.	a)	Identify the ethical dilemmas ascending out of the evaluation of patients and management.	8 Marks	L4	CO3
	b)	Simplify in detail about assessment taking history tests and patient communication.	8 Marks	L3	CO3

(OR)

7.	a)	Explain the assessment of rehabilitation and management in physiotherapy conditions.	8 Marks	L3	CO3
	b)	Write the treatment organization and plan for intervention.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Outline the various teaching methods in physiotherapy education.	8 Marks	L4	CO4
	b)	Examine the role of emotional intelligence in physiotherapy practice that treats vulnerable people having ethical issues.	8 Marks	L3	CO4
		(OR)			
9.	a)	Elaborate in detail about the personality in physiotherapy practice.	8 Marks	L3	CO4
	b)	Discuss in various personalities in physiotherapy practice.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Explain the mentorship program in ethical issues in treating vulnerable populations.	8 Marks	L4	CO5
	b)	Illustrate the guidance and counseling services of students and faculty.	8 Marks	L3	CO5
		(OR)			
11.	a)	Demonstrate the Planning of teaching organization, and give writing lesson plans.	8 Marks	L3	CO5
	b)	Discuss the principles and methods of teaching.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. I Semester (MBU-22) Regular Examinations, June – 2024

RESEARCH METHODOLOGY AND BIOSTATISTICS

[Master of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is meant by Scientific research?	2 Marks	L1	CO1
	b)	What is Research approach?	2 Marks	L1	CO1
	c)	Define Research design.	2 Marks	L1	CO1
	d)	List types of Correlation.	2 Marks	L1	CO3
	e)	Define Hypothesis.	2 Marks	L1	CO1
	f)	Define Sampling distribution.	2 Marks	L1	CO2
	g)	What are the basic requirements of research?	2 Marks	L1	CO1
	h)	What is the need of research?	2 Marks	L1	CO1
	i)	Define research Problem.	2 Marks	L1	CO1
	j)	What is meant by ANOVA?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the significance of a Research.	8 Marks	L2	CO1
	b)	What are the different steps involved in research process?	8 Marks	L1	CO1
		(OR)			
3.	a)	Extend in detail about sources of Research.	8 Marks	L2	CO1
	b)	Explain Basic Principles of Experimental designs.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the difference between collection of data through questionnaires and schedules.	8 Marks	L2	CO2
	b)	Explain data collection methods.	8 Marks	L2	CO2
		(OR)			
5.	a)	Compare Primary and Secondary data collection methods.	8 Marks	L2	CO2
	b)	Categorize in detail about Components of a research problem.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain the importance of study of Statistics.	8 Marks	L2	CO3
	b)	Compare health and Vital Statistics.	8 Marks	L4	CO3
		(OR)			
7.	a)	Illustrate Inferential Statistics in health Sciences.	8 Marks	L2	CO3
	b)	Explain the role of Biostatistics in Paramedical Sciences.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the basic principles of ANOVA.	8 Marks	L2	CO4
	b)	Explain the Procedures of Sampling and Sampling designs.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain a short note on paired student's t-test.	8 Marks	L2	CO4
	b)	Explain he differences between Correlation and Regression.	8 Marks	L2	CO4

MODULE-V

10.	a)	How do you write a report on the scientific investigation on the various methods of data?	8 Marks	L2	CO5
	b)	Explain the types of Reports in detail.	8 Marks	L2	CO5
		(OR)			
11.	a)	Extend detail note on mechanics of writing a Scientific Research reports and journals.	8 Marks	L2	CO5
	b)	Explain the precautions taken while writing a Research report.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. I Semester (MBU-22) Regular Examinations, June – 2024

EXERCISE PHYSIOLOGY & NUTRITION

[Neurology, Cardio Vascular and Pulmonary,Orthopeadics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Add a note on Hyponatremia.	2 Marks	L2	CO1
	b)	List the types of carbohydrates.	2 Marks	L1	CO1
	c)	Demonstrate ATP PCr system.	2 Marks	L3	CO2
	d)	Define Respiratory quotient.	2 Marks	L1	CO2
	e)	What are the effects of growth hormone?	2 Marks	L3	CO3
	f)	Define Insulin sensitivity.	2 Marks	L1	CO3
	g)	Explain Po_2 at High altitudes	2 Marks	L2	CO4
	h)	What are the effects of Live high train low(LHTL).?	2 Marks	L3	CO4
	i)	Give any two examples of Endurance exercises.	2 Marks	L2	CO5
	j)	Explore the physiological changes of the musculoskeletal system in aging.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the role of proteins, sources and daily recommended intake of proteins.	8 Marks	L2	CO1
	b)	Explore the different exercises, and add a note on carbohydrate loading in endurance exercises.	8 Marks	L3	CO1
		(OR)			
3.	a)	What are Micronutrients? Write the effects of Micronutrients on exercise performance.	8 Marks	L1	CO1
	b)	Distinguish legal and illegal aids. Add a note on common legal aids implemented in training.	8 Marks	L4	CO1

MODULE-II

4.	a)	Give any two examples of anaerobic exercises and measurement of Anaerobic power and capacity.	8 Marks	L4	CO2
	b)	Explore Anaerobic exercises with suitable examples. Add a note on the Energy pathway for anaerobic exercises	8 Marks	L3	CO2
		(OR)			
5.	a)	What is a calorimeter? Classify measurement of human energy expenditure and explain any one in detail.	8 Marks	L3	CO2
	b)	Define BMR. Discuss energy expenditure during rest and walking.	8 Marks	L1	CO2

MODULE-III

6.	a)	What is Diagnosis of Hypertension and write effects of aerobic exercises on Hypertension.	8 Marks	L4	CO3
	b)	What is cardiac output? Relate the Cardiac output during rest and exercise.	8 Marks	L3	CO3
		(OR)			
7.	a)	Define cardiac output. Use of cardiovascular drift in prolonged exercises.	8 Marks	L3	CO3
	b)	List the types of Muscle fibers and their properties. How exercise affects the muscle fiber type.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain thermoregulation in heat and cold stress exercise.	8 Marks	L4	CO4
	b)	Apply the principle of acclimatization. Physiological changes and exercise training at high altitudes.	8 Marks	L3	CO4
		(OR)			
9.	a)	Exercise advice during pregnancy.	8 Marks	L3	CO4
	b)	Define anaerobic exercise. Principles of anaerobic training.	8 Marks	L1	CO4

MODULE-V

10.	a)	Outline current systems to classify overweight and obese conditions.	8 Marks	L4	CO5
	b)	Exercise prescription in cardiovascular disease.	8 Marks	L3	CO5
		(OR)			
11.	a)	Exercise prescription for the Geriatrics.	8 Marks	L3	CO5
	b)	Define Obesity. Health risks of excessive body fat.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. I Semester (MBU-22) Regular Examinations, June – 2024

CLINICAL ELECTROPHYSIOLOGY

[Neurology, Cardio Vascular and Pulmonary, Orthopeadics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Filter.	2 Marks	L1	CO1
	b)	Outline the Techniques of Waveform Display.	2 Marks	L1	CO1
	c)	State the Electrode Placements in ECG.	2 Marks	L2	CO2
	d)	Recollect the Diagnostic Tests in Electrophysiology.	2 Marks	L3	CO2
	e)	List out the Principles of Nerve Conduction Study.	2 Marks	L1	CO3
	f)	Recall Median Nerve Entrapment Syndromes.	2 Marks	L1	CO3
	g)	Recognize the Single Fiber EMG.	2 Marks	L2	CO4
	h)	Design the uses of electrodes in EMG.	2 Marks	L2	CO4
	i)	State the Electrode Placements of Auditory Evoked Potential.	2 Marks	L2	CO5
	j)	Design the Sensory Evoked Potential.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Interpret the Electro diagnostic Signals and their Measurements.	8 Marks	L2	CO1
	b)	Recall the Electrical Properties of Muscles.	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss about Ionic Basis of Excitation and Conduction.	8 Marks	L1	CO1
	b)	Contract the Electrical Events at Synapse and Ionic Events in Receptors.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define ECG. Debate the Placements of ECG.	8 Marks	L1	CO2
	b)	Characterize the Diagnostic Modalities of TMT.	8 Marks	L2	CO2
		(OR)			
5.	a)	Recall EEG and Physiological basis of EEG?	8 Marks	L2	CO2
	b)	Define Motor Unit Potential? Discuss the factors affecting the Motor Unit Potential.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the following headlines of the Ulnar Nerve- i) Anatomy ii) NCS and iii) Ulnar Neuropathy.	8 Marks	L3	CO3
	b)	Enumerate the clinical Lumbosacral Plexopathy.	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss the following headlines of the Median Nerve- i)Anatomy ii)NCS and iii)Entrapment Syndromes.	8 Marks	L3	CO3
	b)	Illustrate the Principles of Nerve Conduction Study.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Specify Electromyogram. Classify the different types of needle electrodes in EMG.	8 Marks	L2	CO4
	b)	Illustrate the Single fiber EMG.	8 Marks	L3	CO4
		(OR)			
9.	a)	Justify the Macro electromyography.	8 Marks	L3	CO4
	b)	Predict the Repetitive nerve stimulation (RNS).	8 Marks	L3	CO4

MODULE-V

10.	a)	Memorize Evoked Potential and Discuss the types of Evoked Potentials.	8 Marks	L3	CO5
	b)	Rephrase the Sensory Evoked Potential in Pediatric.	8 Marks	L2	CO5
		(OR)			
11.	a)	Elucidate the Auditory evoked potential.	8 Marks	L2	CO5
	b)	Summarize the Visual evoked potential.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

MICROBIAL GENETICS & RECOMBINANT RDNA TECHNOLOGY

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write on reversion mutation.	2 Marks	L1	CO1
	b)	Write notes on Blue-White screening.	2 Marks	L1	CO1
	c)	Write notes on the copy number of plasmids.	2 Marks	L1	CO2
	d)	Differentiate the composite and non-composite transposons.	2 Marks	L1	CO2
	e)	Give the significance of a promoter in bacteria.	2 Marks	L1	CO3
	f)	Discuss auxotrophs.	2 Marks	L1	CO3
	g)	Write notes on cDNA libraries.	2 Marks	L1	CO4
	h)	What are isoschizomers.	2 Marks	L1	CO4
	i)	Who is credited for dideoxy DNA sequencing?	2 Marks	L1	CO5
	j)	Write on RISC complex.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the transduction mechanism to prove DNA as the genetic material.	8 Marks	L3	CO1
	b)	Write a detailed note on spontaneous and induced mutations.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss the structure of DNA as given by Watson and Crick.	8 Marks	L2	CO1
	b)	Write notes on the various forms of DNA.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the mechanism of plasmid replication,	8 Marks	L2	CO2
	b)	What mutation is used as an indicator of mutation rate in the Ames test and how can it be a test for carcinogenicity?	8 Marks	L3	CO2
		(OR)			
5.	a)	Discuss the genome organization in *E.coli.*	8 Marks	L2	CO2
	b)	Discuss the various physical and chemical mutagens.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the role of *His* and *Arg* tags in recombinant protein purification.	8 Marks	L3	CO3
	b)	Derive a strategy to design vectors for the over expression of recombinant proteins.	8 Marks	L4	CO3

(OR)

7.	a)	Explain the mechanism of *lac* operon and its exploitation in gene manipulation.	8 Marks	L3	CO3
	b)	Discuss the mechanism of signal transduction in bacteria.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Write notes on the genomic and cDNA libraries.	8 Marks	L2	CO4
	b)	Explain the various mammalian expression vectors.	8 Marks	L3	CO4

(OR)

9.	a)	Discuss in detail the types of restriction endonucleases.	8 Marks	L2	CO4
	b)	Classify vectors and add notes on their potential advantages.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss on Maxam and Gilbert's method of DNA sequencing.	8 Marks	L3	CO5
	b)	Illustrate phosphor amidite method for DNA synthesis with a diagrammatic representation.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the role of antisense RNA molecules in gene manipulation with an example.	8 Marks	L4	CO5
	b)	How is recombinant hGH produced?	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

BIOPROCESS TECHNOLOGY

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define fermentation and give the suitable examples.	2 Marks	L1	CO1
	b)	Describe various effluent treatment techniques used in integrated Bioprocess.	2 Marks	L1	CO1
	c)	What is the basic difference between fermentation and chemical reaction?	2 Marks	L1	CO2
	d)	What is meant by "inactivation factor"? Give an expression for it.	2 Marks	L1	CO2
	e)	What are the requirements of the medium in bioprocessing operation?	2 Marks	L1	CO3
	f)	What is PBD? Write the role of PBD in bioprocessing.	2 Marks	L1	CO3
	g)	What are various theories used in diffusional mass transfer?	2 Marks	L1	CO4
	h)	Write a note on gas-liquid mass transfer.	2 Marks	L1	CO4
	i)	Describe the various phases of cell growth in a batch culture, with a neat diagram.	2 Marks	L1	CO5
	j)	What is Malthus' law?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are the traditional and modern applications of Biotechnology?	10 Marks	L2	CO1
	b)	"Biotechnology is truly an interdisciplinary subject." Justify the statement.	6 Marks	L3	CO1

(OR)

3.	a)	What are various steps outlined in integrated bioprocessing?	8 Marks	L2	CO1
	b)	Distinguish between "Unit operation" and "Unit process."	8 Marks	L3	CO1

MODULE-II

4.	a)	Enumerate the various fermentation processes that you come across in process industries.	8 Marks	L4	CO2
	b)	Classify the enzymes based on their uses, and write a note on the enzymes production.	8 Marks	L3	CO2

(OR)

5.	a)	Describe briefly the concept of design of a fermenter. What factors do you consider as essential for a successful design and operation of a fermenter?	8 Marks	L2	CO2
	b)	Distinguish between solid state fermentation and submerged fermentation, and tabulate their essential features.	8 Marks	L3	CO2

MODULE-III

6.	a)	What are the various complexities one comes across in the case of biochemical reactions/processes?	6 Marks	L2	CO3
	b)	Derive the kinetic equations for cell growth.	10 Marks	L3	CO3
		(OR)			
7.	a)	Describe the monod model for specific growth rate.	8 Marks	L2	CO3
	b)	Explain the how do you find out the μ_m and K_s in monod model by linearizing it.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Compare and contrast the static and dynamics methods for measurement of k_La.	8 Marks	L2	CO4
	b)	Describe the process of oxygen transfer methodology from air bubble to the cell or cluster of cells in fermentation broths.	8 Marks	L2	CO4
		(OR)			
9.	a)	Describe the sodium sulphite oxidation method for measurement of mass transfer coefficient.	10 Marks	L2	CO4
	b)	In an aerobic fermentation process, the typical average bubble diameter is 3 mm, with an average raise velocity of 18 cm/s. If the diffusivity coefficient is $8X10^{-10}m^2/s$, Find the mass transfer coefficient on the basis of the penetration theory.	6 Marks	L3	CO4

MODULE-V

10.	a)	Describe a substrate-inhibited cell growth.	6 Marks	L2	CO5
	b)	In a CSTR (chemostat), Show how recycling improves the production rate.	10 Marks	L3	CO5
		(OR)			
11.	a)	Describe a product-inhibited cell growth.	6 Marks	L2	CO5
	b)	Describe the growth associated and non growth associated product formation in fermentation processes.	10 Marls	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

BIOINFORMATICS & ITS APPLICATIONS

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How are biological databases managed and maintained?	2 Marks	L1	CO1
	b)	Name important Restriction enzyme databases.	2 Marks	L1	CO1
	c)	How are transcription-signals identified in nucleotide sequences?	2 Marks	L1	CO2
	d)	Explain the purpose of EST analysis in nucleotide sequence analysis.	2 Marks	L1	CO2
	e)	List the different types of RNA molecules and their functions.	2 Marks	L1	CO3
	f)	How can micro RNAs be utilized as potential therapeutic targets?	2 Marks	L1	CO3
	g)	Describe the concept of protein folding domain motifs.	2 Marks	L1	CO4
	h)	How do hydrophobic patterns contribute to protein structure?	2 Marks	L1	CO4
	i)	What are the PAM and BLOSUM?	2 Marks	L1	CO4
	j)	Define pair-wise alignment. How does it differ from multiple alignments?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the relation between molecular biology and bioinformatics.	8 Marks	L2	CO1
	b)	Provide examples of well-known biological databases and their specific functions in bioinformatics.	8 Marks	L2	CO1
		(OR)			
3.	a)	Outline the Emerging areas of Genomics and Proteomics.	8 Marks	L2	CO1
	b)	Summarize various Protein Sequence databases.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the process of sequence assembly. (Understanding).	8 Marks	L2	CO2
	b)	Discuss the applications and limitations of EST analysis.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the steps involved in a shotgun sequencing project.	8 Marks	L2	CO2
	b)	Evaluate the importance of identifying coding regions in nucleotide sequences.	8 Marks	L5	CO2

MODULE-III

6.	a)	Describe the design and development process of si-RNAs.	8 Marks	L2	CO3
	b)	Describe the steps involved in identifying micro RNAs from high-throughput sequencing data.	8 Marks	L3	CO3

		(OR)			
7.	a)	Analyze the importance of RNA secondary structure in post-transcriptional regulation. (Analyzing - Level 4).	8 Marks	L4	CO3
	b)	Compare and contrast the structure prediction methods for RNA. (Analyzing - Level 4).	8 Marks	L4	CO3
		MODULE-IV			
8.	a)	Explain the process of tertiary structure prediction in proteins.	8 Marks	L2	CO4
	b)	Evaluate the impact of protein structure prediction on drug discovery and design.	8 Marks	L5	CO4
		(OR)			
9.	a)	Discuss the challenges involved in protein structure prediction.	8 Marks	L3	CO4
	b)	Compare and contrast homology modeling and ab initio protein structure prediction methods. (Analyzing).	8 Marks	L4	CO4
		MODULE-V			
10.	a)	Describe the process of sequence alignment and its importance in bioinformatics.	8 Marks	L2	CO4
	b)	Compare and contrast dynamic programming-based alignment methods with heuristic approaches.	8 Marks	L3	CO4
		(OR)			
11.	a)	Provide an overview of the Needleman-Wunsch algorithm for global sequence alignment.	8 Marks	L2	CO4
	b)	Discuss the concept of scoring systems and their importance in sequence alignment.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

IMMUNOLOGY AND IMMUNO-TECHNOLOGY

[Biotechnology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out the difference between RBC and WBC.	2 Marks	L1	CO1
	b)	Define hematopoietic stem cells.	2 Marks	L1	CO1
	c)	What is Immunoglobulin.	2 Marks	L1	CO2
	d)	Define Endogenous antigens.	2 Marks	L1	CO2
	e)	List out any two autoimmune disorders.	2 Marks	L1	CO3
	f)	What is immunotherapy.	2 Marks	L1	CO3
	g)	List out two examples of DNA vaccines.	2 Marks	L1	CO4
	h)	What are the recombinant proteins.	2 Marks	L1	CO4
	i)	Write the name of the antigen-antibody reaction used for the identification of the blood group.	2 Marks	L1	CO5
	j)	Define Hemagglutination.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	The lymphoid system is comprised of primary and secondary lymphoid organs, Compare the processes which occur in the development and maturation of immune cells.	8 Marks	L2	CO1
	b)	Compare the role of innate and adaptive immunity against pathogens.	8 Marks	L2	CO1
		(OR)			
3.	a)	Outline various cells of the immune system that are involved in the recognition and killing of antigens.	8 Marks	L2	CO1
	b)	Differentiate the role of primary and secondary lymphoid organs in the development of T and B cells.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the classical and alternative pathways of complement activation.	8 Marks	L2	CO2
	b)	Summarize the properties, structure, and types of antigens.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the roles of the antibody classes in the recognition and killing of antigens.	8 Marks	L2	CO2
	b)	Compare the role of class I and class II MHC peptide interactions towards T cells.	8 Marks	L2	CO2

MODULE-III

6.	a)	Enlist and elaborate on various hypersensitivity reactions according to the timeline of symptom's appearance.	8 Marks	L2	CO3
	b)	Explain the targeted immunotherapy for Autoimmune Disease.	8 Marks	L2	CO3
		(OR)			
7.	a)	Outline the B and T cell crosstalk with proper explanation with schematics.	8 Marks	L2	CO3
	b)	Describe the Importance of co-stimulatory molecules involved in B and T cell activation.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain briefly about the generation of an immune response to a vaccine.	8 Marks	L2	CO4
	b)	Explain different types of vaccines against pathogens with schematic representation.	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss in detail the Immunity types with suitable explanations.	8 Marks	L6	CO4
	b)	Explain in detail about monoclonal antibodies and their use in diagnosis.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain in detail the types, principles, and experimental procedures of enzyme-linked immunosorbent assay.	8 Marks	L2	CO5
	b)	Identify and explain an immunoassay that uses radiolabeled molecules in a stepwise formation of immune complexes.	8 Marks	L3	CO5
		(OR)			
11.	a)	Identify and explain a qualitative technique for the characterization of any antibody, in which one antigen mixture is electrophoresed in an agarose gel that allows the separation of its different components based on their charge along the gel slide, followed by the lateral diffusion of the serum or monoclonal antibody within the gel.	8 Marks	L3	CO5
	b)	Elucidate the importance of Kohler and Milstein in development of antibodies.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

TECHNICAL REPORT WRITING

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out various components of technical report.	2 Marks	L1	CO1
	b)	Mention the importance of a 'Title' in report.	2 Marks	L1	CO1
	c)	Write the linkage of objectives to findings in a report.	2 Marks	L1	CO2
	d)	Explain the usage of tables in report writing.	2 Marks	L1	CO2
	e)	What are the rules for citation in a report?	2 Marks	L1	CO3
	f)	Explain different ways of achieving good style of report writing.	2 Marks	L1	CO3
	g)	What would be the suitable format for preparing a report?	2 Marks	L1	CO4
	h)	Explain different ways of achieving a good style of report.	2 Marks	L1	CO4
	i)	Discuss the appropriate pointing in presentation.	2 Marks	L1	CO5
	j)	Usage of review in presentation.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define report. Explain different types of reports.	8 Marks	L1	CO1
	b)	Explain, what are different varieties of reports generated in organization?	8 Marks	L1	CO1
		(OR)			
3.	a)	Mention the significance of all components in writing of a report.	8 Marks	L1	CO1
	b)	Explain the title selection and its significance of report.	8 Marks	L1	CO1

MODULE-II

4.	a)	Write the materials and methods in report processing.	8 Marks	L1	CO2
	b)	Discuss the preparation of tables and their usage in report writing.	8 Marks	L3	CO2
		(OR)			
5.	a)	Discuss various essential features of discussion.	8 Marks	L3	CO2
	b)	How would you prepare skeletal framework for a report? Explain.	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe proposal writing in detail while preparation of a report.	8 Marks	L3	CO3
	b)	Discuss the structure of a report in detail.	8 Marks	L3	CO3
		(OR)			
7.	a)	Elaborate the concept of research development through publication.	8 Marks	L2	CO3
	b)	Explain the concept references in report preparation.	8 Marks	L1	CO3

MODULE-IV

8.	a)	List out various reasons for literature citations. Explain.	8 Marks	L1	CO4
	b)	Describe bibliographical data according to ISO standards.	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the importance of desktop publishing systems.	8 Marks	L3	CO4
	b)	Define typographic and cross- references.	8 Marks	L1	CO4

MODULE-V

10.	a)	Define pointing. Explain the need and significance of pointing.	8 Marks	L1	CO5
	b)	Discuss the significance of intermediate questioning in report finalization.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the concept of analysis for statistical inferences in report.	8 Marks	L1	CO5
	b)	Elucidate the preparation of report with formal presentation.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2024

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the difference between Plain text and Cipher Text?	2 Marks	L1	CO1
	b)	Explain the concept of security services in ensuring the integrity, confidentiality, and availability of data.	2 Marks	L1	CO1
	c)	Explain substitution techniques used in cryptography	2 Marks	L1	CO2
	d)	How Cipher Block Chaining (CBC) mode operates in block ciphers.	2 Marks	L2	CO2
	e)	Describe the role of RSA algorithm in public key cryptography.	2 Marks	L2	CO3
	f)	Explain the concept of hash functions and their role in ensuring data integrity.	2 Marks	L1	CO3
	g)	Describe the methods for distributing public keys in a secure manner.	2 Marks	L2	CO4
	h)	Describe the Kerberos protocol and its role in user authentication.	2 Marks	L1	CO4
	i)	Name some considerations for ensuring web security.	2 Marks	L1	CO5
	j)	Explain the significance of HTTPS in web security.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are the fundamental computer security concepts, and how do they contribute to protecting systems and data from unauthorized access and malicious activities?	8 Marks	L1	CO1
	b)	What is the model for network security, and how does it provide a structured approach to identifying and addressing security threats in network environments?	8 Marks	L1	CO1
		(OR)			
3.	a)	What is the symmetric cipher model? How does it work to ensure secure communication by using a shared secret key for both encryption and decryption?	8 Marks	L2	CO1
	b)	What are polyalphabetic ciphers, and how do they utilize multiple alphabets to provide stronger encryption and resist frequency analysis attacks?	8 Marks	L1	CO1

MODULE-II

4.	a)	What are the differences between stream ciphers and block ciphers? How do they operate to provide secure encryption?	8 Marks	L2	CO2
	b)	What are the key considerations and trade-offs when selecting and using different modes of operation for block ciphers?	8 Marks	L1	CO2
		(OR)			
5.	a)	What is the Advanced Encryption Standard (AES), and why is it considered a stronger alternative to DES? How does AES differ in	8 Marks	L1	CO2

terms of key size and the number of rounds?

	b)	Describe the Counter (CTR) mode of operation. How it converts a block cipher into a stream cipher and its use of a counter to generate a unique keystream for each plaintext block?	8 Marks	L2	CO2

MODULE-III

6.	a)	What is the Diffie-Hellman key exchange protocol, and how does it enable two parties to establish a shared secret key over an insecure channel without prior communication or the need for a trusted third party?	8 Marks	L2	CO3
	b)	What are Message Authentication Codes (MACs), and what are their requirements and functions in ensuring data integrity and authenticity? Explain the process of generating and verifying MACs?	8 Marks	L1	CO3

(OR)

7.	a)	What are hash functions, and how do they generate fixed-size hash values from variable-length input data? Explain the concept of simple hash functions and their limitations in terms of collision resistance?	8 Marks	L2	CO3
	b)	How do the security properties and strengths of these cryptographic mechanisms contribute to ensuring the confidentiality, integrity, and authenticity of data in various applications and communication protocols?	8 Marks	L3	CO3

MODULE-IV

8.	a)	What is the distribution of public keys, and how is it different from symmetric key distribution? Can you explain the concept of public key directories and how they facilitate the dissemination of public keys?	8 Marks	L2	CO4
	b)	Explain the principles of remote user authentication, including the challenges and methods for securely verifying the identity of remote users in a networked environment?	8 Marks	L1	CO4

(OR)

9.	a)	Provide an overview of X.509 certificates and their role in public key infrastructure (PKI)? How do X.509 certificates ensure the authenticity and integrity of public keys?	8 Marks	L3	CO4
	b)	Describe personal identity verification (PIV) and its role in user authentication? How does PIV use cryptographic credentials, such as smart cards or tokens, to verify and authenticate the identity of individuals?	8 Marks	L2	CO4

MODULE-V

10.	a)	Provide an overview of S/MIME (Secure/Multipurpose Internet Mail Extensions) and its role in securing electronic mail communication? How does S/MIME provide encryption, authentication, and message integrity for email messages?	8 Marks	L3	CO5
	b)	What is Pretty Good Privacy (PGP), and how does it enhance email security through encryption and digital signatures? Explain the process of encrypting and decrypting email messages using PGP?	8 Marks	L1	CO5

(OR)

11.	a)	How are security policies defined and enforced in IPSec to determine the level of protection and authentication required for IP packets?	8 Marks	L2	CO5
	b)	What is DNSSEC (Domain Name System Security Extensions), and how does it address security vulnerabilities in the DNS infrastructure? Explain the concept of digitally signing DNS records and how DNSSEC ensures data integrity and authenticity?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

DISCRETE MATHEMATICS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define conditional statement for statements A and B, and write its truth table.	2 Marks	L1	CO1
	b)	Write down the negation of the following statement: "All integers are rational numbers, and some rational numbers are not integers."	2 Marks	L2	CO1
	c)	Define Poset and give one example.	2 Marks	L1	CO2
	d)	Find the value of the expression $(1.1)+(\overline{0.1}+0)$.	2 Marks	L1	CO2
	e)	Define order of an element of a group and find the order of the element 2 in the group $H=\{0,1,2,3.4.5\}$ $under$ $+_6$.	2 Marks	L1	CO3
	f)	State Fermat's theorem.	2 Marks	L1	CO3
	g)	What is the generating function for the sequence 1,1,1… and write its closed form.	2 Marks	L2	CO4
	h)	Solve the recurrence relation $f_n = 5f_{n-1} - 6f_{n-2}$.	2 Marks	L2	CO4
	i)	Define regular graph and give one example.	2 Marks	L1	CO5
	j)	Define spanning tree.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Without using the truth tables, find the PDNF of $p\rightarrow[(p\rightarrow q)\wedge\sim(\sim q\vee\sim p)]$.	8 Marks	L2	CO1
	b)	For propositions p,q,r prove that $[p\rightarrow(q\rightarrow r)]\rightarrow[(p\rightarrow q)\rightarrow(p\rightarrow r)]$ is a tautology.	8 Marks	L3	CO1
		(OR)			
3.	a)	Prove that $(\sim p\wedge(\sim q\wedge r))\vee(q\wedge r)\vee(p\wedge r)\Leftrightarrow r$.	8 Marks	L3	CO1
	b)	"If there was a ball game, then traveling was difficult. If they arrived on time, traveling was not difficult. They arrived on time. Therefore, there was no ball game." Show that these statements constitute a valid argument.	8 Marks	L2	CO1

MODULE-II

4.	a)	Draw the Hasse diagram for divisibility on the set {1,2,3,6,12,24,36,48}.	8 Marks	L2	CO2
	b)	Show that (Z,=) is a poset.	8 Marks	L3	CO2

(OR)

5.	a)	Find the sum-of-products expansion of the Boolean functions i) $F(x,y,z) = (x+z)y$ ii) $F(x,y,z) = x\bar{y}$	8 Marks	L3	CO2
	b)	Use a K-map to find a minimal expansion as a Boolean sum of Boolean products of the following function in the variables *w,x,y,z.* $wx\bar{y}\bar{z} + w\bar{x}yz + w\bar{x}y\bar{z} + w\bar{x}\,\bar{y}\,\bar{z} + \bar{w}\,x\,\bar{y}\,\bar{z} + \bar{w}\,x\,\bar{y}\,\bar{z} + \bar{w}\,\bar{x}\,\bar{y}\,\bar{z}$.	8 Marks	L2	CO2

MODULE-III

6.	a)	Show that $G = \begin{bmatrix} x & x \\ x & x \end{bmatrix}$, the set of all singular matrices is a group under matrix multiplication where $x \neq 0$.	8 Marks	L3	CO3
	b)	Prove that $G = \{1,2,3,4,5,6\}$ is a finite abelian group of order 6 with respect to X_7.	8 Marks	L3	CO3

(OR)

7.	a)	Prove that $n^5 - n$ is divisible by 30.	8 Marks	L3	CO3
	b)	Find the G.C.D. of 275 and 200 and express it in the form *275x+200y.*	8 Marks	L3	CO3

MODULE-IV

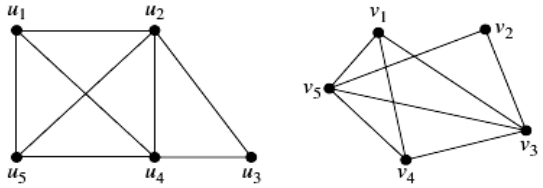
8.	a)	Solve the recurrence relation $f_n = f_{n-1} + f_{n-2}; n \geq 2$ with $f_0 = f_1 = 1$.	8 Marks	L3	CO4
	b)	Solve the recurrence relation $a_n = a_{n-1} + \frac{1}{n(n+1)}; a_0 = 1$ by the method of substitution.	8 Marks	L3	CO4

(OR)

9.	a)	Solve the recurrence relation $f_n = 7f_{n-1} - 10f_{n-2}$ with $f_0 = 8$ and $f_1 = 36$.	8 Marks	L3	CO4
	b)	Use generating functions to solve the recurrence relation $a_k = 7a_{k-1}$ with the initial condition $a_0 = 5$.	8 Marks	L3	CO4

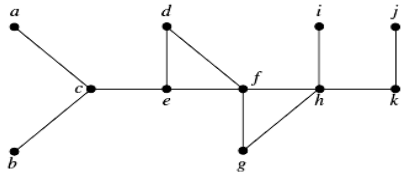
MODULE-V

10.	a)	Prove that the number of vertices of odd degree in a graph is always even.	8 Marks	L3	CO5
	b)	Examine whether the following graphs are isomorphic or not.	8 Marks	L3	CO5



(OR)

11.	a)	If G is a connected graph with n vertices and (n-1) edges, then show that G is a tree.	8 Marks	L2	CO5
	b)	Use depth-first search to find a spanning tree for the graph H shown in the following figure:	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

DATA WAREHOUSING AND DATA MINING

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Data ware housing.	2 Marks	L2	CO1
	b)	List out the operations of OLAP.	2 Marks	L2	CO1
	c)	Differentiate between loose coupling and tight coupling.	2 Marks	L4	CO2
	d)	Define discretization?	2 Marks	L4	CO2
	e)	Give a note on Closed Frequent Item Set.	2 Marks	L4	CO3
	f)	Write the purpose of Apriori algorithm.	2 Marks	L2	CO3
	g)	What is agglomerative clustering?	2 Marks	L1	CO4
	h)	Write the strengths of hierarchical clustering.	2 Marks	L2	CO4
	i)	What is web data mining?	2 Marks	L1	CO5
	j)	What is complex data type?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the star and snowflake schema in detail with suitable example.	8 Marks	L3	CO1
	b)	What are the various components of data warehouse? Explain their functionality in detail.	8 Marks	L1	CO1

(OR)

3.	a)	What is the significance of OLAP in data warehouse? Describe OLAP operations with necessary diagram/example.	8 Marks	L1	CO1
	b)	Write the difference between designing a data warehouse and an OLAP cube.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain different data mining tasks for knowledge discovery.	8 Marks	L2	CO2
	b)	Explain the various Data pre-processing techniques. How data reduction helps in data pre-processing.	8 Marks	L2	CO2

(OR)

5.	a)	Discuss briefly about data cleaning techniques.	8 Marks	L3	CO2
	b)	Explain major issues in data mining?	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain decision tree induction algorithm for classifying data tuples and discuss suitable example.	8 Marks	L2	CO3
	b)	Describe the data classification process with a neat diagram. How does the Naive Bayesian classification work? Explain.	8 Marks	L3	CO3

		(OR)			
7.	a)	Explain the procedure to mining closed frequent data item sets.	8 Marks	L2	CO3
	b)	What is Linear regression, explain with an example?	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Explain about statistical information grid in data mining in details. Give its advantages.	8 Marks	L2	CO4
	b)	What is density-based clustering and explain its methods in detail.	8 Marks	L1	CO4
		(OR)			
9.	a)	Write K-means clustering algorithm?	8 Marks	L2	CO4
	b)	What is outlier detection? Explain distance-based outlier detection.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	What are different types of data in data mining in detail.	8 Marks	L1	CO5
	b)	What is spatial data mining and its types?	8 Marks	L1	CO5
		(OR)			
11.	a)	What are the applications of data mining?	8 Marks	L1	CO5
	b)	Explain about intrusion detection with an example?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2024

INTRODUCTION TO MECHINE LEARNING

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define machine learning. State the primary goal of machine learning.	2 Marks	L1	CO1
	b)	Explain the difference between supervised & unsupervised learning.	2 Marks	L2	CO1
	c)	What is feature transformation in machine learning?	2 Marks	L1	CO1
	d)	Name two common metrics used to evaluate the performance of a classification model.	2 Marks	L1	CO1
	e)	Discuss the concept of the margin in SVM.	2 Marks	L2	CO2
	f)	Describe the structure of a decision tree.	2 Marks	L2	CO2
	g)	Explain the importance of machine learning in various fields.	2 Marks	L2	CO1
	h)	Describe the two types of clustering techniques.	2 Marks	L2	CO1
	i)	Describe neural network representations.	2 Marks	L2	CO2
	j)	What is a perceptron?	2 Marks	L1	CO2

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Compare Supervised, Unsupervised, and Reinforcement Learning.	8 Marks	L2	CO4
	b)	Discuss the applications of Machine Learning in detail.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the concepts of i. Learning under expert guidance. ii. Learning guided by knowledge gained from experts. iii. Learning by self.	8 Marks	L1	CO1
	b)	What is Machine Learning? Elaborate the types of Machine Learning.	8 Marks	L2	CO1

MODULE-II

4.		Discuss the below concepts in detail each i. Underfitting ii. Overfitting iii. Bias-Variance trade-off	16 Marks	L2	CO2
		(OR)			
5.		What are Feature and Feature Engineering? Discuss about the below in brief each i. Feature Transformation, and ii. Feature Subset Selection.	16 Marks	L2	CO2

	MODULE-III			
6.	What is Supervised Learning? Explain the types of Supervised Learning each in detail with examples. Mention some common algorithms used for both Classification and Regression.	16 Marks	L3	CO3
	(OR)			
7.	Explain the below algorithms each in detail i. Decision Tree Algorithm ii. Random Forest Algorithm	16 Marks	L3	CO3
	MODULE-IV			
8.	Discuss about K-Medoids algorithm in detail.	16 Marks	L3	CO3
	(OR)			
9.	Explain about Hierarchical Clustering technique with an example.	16 Marks	L3	CO3
	MODULE-V			
10.	What are the basic types of neural network representations? How do neural network representations differ from each other?	16 Marks	L4	CO4
	(OR)			
11.	Discuss about the concept of perceptron. How does a perceptron work?	16 Marks	L3	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations May – 2024

DATABASE MANAGEMENT SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List the advantages of DBMS.	2 Marks	L1	CO1
	b)	Show the ER Notation of weak Entity.	2 Marks	L1	CO1
	c)	Define Foreign key.	2 Marks	L1	CO3
	d)	List out the ACID properties of a transaction.	2 Marks	L1	CO5
	e)	Compare Undo and redo operations.	2 Marks	L1	CO4
	f)	State the role of Data Dictionary.	2 Marks	L1	CO1
	g)	What is a Domain Constraint.	2 Marks	L1	CO2
	h)	Illustrate the role of Views in SQL.	2 Marks	L1	CO3
	i)	Summarize the problems caused by Data redundancy?	2 Marks	L1	CO2
	j)	Explain De-normalization.	2 Marks	L1	CO3

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Model the Three Scheme Architecture of a Database.	8 Marks	L2	CO1
	b)	Make use of the following set of requirements related to a Bank database that keeps track of its Customers and Draw and ER diagram representing the Entities , relationships and structural constraints. i. Each bank has a unique name. ii. Each branch has a number, name, address (number, street, city), and set of phones. iii. Customer includes their name, set of address (P.O. Box, city, zip code, country), set of phones, and social security number. iv. Accounts have numbers, types (e.g. saving, checking) and balance. Other branches might use the same designation for accounts. So to name an account uniquely, we need to give both the branch number to which this account belongs to and the account number. v. A customer may have at most 2 accounts in the bank. vi. An account must have only one customer. vii. A customer may have many accounts in different branches.	8 Marks	L3	CO1

(OR)

3.	a)	Examine the importance of Logical data Independence with Physical data Independence in database architectural design.	8 Marks	L3	CO1

	b)	Outline the ER representation of a derived attribute, multi valued and composite attributes with a suitable examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Interpret the importance of various keys in DBMS.	8 Marks	L2	CO2
	b)	Compare and Contrast Entity integrity constraint with Referential Integrity constraint.	8 Marks	L2	CO2

(OR)

5.	a)	Make use of the following relation schema Sailors (sid: integer, sname: string, rating: integer, age: real) Boats (bid: integer, bname: string, color: string) Reserves (sid: integer, bid: integer, day: date) and Model Relational Algebra Expressions for the following i. Display all the sailors whose age is >35. ii. Display all red colored boats iii. Display sailor name and the Boat name(s) reserved by him iv. Display all Sailors name and his age	8 Marks	L3	CO2
	b)	Illustrate the usage of SELECT, PROJECT ,JOIN operations in Relational algebra.	8 Marks	L2	CO2

MODULE-III

6.	a)	Illustrate the usage of group by ,having & Order By clauses in SQL.	8 Marks	L2	CO3
	b)	Apply SQL DDL and DML Statements to create the following tables using suitable data types and constraints as specified below. Manufacturer (ID, Name) ; [Primary Key : ID] Products(PID, PName, MID, Price) ; [Primary Key : ProductID , ForeignKey: MID→Manufacturer(ID)] Insert at least 3 records into the above tables.	8 Marks	L4	CO3

(OR)

7.	a)	Develop SQL Queries for the following using the table (Book) below.	8 Marks	L3	CO3

Book

title	isbn	cost	authorName	publisherName
Swimming	2356	2.00	Smith	BudgetBooks
Cricket	4414	18.50	Davies	Universal
Physics	1098	29.99	Chan	TechBooks
Databases	1045	34.99	Patel	TechBooks
Athletics	4425	17.50	Smith	BudgetBooks

i. Display all the Books written by “Smith”.
ii. Display all the Books whose cost is greater than Rs.20.00
iii. Update the Cost of Book –“ Physics” from 29.99 to 36.75
iv. Delete the Books published by “Physics”

	b)	Illustrate the usage of PL/SQL Procedure & PL/SQL Function using a suitable example.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Why do we need normalization? List out its Advantages.	8 Marks	L2	CO4
	b)	Choose any relation with required attributes of your choice and demonstrate that the relations is having insertion, deletion and modification anomalies.	8 Marks	L3	CO4

(OR)

9.	a)	Justify how a Relation in BCNF is also in 3NF with an example.	8 Marks	L2	CO4
	b)	Summarize the causes for transaction failure.	8 Marks	L2	CO4

MODULE-V

10.	a)	Develop a pseudocode that performs the following operations in a transaction. i. READ_LOCK(X) ii. WRITE_LOCK(X)	8 Marks	L4	CO5
	b)	Summarize the characteristics of i. Hash based indexing . ii. Tree based Indexing.	8 Marks	L2	CO5

(OR)

11.	a)	Examine the features of the following time stamp algorithms. i. Basic Time stamp ordering. ii. Strict time stamp ordering.	8 Marks	L3	CO5
	b)	Select a set of transactions T1 and T2 of your choice and build a wait-for graph of the transactions that detects a deadlock.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May– 2024

SOFTWARE ENGINEERING

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out different types of Agile Methodology.	2 Marks	L2	CO1
	b)	List any two advantages and disadvantages of Agile Process	2 Marks	L1	CO1
	c)	Define a term Software Requirements Specification.	2 Marks	L2	CO2
	d)	Define functional requirement.	2 Marks	L1	CO2
	e)	Describe Software Design.	2 Marks	L1	CO3
	f)	What is meant by a level-0 Data Flow Diagram?	2 Marks	L2	CO3
	g)	Define terms: Verification and Validation	2 Marks	L1	CO4
	h)	Explain BPR model.	2 Marks	L2	CO4
	i)	Define a term LOC.	2 Marks	L1	CO5
	j)	Describe basic use of COCOMO.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Differentiate sprint backlog and product backlog.	8 Marks	L2	CO1
	b)	Differentiate Agile methodology and Traditional methodology of Software Development.	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe Agile Manifesto? What are its values and principles.	8 Marks	L2	CO1
	b)	Name three main Agile frame works other than Scrum for product development. Briefly explain.	8 Marks	L4	CO1

MODULE-II

4.	a)	List out different types of requirements and explain.	8 Marks	L2	CO2
	b)	Define a use case. Draw a use case diagram for Library Management System.	8 Marks	L4	CO2
		(OR)			
5.	a)	List out the problems of requirement analysis or elicitation. Explain?	8 Marks	L2	CO2
	b)	List out phases in Software Requirement Specification Document.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the concepts of user interface design with example.	8 Marks	L2	CO3
	b)	List and explain different architectural styles in software design.	8 Marks	L3	CO3
		(OR)			
7.	a)	Describe the concepts of Design process, Design concepts, Design model.	8 Marks	L3	CO3
	b)	Explain the concept of component level design.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What are the different methods of testing?	8 Marks	L2	CO4
	b)	Differentiate Forward Engineering and Reverse Engineering.	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the process of software reengineering.	8 Marks	L3	CO4
	b)	Describe unit testing.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the use of earned value analysis in software engineering.	8 Marks	L3	CO5
	b)	List and explain the stages in project management.	8 Marks	L2	CO5
		(OR)			
11.	a)	What is RFP risk management in software engineering?	8 Marks	L2	CO5
	b)	How the scheduling can be done while developing software?	8 Marks	L3	CO5

CODE No.: 22MM201004 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write about encryption.	2 Marks	L1	CO1
	b)	Describe the interruption in computer security.	2 Marks	L1	CO1
	c)	Explain Feistel cipher security.	2 Marks	L1	CO2
	d)	List out transformation functions.	2 Marks	L1	CO2
	e)	Define RSA algorithm.	2 Marks	L1	CO3
	f)	List out data integrity algorithms.	2 Marks	L1	CO3
	g)	What are the X.509 certificates in computer security?	2 Marks	L1	CO4
	h)	Explain personal identity verification.	2 Marks	L1	CO4
	i)	What are the web security considerations?	2 Marks	L1	CO5
	j)	Define security pay load in IP security.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	List the Computer Security mechanisms and discuss each mechanism.	8 Marks	L2	CO1
	b)	Construct the Network security model and briefly explain.	8 Marks	L3	CO1

(OR)

3.	a)	With suitable examples, explain the additive and multiplicative ciphers.	9 Marks	L3	CO1
	b)	What are the Polyalphabetic ciphers? Explain with suitable examples.	7 Marks	L1	CO1

MODULE-II

4.	a)	Demonstrate Triple encryption algorithm in detail for security to the data to be transmitted.	8 Marks	L3	CO2
	b)	Explain block cypher operation by taking a suitable example.	8 Marks	L2	CO2

(OR)

5.	a)	Illustrate the use of AES algorithm to generate encryption and decryption keys in cryptography.	8 Marks	L3	CO2
	b)	Explain the Cipher block chaining mode with a neat diagram.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write about the exponential key agreement process for public key generation.	8 Marks	L1	CO3
	b)	Identify the list of hash functions and explain each function with example.	8 Marks	L3	CO3

(OR)

7.	a)	What is secure hash algorithm? Explain in detail with example.	8 Marks	L1	CO3
	b)	With suitable examples, Explain Message Authentication Code in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	How to distribute the public keys? Explain key distribution process in detail.	8 Marks	L1	CO4
	b)	Explain the public key infrastructure in detail with a neat sketch.	8 Marks	L2	CO4

(OR)

9.	a)	List out the X.509 certificates for data security and discuss in detail.	8 Marks	L2	CO4
	b)	Write about the user authentication principles in detail with example.	8 Marks	L1	CO4

MODULE-V

10.	a)	Apply the HTTPS Security and explain how it provides cyber security?	8 Marks	L3	CO5
	b)	Explain IP security policy in detail with suitable illustrations.	8 Marks	L2	CO5

(OR)

11.	a)	What is DNSSEC and Why is It important in cyber security? Explain in brief.	8 Marks	L1	CO5
	b)	Identify the list of Network security issues and suggest the suitable solutions.	8 Marks	L3	CO5

CODE No.: 22MM201008 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

DATA WAREHOUSING AND DATA MINING

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Tabulate the differences between Operational Database Systems and Data Warehouses.	2 Marks	L1	CO1
	b)	Define OLAP Data Indexing process.	2 Marks	L1	CO1
	c)	List out the major issues in Data Mining process.	2 Marks	L1	CO2
	d)	What is Data Reduction process in data mining?	2 Marks	L1	CO2
	e)	Write the data mining process From Association Mining to Correlation Analysis.	2 Marks	L1	CO3
	f)	State and explain the Prediction principle in data mining.	2 Marks	L1	CO3
	g)	Define k-Means clustering algorithm in brief.	2 Marks	L1	CO4
	h)	List out the Grid-Based Methods for data clustering and explain.	2 Marks	L1	CO4
	i)	What is Spatial data mining?	2 Marks	L1	CO5
	j)	Describe the Data Mining and Society.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		With a neat sketch, explain the Data Warehouse Architecture in detail.	16 Marks	L3	CO1
		(OR)			
3.	a)	List the OLAP Operations and discuss each operation in detail.	8 Marks	L2	CO1
	b)	Differentiate between Star schema and star flake schemas.	8 Marks	L2	CO1

MODULE-II

4.	a)	Classify the Functionalities of Data Mining in detail.	8 Marks	L2	CO2
	b)	Sketch the Data Mining process with a neat diagram in detail.	8 Marks	L3	CO2
		(OR)			
5	a	Explain Data cleaning and integration techniques with sample data.	8 Marks	L2	CO2
	b	Define the Data reduction and transformation techniques with sample data.	8 Marks	L1	CO2

MODULE-III

6.	a)	Illustrate the use of Apriori Algorithm with suitable data sets	8 Marks	L3	CO3
	b)	Describe the FP-growth algorithm with suitable data sets.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain in detail about Decision Tree Algorithm for classification	8 Marks	L2	CO3
	b)	Classify the Bayesian Classification Methods and discuss briefly.	8 Marks	L3	CO3

MODULE-IV

8.	a)	List out the Hierarchical methods for clustering. Write about each method in brief.	8 Marks	L2	CO4
	b)	What is Constraint-Based Cluster Analysis? Describe the entire process in detail.	8 Marks	L2	CO4
		(OR)			
9.		Apply the data clustering knowledge and detect the Outliers using various techniques.	16 Marks	L3	CO4

MODULE-V

10.	a)	Demonstrate sequence data mining with some sample data sets.	8 Marks	L3	CO5
	b)	Discuss the Mining of Multimedia and Web data with some sample data sets.	8 Marks	L2	CO5
		(OR)			
11.	a)	Demonstrate the Mining process of Complex Data Types in detail.	8 Marks	L3	CO5
	b)	Show the list of Data Mining Applications and write about each one in brief.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Supplementary Examinations, January – 2024

DATABASE MANAGEMENT SYSTEMS

[Computer Science]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the applications of DBMS.	2 Marks	L1	CO1
	b)	Define: i) Weak Entity ii)Relationship set	2 Marks	L1	CO1
	c)	How to create a view?	2 Marks	L1	CO2
	d)	Discuss Integrity constraints.	2 Marks	L2	CO2
	e)	List PL/SQL data types.	2 Marks	L1	CO3
	f)	Define Cursor.	2 Marks	L1	CO3
	g)	Write BCF	2 Marks	L2	CO4
	h)	Define Concurrency.	2 Marks	L1	CO4
	i)	Define deadlock.	2 Marks	L1	CO5
	j)	Define Lock based indexing.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss about different types of data models.	10 Marks	L2	CO1
	b)	Write applications of Database Systems	6 Marks	L2	CO1
		(OR)			
3.		Explain the concept Design and ER modeling,	16 Marks	L2	CO1

MODULE-II

4.		Design a relational database by converting any ER diagram into relational table.	16 Marks	L2	CO2
		(OR)			
5.		a) Discuss correlated nested queries? Understand b) Write a query to find the names of sailors who have reserved a red boat? 10 c) Write a query to find the names of sailors who have not reserved a red boat?	16 Marks	L2	CO2

MODULE-III

6.		Consider the following relational schema Employee (empno,name,office,age) Books(isbn,title,authors,publisher) Loan(empno, isbn,date) **Write** the following queries in relational algebra. a) Find the names of employees who have borrowed a book Published by	16 Marks	L3	CO3

	1 McGraw-Hill? b) Find the names of employees who have borrowed all books Published by McGraw-Hill? c) Find the names of employees who have borrowed more than five different books published by McGraw-Hill? d) For each publisher, find the names of employees who have borrowed?			
	(OR)			
7.	Discuss iterative PL/Sql Control structures.	16 Marks	L2	CO3
	MODULE-IV			
8.	Define normalization? Explain 1NF, 2NF, 3NF Normal forms?	16 Marks	L2	CO3
	(OR)			

9.	Consider the following transactions with data items P and Q initialized to zero:
	read(TQ1):; read(P);
	If P=0 then Q:=Q+1;
	write(Q);
	T2: read(Q);
	read(P);
	If Q=0 then P:=P+1;
	write(P);
	Solve and find any non-serial interleaving of T1 and T2 for concurrent
		16 Marks	L3	CO4

	MODULE-V			
10.	What is Multiple granularity? List its levels. Write about Intention mode lock.	16 Marks	L2	CO5
	(OR)			
11.	What is indexing? Write its advantages. Distinguish between file organizations and indexing.	16 Marks	L2	CO5

CODE No.: 23PH201012 SOP-PHARM.D-23

Reg. No. | | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

I Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, July – 2024

BIOPHARMACEUTICS AND PHARMACOKINETICS

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Why active transport mechanism is called exsorption? Justify this.	5 Marks	L5	CO1
	b)	Write any three theories explaining drug dissolution.	5 Marks	L6	CO1
	c)	Write about simple cell membrane barrier and capillary endothelial barrier for drug distribution.	5 Marks	L5	CO1
	d)	Explain among the physiological barriers which one is considered as strong for drug distribution and why?	5 Marks	L6	CO1
	e)	Describe the methods for analysis of pharmacokinetic data.	5 Marks	L1	CO2
	f)	Discuss in detail the pharmacodynamic parameters.	5 Marks	L1	CO2
	g)	Prove mathematically that when an i.v. loading dose is followed immediately by a constant rate infusion, the plasma concentration remains steady as long as the infusion is continued.	5 Marks	L4	CO2
	h)	Under what circumstances is the value of Ka computed from method of residuals incorrect? What are the merits and demerits of Wagner-Nelson method in computing Ka?	5 Marks	L5	CO2
	i)	What are the limitations of using oral solution as a standard for determining absolute bioavailability?	5 Marks	L2	CO3
	j)	Discuss the merits and demerits of using healthy subjects and patients as volunteers for bioavailability studies.	5 Marks	L1	CO3

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.	a)	Which plot is used for estimation of K_m and V_{max} at steady-state concentrations of a drug given at different dosing rates .	5 Marks	L1	CO2
	b)	Write About the graphical methods to compute K_m and V_{max}	10 Marks	L6	CO2
3.		How do you estimate pharmacokinetic parameters of a drug following two compartment kinetics administered by I.V.bolus route.	15 Marks	L2	CO2
4.		Write the method of determination of K_a by method of residuals with its advantages and disadvantages.	15 Marks	L6	CO2
5.	a)	What are the physicochemical properties influencing drug absorption?	13 Marks	L1	CO1
	b)	Define the terms absorption and intrinsic solubility .	2 Marks	L1	CO1

CODE No.: 23PP201005 SOP-PHARM.D-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

I Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, July – 2024

BIOSTATISTICS AND RESEARCH METHODOLOGY

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Explain in detail the clinical trail design. Classify its designs.	5 Marks	L1	CO1
	b)	Describe how a sample size determined for sample comparative experiments.	5 Marks	L1	CO1
	c)	Explain confidence interval.	5 Marks	L1	CO3
	d)	Explain two types of errors.	5 Marks	L1	CO3
	e)	Explain the criteria for good estimator.	5 Marks	L1	CO3
	f)	Give the merits and demerits of Median.	5 Marks	L1	CO3
	g)	Explain standard error.	5 Marks	L1	CO3
	h)	Give procedure of constructing pie diagram.	5 Marks	L1	CO3
	i)	Define Alternate hypothesis, Power of the test.	5 Marks	L1	CO3
	j)	Explain the role of computers in patient medication profile.	5 Marks	L1	CO4

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.	a)	Define correlation and regression. What are the different measures of correlation? Explain Pearson's correlation.	7 Marks	L2	CO3
	b)	Discuss different types of observational clinical studies.	8 Marks	L2	CO1
3.	a)	In an Experiment different concentration of plant cytokine were applied to the leaves and the emergence of roots were tested. The following results were obtained. Number of roots emerged under different concentration of cytokine (ppm).	15 Marks	L3	CO3

Replicates	0	5	10	15
1	4	6	5	8
2	3	6	5	7
3	2	4	6	8
4	3	2	7	6
5	3	5	6	8

Apply ANOVA to test whether the different concentration have any effect on root emergence given F 0.01 (3, 16) =5.3.

4.	a)	Explain the importance of control group in clinical study	8 Marks	L2	CO1
	b)	Calculate standard deviation from the following data	7 Marks	L3	CO3

X	5	10	15	20	25	30	35	40
F	6	10	12	16	20	16	12	8

5.	a)	Calculate Correlation coefficient for the following data:								8 Marks	L3	CO3
		x : 10	8	7	6	5	4	3	2			
		y : 9	5	7	4	2	3	3	8			
	b)	Write a note on computer applications in prescription dispensing process.								7 Marks	L2	CO4

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CODE No.: 23PP201005 SOP-PHARM.D-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

I Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, July – 2024

PHARMACOTHERAPEUTICS-III

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Write the etiology, pathophysiology and prevention of Hepatitis C.	5 Marks	L1	CO1
	b)	Explain the pathogenesis and pathophysiology of stroke.	5 Marks	L2	CO1
	c)	Outline the pathophysiology and clinical manifestations of generalized anxiety disorder.	5 Marks	L2	CO1
	d)	Discuss the pharmacotherapy of H.pylori induced peptic ulcer.	5 Marks	L3	CO2
	e)	Extend a note on pharmacotherapy of iron deficiency anaemia.	5 Marks	L3	CO2
	f)	List out the pharmacotherapeutic approaches in status epilepticus management.	5 Marks	L4	CO3
	g)	Justify the role of NSAIDS in acute pain management.	5 Marks	L5	CO3
	h)	Write a short note on neuralgia management.	5 Marks	L2	CO2
	i)	Prioritize the role of sleep hygiene practice and stimulus control in insomnia management.	5 Marks	L5	CO2
	j)	Elaborate a note on drug of choice and treatment approaches in gastroesophageal reflux disease management.	5 Marks	L6	CO3

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.	a)	Discuss the mechanism and pattern of injury of drug induced liver diseases.	8 Marks	L3	CO1
	b)	Write the etiopathogenesis, clinical manifestations and diagnosis of deep vein thrombosis.	7 Marks	L1	CO1
3.	a)	Summerize the goals of therapy, non-pharmacological therapy and algorithm of alcoholic liver disease.	8 Marks	L3	CO2
	b)	Give a summary on desired outcomes, approaches and management of alzheimer's disease.	7 Marks	L2	CO2
4.	a)	Make a detail presentation on pharmacotherapy and evaluation of therapeutic outcomes in schizophrenia.	8 Marks	L4	CO3
	b)	Appraise the therapeutic approaches and algorithm of major depressive disorder.	7 Marks	L5	CO3
5.	a)	Describe the differential diagnosis of ulcerative colitis and crohn's disease.	5 Marks	L4	CO1
	b)	Write the definition and steps of evidence based medicine and add a note on role of pharmacist in promoting evidence based medicine.	10 Marks	L2	CO4

CODE No.: 23PP201006 SOP-PHARM.D-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

I Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, July – 2024

HOSPITAL PHARMACY

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Write about EOQ.	5 Marks	L6	CO3
	b)	List out the contents of news letter with 2 lines about each.	5 Marks	L2	CO2
	c)	Write the objectives of hospital pharmacy.	5 Marks	L6	CO1
	d)	List out external teaching programs that can be undertaken by a hospital pharmacist.	5 Marks	L2	CO5
	e)	What is lead time?	5 Marks	L1	CO3
	f)	Write the benefits of therapeutic guidelines.	5 Marks	L1	CO2
	g)	Explain about sealing of ampoules.	5 Marks	L1	CO4
	h)	What are objectives of CPD programme?	5 Marks	L2	CO5
	i)	Define budget and write about income sources.	5 Marks	L1	CO1
	j)	Define clean room.	5 Marks	L1	CO4

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.		Discuss the role of PTC in i) Emergency Drugs. ii) drug Safety. iii) defect reporting Program. iv) automatic stop order. v) Infection committee.	15 Marks	L2	CO2
3.	a)	Describe the criteria for distribution of drugs to emergency wards and to operation theatre .	7 Marks	L1	CO3
	b)	Briefly explain about the procedure involved in distribution of controlled drugs in hospital .	8 Marks	L1	CO3
4.	a)	Explain about location and layout of a typical hospital pharmacy.	7 Marks	L1	CO1
	b)	Write about staff requirement and their qualification for hospital pharmacy.	8 Marks	L6	CO1
5.	a)	What are radiopharmaceuticals, give the therapeutic and diagnostic applications of radiopharmaceuticals.	8 Marks	L1	CO4
	b)	Describe radio isotope generator.	7 Marks	L1	CO4

CODE No.: 23PP201007 SOP-PHARM.D-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

I Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, July – 2024

CLINICAL PHARMACY

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Explain Patient related outcomes in Pharmaceutical Care.	5 Marks	L2	CO7
	b)	Explain the various types of Communications in hospital setup.	5 Marks	L2	CO6
	c)	Draw the layout of DIC and Mention the various functions of DIC.	5 Marks	L6	CO4
	d)	Write Scope of Clinical Pharmacy in India and history of clinical pharmacy.	5 Marks	L6	CO1
	e)	Write the Role of pharmacist in management of Medication error.	5 Marks	L6	CO8
	f)	What is the significance of test for Creatinine Kinase and their normal values?	5 Marks	L1	CO3
	g)	Write the Components of Patient case History.	5 Marks	L6	CO2
	h)	Write about Resources For Pharmacovigilace Centers.	5 Marks	L6	CO5
	i)	Define the following: i) Cellulitis ii) Dysplasia	5 Marks	L6	CO2
	j)	Write the goals of DUE in hospital setup explain typical DUE cycle in detail.	5 Marks	L6	CO1

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.		Write about common mistakes in oral presentation.	15 Marks	L6	CO6
3.	a)	What are the factors that influencing the medication errors?	9 Marks	L2	CO8
	b)	Describe the causes of medication error.	6 Marks	L1	CO8
4.	a)	Discuss the steps involved in Patient Counselling.	5 Marks	L2	CO1
	b)	Explain the roles and responsibilities of clinical pharmacist in clinical Review.	10 Marks	L2	CO1
5.		Write the pharmaceutical problems categories and explain them along with examples.	15 Marks	L6	CO7

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

I Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, July – 2024

CLINICAL TOXICOLOGY

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Describe the clinical application of antidotes in managing poisoning cases. Provide two examples of specific antidotes and the toxins they counteract.	5 Marks	L1	CO1
	b)	Explain the concept of supportive care in clinical toxicology and provide two examples of supportive care interventions.	5 Marks	L1	CO1
	c)	Analyze the similarities and differences in the clinical manifestations and treatment strategies for poisoning with paracetamol and salicylates.	5 Marks	L4	CO2
	d)	Describe three common types of mushrooms known to cause poisoning in humans.	5 Marks	L1	CO4
	e)	Evaluate the effectiveness of chelation therapy in the management of chronic copper poisoning. Discuss the rationale behind using chelating agents and potential adverse effects.	5 Marks	L5	CO3
	f)	Solve a scenario of a patient presenting with symptoms of alcohol poisoning, outline the immediate management steps to be taken in the emergency department.	5 Marks	L3	CO2
	g)	Describe three clinical symptoms commonly associated with acute pesticide poisoning, specifying the types of pesticides involved in each symptom.	5 Marks	L1	CO2
	h)	Evaluate the potential complications of delayed treatment in snakebite injuries, considering factors such as tissue necrosis, systemic toxicity, and long-term disability.	5 Marks	L5	CO4
	i)	Explain the mechanisms of toxicity of mycotoxins produced by fungi and their effects on human health.	5 Marks	L1	CO4
	j)	Compare and contrast gut decontamination methods in clinical toxicology, highlighting the advantages and disadvantages of each method.	5 Marks	L2	CO1

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.	a)	Relate a critical analysis of the challenges associated with snakebite management in resource-limited settings, such as rural areas with limited access to healthcare facilities.	10 Marks	L2	CO4
	b)	Discuss strategies for improving outcomes in such settings, including community education and training for healthcare providers.	5 Marks	L2	CO4

3.	a)	Describe a comprehensive list of common plants known to cause poisoning in humans.	5 Marks	L1	CO4
	b)	Include examples of toxic compounds found in each plant species and their clinical effects.	10 Marks	L1	CO4
4.	a)	Using a case-based approach, devise a comprehensive management plan for a patient presenting with acute poisoning from multiple agents, including pesticides, opioids, and hydrocarbons.	5 Marks	L3	CO2
	b)	Consider the prioritization of treatment interventions and potential interactions between the different toxins.	10 Marks	L3	CO2
5.	a)	Contrast a critical analysis of the clinical manifestations and management strategies for acute poisoning with barbiturates and benzodiazepines, focusing on the challenges in diagnosis and treatment.	5 Marks	L4	CO2
	b)	Evaluate the role of specific antidotes and supportive care measures in improving patient outcomes.	10 Marks	L4	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

I Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, July – 2024

Pharmacotherapeutics – I & II

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Explain the electrophysiology of heart.	5 Marks	L2	CO1
	b)	Enlist the various complications associated with the use of oral contraceptives.	5 Marks	L2	CO1
	c)	Differentiate between bacterial and viral conjunctivitis.	5 Marks	L2	CO1
	d)	Summarize the clinical presentation and management of urinary tract infections.	5 Marks	L2	CO1
	e)	Discuss the role of oncogenes and tumor suppressor genes in etiopathogenesis of cancer.	5 Marks	L2	CO1
	f)	Explain the management practice of impetigo.	5 Marks	L2	CO1
	g)	Enlist the various complications associated with the use of oral contraceptives.	5 Marks	L2	CO1
	h)	Discuss the pregnancy category of drugs.	5 Marks	L2	CO3
	i)	Summarize the management of malaria.	5 Marks	L2	CO1
	j)	Discuss toxicities of chemo-therapeutic agents.	5 Marks	L2	CO1

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.	Explain the pathophysiology, symptoms, treatment goals and treatment of diabetes mellitus with oral drugs.	15 Marks	L2	CO1
3.	Define rational drug use. Explain the role of pharmacist in rational drug use and how rational use of drugs can be promoted in healthcare system.	15 Marks	L2	CO3
4.	Explain various considerations in design of a Hemodialysis.	15 Marks	L2	CO1
5.	Explain the Pathophysiology, diagnosis and management of Psoriasis	15 Marks	L2	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

INSTRUMENTATION IN OPERATION THEATRE

[Anaesthesia & Operation Theatre Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe Color coding system of medical gas.	2 Marks	L2	CO1
	b)	Define pin index .And give detail of the mixture of gases used.	2 Marks	L1	CO1
	c)	Illustrate pulse oximetry working model.	2 Marks	L3	CO2
	d)	Name the 4 Types of laryngoscope.	2 Marks	L1	CO2
	e)	Demonstrate the procedure for Blood pressure recording.	2 Marks	L3	CO2
	f)	Define WSG. Write down the types of gases used in the process.	2 Marks	L1	CO2
	g)	Summarize The QRS complex with diagram.	2 Marks	L2	Co1
	h)	List out the manual resuscitators that are in a emergency cart.	2 Marks	L3	CO1
	i)	Explain simple mask and its uses.	2 Marks	L2	CO1
	j)	Illustrate ECG wave form. And explain T and U wave.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe about the cryogenic storage of medical gases and its pipeline setup In a ICU.	8 Marks	L2	CO1
	b)	Demonstrate the 5 components of WGS. Give examples of occupational illness.	8 Marks	L3	CO1

(OR)

3.	a)	List out the features of DC and its uses.Describe its role in an emergency management.	8 Marks	L1	CO1
	b)	List out the features of DC and its uses.Describe its role in an emergency management.	8 Marks	L4	CO1

MODULE-II

4.	a)	Categorize the diodes of the pulse oximetry and its uses.	8 Marks	L4	CO2
	b)	Demonstrate the indication and the contraindication of a laryngoscope.	8 Marks	L3	CO2

(OR)

5.	a)	Illustrate basic circle breathing system.	8 Marks	L3	CO2
	b)	List out the procedure for a direct laryngoscope and its complications.	8 Marks	L1	CO2

MODULE-III

6.	a)	Illustrate Hanger and yoke system. Write down its usages.	8 Marks	L4	CO3
	b)	Demonstrate the types and methods of humidifiers	8 Marks	L3	CO3

(OR)

7.	a)	Illustrate the BAINS Circuit. What are the indications of BAINS IN A Emergency?	8 Marks	L3	CO3
	b)	Define capnography its uses indications and contraindication.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Simplify ETCO2 and its measurement in a MV.	8 Marks	L4	CO4
	b)	Demonstrate anesthesia gas monitoring in OT and its scavenging system.	8 Marks	L3	CO4

(OR)

9.	a)	Categories the protocol for Anesthesia depth monitor and its indication.	8 Marks	L3	CO4
	b)	Case study:A 62 years old male smoker, presented with cough and excessive sputum, has C/O dyspnoea, chest tightness. O/E his SpO2 was 85% and his BP was 138/82 mmhg what would be your first line intervention.	8 Marks	L3	CO4

MODULE-V

10.	a)	Demonstrate the procedure for BIO-HAZARD sterilization. What are the precautionary measures taken?	8 Marks	L4	CO5
	b)	Illustrate autoclave and write down its uses.	8 Marks	L3	CO5

(OR)

11.	a)	Present the difference between contamination and decontamination, and write the sterilization method.	8 Marks	L3	CO5
	b)	List out Autoclave sterilization and its types.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

INSTRUMENTATION IN EMERGENCY SERVICES

[Emergency Medical and Critical Care Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Discuss the use of DC.	2 Marks	L2	CO1
	b)	Name the associations for bio medical engineering.	2 Marks	L1	CO1
	c)	Demonstrate the procedure of SpO2,SaO2 and SVO2.	2 Marks	L3	CO2
	d)	Define goals of oxygen therapy.	2 Marks	L1	CO2
	e)	Present the indication for intubation.	2 Marks	L3	CO2
	f)	What are the basic monitors in an ICU.	2 Marks	L1	CO2
	g)	Describe QRS complex.	2 Marks	L2	CO1
	h)	Illustrate laryngoscope.	2 Marks	L3	CO1
	i)	Summarize the types of masks.	2 Marks	L2	CO1
	j)	Application of suction catheter on a icu patient.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Summarize the ventricular fibrillation and atrial fibrillation.	8 Marks	L2	CO1
	b)	Demonstrate the positions of ECG leads on a 12 lead ECG with a diagram.	8 Marks	L3	CO1

(OR)

3.	a)	List out the working principle of a BP apparatus.	8 Marks	L1	CO1
	b)	Analyze laryngoscope and its type. Write down its complications while intubation.	8 Marks	L4	CO1

MODULE-II

4.	a)	Categorize the types of ICU in a multi speciality hospital? Explain.	8 Marks	L4	CO2
	b)	Demonstrate the pipe line system of medical gas.	8 Marks	L3	CO2

(OR)

5.	a)	Present the uses of vacuum in a suction machine.	8 Marks	L3	CO2
	b)	Outline AMBU bag, what are the sizes and volume of an AMBU bag .write down its role in the emergency.	8 Marks	L1	CO2

MODULE-III

6.	a)	Classify PIN index system and associate the use of gases.	8 Marks	L4	CO3
	b)	Determine the human error In a pin index system with example. What are the possible methods would you take to avoid errors.	8 Marks	L3	CO3

(OR)

7.	a)	Predict the system overview of a pin index .	8 Marks	L3	CO3
	b)	Define Hanger yoke system and its uses.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Simplify the measurement of CO2 in a capnometry. give details.	8 Marks	L4	CO4
	b)	Demonstrate the techniques and uses of a MDI inhaler.	8 Marks	L3	CO4

(OR)

9.	a)	Demonstrate the Performance ofHelium dilution and DLCO method of testings.	8 Marks	L3	CO4
	b)	Case study:A 45 years old male heavy smoker, presented with cough and chest tightness O/E his SpO2 was 95% and his BP was 120/80 mmhg what would be your first line intervention.	8 Marks	L1	CO4

MODULE-V

10.	a)	Simplify the procedure for sterilization. What are the precautionary methods during sterilization.	8 Marks	L4	CO5
	b)	Demonstrate working principle of a Hot Air Oven. Write down its role in sterilization.	8 Marks	L3	CO5

(OR)

11.	a)	Illustrate Autoclave write down its working principle.	8 Marks	L3	CO5
	b)	Outline the drying and heating method of sterilization	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

INSTRUMENTATION IN RESPIRATORY TECHNOLOGY

[Respiratory Therapy Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Restate the properties of helium.	2 Marks	L2	CO1
	b)	List the uses of oxygen hood.	2 Marks	L1	CO1
	c)	Illustrate lung and mark it.	2 Marks	L3	CO2
	d)	Define oxygen toxicity.	2 Marks	L1	CO2
	e)	Illustrate Color coding of medical gas.	2 Marks	L3	CO2
	f)	List out medical pipeline system.	2 Marks	L1	CO2
	g)	State lung segments.	2 Marks	L2	CO1
	h)	Present non rebreathing mask and its functions.	2 Marks	L3	CO1
	i)	Write a short note on the principle of pulse oximetry.	2 Marks	L2	CO1
	j)	Application of compressed gas and its uses.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Paraphrase the sizes of medical gas cylinder and its Uses.	8 Marks	L4	CO1
	b)	Illustrate the oropharengeal airway.	8 Marks	L3	CO1

(OR)

3.	a)	Define pipeline system in a hospital .it's storage and its uses.	8 Marks	L3	CO1
	b)	Illustrate the lung airway and its segments.	8 Marks	L1	CO1

MODULE-II

4.	a)	Illustrate AMBU bag and write down its uses.	8 Marks	L4	CO2
	b)	Demonstrate the properties of He and NO and its diagnostic procedures.	8 Marks	L3	CO2

(OR)

5.	a)	Demonstrate the procedure of measuring BP, exhibiting the Normal values in a Non invasive and Invasive ventilation.	8 Marks	L3	CO2
	b)	A patient C/O of excessive cough an chest tightness ,wheezing O/E the spO2 is 90% and BP of 124/80mmhg , what would be your fist line therapy for the patient and why?	8 Marks	L1	CO2

MODULE-III

6.	a)	Categorize the difference between an Endotracheal tube and Tracheotomy tube. Give its types.	8 Marks	L4	CO3
	b)	Determine the difference of MDIs and DPIs and its techniques.	8 Marks	L3	CO3

(OR)

7.	a)	Demonstrate educating a patient in using of MDI and DPI inhaler. Write down the contraindication.	8 Marks	L3	CO3
	b)	List out the procedure of suctioning. And its complications.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Demonstrate the preparation for the procedure of Intubation.	8 Marks	L4	CO4
	b)	Determine the protocol for weaning? Write down the parameters of weaning procedure.	8 Marks	L3	CO4

(OR)

9.	a)	Demonstrate the procedure of an extubation? Write down the criteria for extubation.	8 Marks	L3	CO4
	b)	A 60 yrs old male with BP of 144/98 mmhg, showing rapid decreasing of BP of 102/80mmhg with recording of ventricular fibrillation on an Echocardiogram Spo2 of 75% what would be your immediate response. Demonstrate.	8 Marks	L1	CO4

MODULE-V

10.	a)	Categorize the difference between Invasive and Non -Invasive ventilation. Give the record of MODES on ventilators.	8 Marks	L4	CO5
	b)	Determine the difference between CPAP and BIPAP and its uses on COPD patient.	8 Marks	L3	CO5

(OR)

11.	a)	Illustrate ECG waveform. And give the demonstration of Defibrillator.	8 Marks	L3	CO5
	b)	Identify the normal value of an ABG and its Acid base disturbance. List out the Acid base disturbance in a COPD patient.	8 Marks	L1	CO5

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B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

BASICS IN DIALYSIS TECHNOLOGY

[Dialysis Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Relate the importance of principles of dialysis.	2 Marks	L2	CO1
	b)	Explain the orange of history of dialysis.	2 Marks	L1	CO1
	c)	Utilize your knowledge on vascular access infections.	2 Marks	L3	CO2
	d)	Recall the Recirculation.	2 Marks	L1	CO2
	e)	Develop an different types of vascular access for haemodialysis.	2 Marks	L3	CO2
	f)	Define the write the advantage the arteriovenous fistula.	2 Marks	L1	CO2
	g)	Summarize the haemodialysis.	2 Marks	L2	CO1
	h)	Develop your knowledge dialyzer re-use.	2 Marks	L3	CO1
	i)	Interpret the importance the diet management for dialysis patient.	2 Marks	L2	CO1
	j)	Identify the usefulness of the ultrafiltration.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Demonstrate the indications for dialysis.	8 Marks	L2	CO1
	b)	Develop the knolwdge in quantification of adequacy in haemodialysis.	8 Marks	L3	CO1

(OR)

3.	a)	Explain the rights and responsibilities of dialysis technologist.	8 Marks	L2	CO1
	b)	Categorize the distinguish the body fluids and electrolytes balance.	8 Marks	L4	CO1

MODULE-II

4.	a)	Classify the various types of vascular access demonstrate the vascular access for haemodialysis.	8 Marks	L4	CO2
	b)	Experiment with what are the types of central venous catherization and explain about its complications in detail.	8 Marks	L3	CO2

(OR)

5.	a)	Construct the importance of vascular access recirculation.	8 Marks	L3	CO2
	b)	What are the types of vascular access complications management.	8 Marks	L1	CO2

MODULE-III

6.	a)	Categorize the acute complication of hemodialysis? Add a note on dialysis disequilibrium syndrome.	8 Marks	L4	CO3
	b)	Distinguish and demonstration the different types of dialyzer membrane and mention the composition of dialysate .	8 Marks	L3	CO3

(OR)

7.	a)	Construct a note about monitors and alarms in hemodialysis machine.	8 Marks	L3	CO3
	b)	Explain about continuous hemofiltration and discuss the SCUF.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Categorize the Infection controls and universal precautions in dialysis department.	8 Marks	L4	CO4
	b)	Develop knowledge on dialysis prescription in patients with Acute kidney injury detailing the principles behind it.	8 Marks	L3	CO4

(OR)

9.	a)	Organize the patient positions for the dialysis and discuss the patient assessment during the dialysis.	8 Marks	L3	CO4
	b)	patient monitoring during hemodialysis diet management for dialysis patient.	8 Marks	L1	CO4

MODULE-V

10.	a)	What are all the types of peritoneal dialysis and elaborate its procedures.	8 Marks	L4	CO5
	b)	Write briefly about clinical features and lab investigations in management of CAPD.	8 Marks	L3	CO5

(OR)

11.	a)	Construct your knowledge on recirculation acquire the importance of it.	8 Marks	L3	CO5
	b)	Exhibit your memory on automated Peritoneal Dialysis and elucidate your knowledge.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. II Semester (MBU-22) Supplementary Examinations, April – 2024

MEDICAL TERMINOLOGY AND RECORD MANAGEMENT

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Give the detail about connection of bone to bone?	2 Marks	L2	CO1
	b)	Write the joint functions?	2 Marks	L1	CO1
	c)	Write any two disorders of Musculo skeletal system.	2 Marks	L3	CO2
	d)	What are the layers of meninges?	2 Marks	L1	CO2
	e)	Illustrate the functions of heart.	2 Marks	L3	CO3
	f)	Define respiratory unit?	2 Marks	L1	CO3
	g)	Estimate the maintenance of record keeping.	2 Marks	L2	CO4
	h)	Examine data entry?	2 Marks	L3	CO4
	i)	Detail about the basic principles of medical ethics.	2 Marks	L2	CO5
	j)	Classify the physio ethics.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the anatomy and explain the sub-divisions of anatomy.	8 Marks	L2	CO1
	b)	Determine the basic medical terms by utilizing roots and suffixes	8 Marks	L3	CO1

(OR)

3.	a)	Describe the positions language of anatomy.	8 Marks	L1	CO1
	b)	Analyze the role of medical terminology in health care.	8 Marks	L4	CO1

MODULE-II

4.	a)	Illustrate about the conditions, disorders and care of patients in Musculo skeletal system.	8 Marks	L4	CO2
	b)	Demonstrate about the cranial nerves and function.	8 Marks	L3	CO2

(OR)

5.	a)	Discuss in detail about the musculoskeletal system.	8 Marks	L3	CO2
	b)	Explain brief about the integumentary system and functions.	8 Marks	L1	CO2

MODULE-III

6.	a)	Optimize about the structure development and function of endocrine system.	8 Marks	L4	CO3
	b)	Explore the cardiovascular system and functions.	8 Marks	L3	CO3

(OR)

7.	a)	Sketch the main function of anatomy and respiratory system.	8 Marks	L3	CO3
	b)	Outline how does the respiratory system work?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Characterize the advanced tools to maintain records in health care?	8 Marks	L4	CO4
	b)	Demonstrate about the medical orders.	8 Marks	L3	CO4

(OR)

9.	a)	Examine the data entry and management on electronic health record system.	8 Marks	L3	CO4
	b)	Study the procedures in medical record keeping.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the autonomy ethics of principle.	8 Marks	L4	CO5
	b)	Illustrate the explanation the principles of medical ethics.	8 Marks	L3	CO5

(OR)

11.	a)	Demonstrate the ethics in medical system.	8 Marks	L3	CO5
	b)	Review the ethical principles for governing practices in physiotherapy.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. II Semester (MBU-22) Supplementary Examinations, April – 2024

BASIC COMPUTERS AND INFORMATION SCIENCE

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Draw the block diagram of a computer system.	2 Marks	L2	CO1
	b)	What is the need for RAM? How does it differ from ROM?	2 Marks	L2	CO1
	c)	What does the title bar contain?	2 Marks	L1	CO2
	d)	What happens when the left button of the mouse is clicked twice on a word?	2 Marks	L2	CO2
	e)	What is the use of the auto sum feature?	2 Marks	L2	CO3
	f)	What is meant by slide design?	2 Marks	L1	CO3
	g)	How is tree topology different from bus topology?	2 Marks	L2	CO4
	h)	Define protocol.	2 Marks	L1	CO4
	i)	What is paging?	2 Marks	L2	CO5
	j)	What are the two types of operating systems?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the functional components of a computer with the help of a block diagram.	8 Marks	L2	CO1
	b)	What is the role of input devices? Write down any three input devices with their full description.	8 Marks	L2	CO1

(OR)

3.	a)	Describe the evolution of the computer in detail.	8 Marks	L2	CO1
	b)	Explain memory in Computer Systems.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the utility of mail merge with a step-by-step procedure.	8 Marks	L2	CO2
	b)	What is formatting? Discuss the different types of formatting in a word processor.	8 Marks	L2	CO2

(OR)

5.	a)	Describe in detail about word window and explain each	8 Marks	L2	CO2

		component.			
	b)	How do you insert a table in your document? Discuss the steps involved in splitting and merging cells.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain any five types of charts in Excel.	8 Marks	L2	CO3
	b)	Describe in detail about Selecting Cells in Excel.	8 Marks	L3	CO3

(OR)

7.	a)	Describe the process of creating an electronic presentation.	8 Marks	L3	CO3
	b)	Discuss the process of inserting the table and adding clipart into the slide.	8 Marks	L3	CO3

MODULE-IV

8.	a)	What are the various types of Networks? Explain.	8 Marks	L2	CO4
	b)	Discuss the Network Topologies.	8 Marks	L2	CO4

(OR)

9.	a)	What is the Internet and explain its applications?	8 Marks	L2	CO4
	b)	How to create and access the Gmail Account? Explain.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the Purposes of an Operating System.	8 Marks	L2	CO5
	b)	Describe the steps to install in Windows OS.	8 Marks	L3	CO5

(OR)

11.	a)	What are the two general categories of an OS? Describe briefly.	8 Marks	L2	CO5
	b)	What are the characteristics of operating systems? Explain briefly.	8 Marks	L1	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

MEDICAL BIOCHEMISTRY

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Radiology & Imaging Technology, Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Classify the oligosaccharides.	2 Marks	L2	CO1
	b)	Recall the phospholipids.	2 Marks	L1	CO1
	c)	Use of biologically important peptides.	2 Marks	L3	CO2
	d)	List any two functions of proteins.	2 Marks	L1	CO2
	e)	Write the functions of calcium.	2 Marks	L3	CO3
	f)	Relate the RDA of Vitamin D.	2 Marks	L1	CO3
	g)	Give an outline of suicidal inhibition.	2 Marks	L2	CO4
	h)	Write a Note on Marasmus – Kwashiorkor.	2 Marks	L3	CO4
	i)	What are the renal function test.	2 Marks	L2	CO5
	j)	List the adrenal gland disorders.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the pathway of glycolysis and explain the importance.	8 Marks	L2	CO1
	b)	What are the disaccharides? Explain with suitable structures.	8 Marks	L1	CO1

(OR)

3.	a)	Label the heteropolysaccharides by recalling the functions with suitable structures.	8 Marks	L1	CO1
	b)	Classification of fatty acids. Summarize the properties and functions of fatty acids.	8 Marks	L4	CO1

MODULE-II

4.	a)	Demonstrate the different types of nucleic acids and illustrate the purines and pyrimidine. Organize the DNA B-DNA.	8 Marks	L1	CO2
	b)	Classify various types of amino acids and explain the properties of amino acids.	8 Marks	L2	CO2

(OR)

5.	a)	Explain the structure and types of RNA.	8 Marks	L2	CO2
	b)	Define the protein. Classification and functions of the proteins	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the biological importance, Functions, and Deficiencies of Vitamin C.	8 Marks	L2	CO3
	b)	Describe the sources, biological functions, and deficiency manifestation of Vitamin D.	8 Marks	L3	CO3

(OR)

7.	a)	Describe the sources, biological functions, and deficiency manifestation of Vitamin A.	8 Marks	L3	CO3
	b)	Classification of the B - complex vitamins and explain the importance of B1.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Classify the enzyme inhibition and explain its feedback regulation.	8 Marks	L3	CO4
	b)	What is the basal metabolic rate and explain the factor affecting BMR.	8 Marks	L2	CO4

(OR)

9.	a)	Define Isoenzyme, classification of Isoenzyme, and explain the different types of Diagnostic enzymes.	8 Marks	L3	CO4
	b)	Elaborate on the Factors affecting enzyme activity with suitable examples.	8 Marks	L1	CO4

MODULE-V

10.	a)	Classify the metabolic disorders and explain the glycogen storage diseases.	8 Marks	L2	CO5
	b)	Explain the importance of blood buffers and describe the bicarbonate buffer system.	8 Marks	L2	CO5

(OR)

11.	a)	What is the acid-base balance? Importance of lungs and kidneys in acid-base equilibrium.	8 Marks	L3	CO5
	b)	What is Galactosemia, its clinical manifestations, and management?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

BASIC CLINICAL BIOCHEMISTRY AND ANALYTICS

[Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Recall on storage of distilled water.	2 Marks	L2	CO1
	b)	Explain the importance of chromic acid solution and storage.	2 Marks	L1	CO1
	c)	Develop your ideas Molarity.	2 Marks	L3	CO2
	d)	List out the importance of unit of Measurement.	2 Marks	L1	CO2
	e)	Experiment your knowledge on cylinders in laboratory.	2 Marks	L3	CO2
	f)	Omit the different types of Pipettes.	2 Marks	L1	CO2
	g)	Write a brief note on molecular weight vs. equivalent weight.	2 Marks	L2	CO1
	h)	Develop a model on preparation of distilled water.	2 Marks	L3	CO1
	i)	What are the safety measures in laboratory.	2 Marks	L2	CO1
	j)	Preparation of first aid for needle stick injury.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss and Illustrate the role and responsibilities of medical laboratory services and explain its importance in health care system.	8 Marks	L2	CO1
	b)	Demonstrate the different types of safety measures followed in laboratory.	8 Marks	L3	CO1

(OR)

3.	a)	Utilize your knowledge on preparation of distilled water and explain various methods.	8 Marks	L1	CO1
	b)	Outline different types of leaning and care of laboratory glass ware	8 Marks	L4	CO1

MODULE-II

4.	a)	Discover your ideas and various pipette types with diagrams and their various applications in diagnostic laboratory.	8 Marks	L4	CO2
	b)	Organize your knowledge on describing various volumetric apparatus types using an appropriate diagram.	8 Marks	L3	CO2

(OR)

5.	a)	Build your ideas around the development of the Analytical Balance Principle and its application in laboratory.	8 Marks	L3	CO2
	b)	Apply knowledge on types of flasks and beakers and its applications.	8 Marks	L1	CO2

MODULE-III

6.	a)	Classify and categorize the normal solutions explain the use in clinical laboratory and discuss the preparation of 1 N solutions with an example.	8 Marks	L4	CO3
	b)	Explain the henderson Hassel batch equation and discus about the is importance acid base balance.	8 Marks	L3	CO3

(OR)

7.	a)	Discuss in detailed about the acid base balance Vant Hoff's equation.	8 Marks	L3	CO3
	b)	Define osmosis construct your knowledge on factors effecting the osmotic pressure and develop a model in maintenance of osmotic pressure.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Contrast your knowledge on electrophoresis inference the details of gel electrophoresis and its applications.	8 Marks	L4	CO4
	b)	Utilize your knowledge in colorimetry discuss the parts of colorimeter and explain the operating system.	8 Marks	L3	CO4

(OR)

9.	a)	Write an important make use of spectrophotometer and summarize the utilization in clinical laboratory.	8 Marks	L3	CO4
	b)	Justify your knowledge on Beers Laberts law elaborate the parts of photometer.	8 Marks	L1	CO4

MODULE-V

10.	a)	Categorize the chromatographic techniques and distinguish the paper chromatography quantitative analysis and discuss applications.	8 Marks	L4	CO5
	b)	Describe the what is clearance demonstrate the urine clearance test.	8 Marks	L3	CO5

(OR)

11.	a)	Illustrate the mechanism of the acid base balance and explain the bicarbonate buffer system.	8 Marks	L3	CO5
	b)	Recall the various function s of kindly and explain the different types of Kidney function test.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. II Semester (MBU-22) Supplementary Examinations, April – 2024

HEALTHCARE QUALITY AND PATIENT SAFETY

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Recall Quality of Healthcare.	2 Marks	L2	CO1
	b)	Label NABH.	2 Marks	L1	CO1
	c)	List out the Key dimensions of Quality Healthcare.	2 Marks	L3	CO1
	d)	Design Sterilization.	2 Marks	L2	CO2
	e)	List the types of Filters.	2 Marks	L3	CO2
	f)	Memorize Antibiotics.	2 Marks	L2	CO3
	g)	Recollect the Antibiotic Sensitivity test.	2 Marks	L3	CO3
	h)	Formalize Global Warming.	2 Marks	L1	CO4
	i)	State Global action plan.	2 Marks	L1	CO4
	j)	Define Incineration.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the Quality Improvement Approaches,	8 Marks	L3	CO1
	b)	Label the Concepts of Quality of Care.	8 Marks	L1	CO1

(OR)

3.	a)	Trace out the Key dimensions of Quality Healthcare.	8 Marks	L3	CO1
	b)	Recall NABH and outline of NABH Standards.	8 Marks	L1	CO1

MODULE-II

4.	a)	Summarize working principle of Hot air oven.	8 Marks	L4	CO2
	b)	Demonstrate the routes of transmission of infections.	8 Marks	L3	CO2

(OR)

5.	a)	Recite Autoclave and Component of Autoclave?	8 Marks	L4	CO2
	b)	Trace out the methods of Sterilization.	8 Marks	L3	CO2

MODULE-III

6.	a)	Predict the resistance mechanisms strategies and give examples.	8 Marks	L4	CO3
	b)	Demonstrate the aim of antimicrobial stewardship.	8 Marks	L3	CO3

(OR)

7.	a)	Illustrate the types of samples collecting for antibiotic sensitivity test and explain procedure of AST.	8 Marks	L3	CO3
	b)	Recall the antimicrobial resistance and explain complications of antimicrobial resistance?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Recollect the present situation of drug resistance.	8 Marks	L1	CO3
	b)	Trace out the ways to bacterial resistance mechanisms.	8 Marks	L3	CO3

(OR)

9.	a)	Discuss in detail about the Resource management.	8 Marks	L3	CO4
	b)	Explain the Preparedness and risk reduction.	8 Marks	L4	CO4

MODULE-V

10.	a)	Distinguish principles of on-site disaster management.	8 Marks	L4	CO4
	b)	Trace out the Fundamentals of emergency management.	8 Marks	L3	CO4

(OR)

11.	a)	Demonstrate the things involved in infrastructure and operational systems.	8 Marks	L1	CO4
	b)	List out all the emergency planning principles.	8 Marks	L4	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

TELUGU

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology, Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	"పెండ్లి పందిరి" ఏ సమాసమో తెలపండి?	2 Marks	L1	CO1
	b)	గొప్పతనము పెరిగే కొద్దీ ఏది పెరగాలి?	2 Marks	L1	CO1
	c)	నాడీజంఘుడు ఎవరు?	2 Marks	L3	CO2
	d)	కృషీవలుడు పాఠ్యభాగ రచయిత గురించి తెలపండి?	2 Marks	L1	CO2
	e)	పోతన గురించి వివరించండి?	2 Marks	L3	CO2
	f)	ధ్రువుని తల్లిదండ్రులు ఎవరు?	2 Marks	L1	CO2
	g)	**దువ్వూరికవితవిశేషాలుతెలపండి** ?	2 Marks	L2	CO1
	h)	దువ్వూరి రచనలు ఏవి.	2 Marks	L3	CO1
	i)	**యమకాలంకారము**	2 Marks	L3	CO1
	j)	**చంపకమాల**	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	మానవుడు దేనిని విడువరాదు?	8 Marks	L2	CO1
	b)	మనిషి ఉన్నంతవరకు ఏమి ఎదురు చూస్తుంటారు ?	8 Marks	L3	CO1

(OR)

3.	a)	గొప్పతనము పెరిగిన కొలదీ ఏది అలవడవలెను ?	8 Marks	L1	CO1
	b)	భారత భూమి ఎప్పుడు గొప్పగా ప్రకాశిస్తుంది?	8 Marks	L4	CO1

MODULE-II

4.	a)	వినుమొక బ్రాహ్మణుండు కులవృత్తము పెంపు దొఱంగి బోయదానినొకత నాలి జేసికొని, నెమ్మి గిరాతుల గూడి వేటకుం జను దిను మాంస మద్దురితసక్తుడు భోగపరుండు గావునన్ ధనము ఘటింపగా దగు విధం బని చూచి వణిగ్జనంబుతోన్? ప్రతిపధార్థం వ్రాయండి.	8 Marks	L4	CO2

	b)	'యిద్దురిత శరీరముందినగ దోసము మాకు 'సందర్భవాఖ్య వివరించండి?	8 Marks	L2	CO2
		(OR)			
5.	a)	అన్నాహాలిక! నీదు జీవితము నెయ్యంబార వర్ణింప మే కొన్న న్నిర్ఝరసార వేగమున వాక్పూరంబు మాధుర్యం సం పన్నంబై ప్రవహించుగాని యితరుల్ భగ్నాశులై యూర్ష్యతో నన్నుం గర్షకపక్షపాతియని నిందావాక్యములవ్వల్కరే! ప్రతిపధార్థం వ్రాయండి	8 Marks	L2	CO2
	b)	'దనుజులు పురి వెడల దెచ్చి తద్గాత్రంబున్ 'సందర్భవాఖ్య వివరించండి?	8 Marks	L2	CO2
		MODULE-III			
6.	a)	ఫలము లెక్కెడివారు తత్ఫల రసాస్వాద క్రియాలోలురై పలుమాఅమ్మధురత్వము న్నుతుల సంభావింతురేగాని, త త్ఫల హేతుక్రమ వృక్షముందల పరెవ్వారైన, నట్లే రమా కలితుల్భోగములన్ భుజించుచు నినుంగన్నెత్తియుంజూతురే! ప్రతి పదార్థం వివరించండి ?	10 Marks	L3	CO3
	b)	శ్రీహరిని కవి వర్ణించిన విధమును తెలపండి?	6 Marks	L2	CO3
		(OR)			
7.	a)	"కుడిచిన పళ్ళెరంబును సకుంఠిత హర్షముతోడ నిచ్చినం గడుముదమంది యెత్తికొని గాఢభరంబున మార్చి మోపగా మెడయును వీపు మూపులును మిక్కలి నొవ్వున గొంకు వోవ నెక్కుడు వెస నేగుదెంచె గని కొక్కెర సమ్మదమంద మఱ్ఱికిన్". పద్యమునకు ప్రతి పదార్థం రాయండి?	10 Marks	L3	CO3
	b)	నారదుడు ఉత్తానపాదునకు ఏమని సమాధానమిచ్చాడు ?	6 Marks	L2	CO3
		MODULE-IV			
8.	a)	కృషీవలుడు ద్వారా దువ్వూరి రైతు జీవనాన్ని ఎలా వివరించాడు.	8 Marks	L2	CO4
	b)	నాడీజంఘుని గొప్పతనాన్ని వివరించండి?	8 Marks	L2	CO4
		(OR)			
9.	a)	ప్రస్తుత రైతు స్థితిగతులు ఏమిటి?	8 Marks	L2	CO4
	b)	ఎంత నిర్మలమోయి నీ హృదయకలిక సందర్భవాఖ్యం రాయండి.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	'తరువగ జాచ్చినంబెరు గుతాలి మినీయ దెవెన్న భాస్కరా ' పాదాన్ని గణ విభజన చేసి, చందోలక్షణాలు తెలపండి.?	8 Marks	L3	CO5
	b)	అలంకారములు ఎన్ని రకాలు ? అవి ఏవి ?	8 Marks	L3	CO5
		(OR)			
11.	a)	కర్మధారయ సమాసమును వివరించండి ?	8 Marks	L3	CO5
	b)	యావజ్జీవితము, మహాద్వాచకం పదాలలోని సంధులను గుర్తించి, నిర్వచించండి ?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

NATIONAL HEALTH CARE DELIVERY SYSTEM

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the full form of ASHA and DGHS?	2 Marks	L2	CO1
	b)	What is the full form of PHC and NRHM?	2 Marks	L1	CO1
	c)	List out the functions of Municipal boards.	2 Marks	L3	CO1
	d)	When National Ayurveda Day and International Yoga Day celebrated?	2 Marks	L1	CO2
	e)	What is the full form of AYUSH?	2 Marks	L3	CO2
	f)	List out Vedas.	2 Marks	L1	CO2
	g)	Illustrate vital events.	2 Marks	L2	CO3
	h)	Who is the father of demography?	2 Marks	L3	CO3
	i)	Write any four National health programs for non-communicable diseases.	2 Marks	L2	CO4
	j)	Apply your knowledge on Pradhan Mantri Jan Arogya Yojana.	2 Marks	L3	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain briefly about Primary health care in India.	8 Marks	L2	CO1
	b)	Apply your knowledge on definition, functions and staff of PHC.	8 Marks	L3	CO1
		(OR)			
3.	a)	Summarize Health care system in India at central level.	8 Marks	L1	CO1
	b)	Summarize Health care system in India at state level.	8 Marks	L4	CO1

MODULE-II

4.	a)	Apply your knowledge on Naturopathy.	8 Marks	L4	CO2
	b)	Outline AYUSH system of medicine.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain briefly about Ayurveda.	8 Marks	L3	CO2
	b)	Explain briefly about yoga.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain about methods of data collection.	8 Marks	L4	CO3
	b)	Describe National Family Health Service and its main sources of data collection.	8 Marks	L3	CO3

(OR)

7.	a)	What is census and explain its purpose and method of census collection?	8 Marks	L3	CO3
	b)	Define demography and Explain scope of demography.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Outline National health programs for Non-communicable diseases.	8 Marks	L1	CO4
	b)	Write a long note on National health programs for nutrition.	8 Marks	L3	CO4

(OR)

9.	a)	Summarize national health policy.	8 Marks	L4	CO4
	b)	Explain about Ayushman Bharat Health scheme.	8 Marks	L1	CO4

MODULE-V

10.	a)	What is the definition, objectives and characteristics of National Health Care Delivery system?	8 Marks	L2	CO1
	b)	Apply your knowledge on Homeopathy.	8 Marks	L3	CO2

(OR)

11.	a)	Distinguish between primary and secondary data collection methods.	8 Marks	L4	CO3
	b)	Summarize national health programs in India.	8 Marks	L4	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. II Semester (MBU-22) Supplementary Examinations, April – 2024

ANATOMY - II

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out structures passing through the minor openings in diaphragm.	2 Marks	L2	CO1
	b)	Mention the ligaments of spleen.	2 Marks	L1	CO1
	c)	Name the structures passing through the ***"Foramen Magnum***".	2 Marks	L3	CO2
	d)	Illustrate the formation of carotid sheath and contents of it.	2 Marks	L1	CO2
	e)	What is a reflex arc?	2 Marks	L3	CO3
	f)	Name the parts of corpus callosum.	2 Marks	L1	CO3
	g)	What are "**Brunner's glands"**?	2 Marks	L2	CO4
	h)	Define pseudostratified ciliated columnar epithelium and give examples.	2 Marks	L3	CO4
	i)	Mention the derivatives of midgut.	2 Marks	L2	CO5
	j)	What is septum transversum and its derivatives?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the structure of stomach under following headings? a) External features b) Internal features c) Relations d) Blood supply & Nerve supply e) Applied anatomy?	8 Marks	L2	CO1
	b)	What are the openings of diaphragm and structures passing through it?	8 Marks	L3	CO1

(OR)

3.	a)	Define the structure of urinary bladder under following headings? a) External features b) Internal features c) Relations d) Blood supply & Nerve supply e) Applied anatomy?	8 Marks	L1	CO1
	b)	Illustrate the formation of rectus sheath and list out the contents of it?	8 Marks	L3	CO1

MODULE-II

4.	a)	What are the muscles of mastication and explain its origin, insertion, nerve supply, and action?	8 Marks	L1	CO2
	b)	Explain the structure of thyroid gland under following headings? a) External features b) Internal features c) Relations d) Blood supply & Nerve supply e) Applied anatomy	8 Marks	L3	CO2
		(OR)			
5.	a)	Write about the layers of scalp, contents and it's applied anatomy?	8 Marks	L3	CO2
	b)	Enumerate the structure of parotid gland under following headings? a) External features b) Internal features c) Relations d) Blood supply & Nerve supply e) Applied anatomy?	8 Marks	L1	CO2
		MODULE-III			
6.	a)	Describe the sulci and gyri present on superolateral surface of cerebrum?	8 Marks	L2	CO3
	b)	Write in detail about the ascending tracts of spinal cord?	8 Marks	L3	CO3
		(OR)			
7.	a)	Illustrate the structure of ***"Circle of Willis"?***	8 Marks	L3	CO3
	b)	Describe taste pathway and mention its defects?	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Describe the microscopic structure of trachea and lungs with a neat labeled diagram?	8 Marks	L3	CO4
	b)	Illustrate the microscopic structure of liver and gall bladder with a neat labelled diagram?	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the microscopic structure of spleen and thymus with a neat labelled diagram?	8 Marks	L3	CO4
	b)	Describe the microscopic structure of ovary and uterus with a neat labeled diagram?	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Write a note on development of tongue, thyroid gland and palate?	8 Marks	L4	CO5
	b)	What are teratogens, and classify teratogens?	8 Marks	L3	CO5
		(OR)			
11.	a)	Write a note on development of heart and pericardium?	8 Marks	L3	CO5
	b)	What are the different techniques used in prenatal diagnosis?	8 Marks	L1	CO5

CODE No.: 22PT102005 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. II Semester (MBU-22) Supplementary Examinations April – 2024

PHYSIOLOGY-II

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Mention the ducts of salivary glands.	2 Marks	L1	CO1
	b)	Add a note on movements of oesophagus.	2 Marks	L1	CO1
	c)	Add a note on dieresis.	2 Marks	L1	CO2
	d)	Mention the functions of detrusor muscle.	2 Marks	L2	CO2
	e)	Write a brief note on Dwarfism.	2 Marks	L2	CO3
	f)	Add a note on cryptorchidism.	2 Marks	L1	CO3
	g)	Write a brief note on 'Broadman's Area No 44'.	2 Marks	L1	CO4
	h)	Add a note on functions of hippocampus.	2 Marks	L1	CO4
	i)	Write a brief note on Myopia.	2 Marks	L2	CO5
	j)	List out the layers of retina.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain different phases of gastric secretion.	8 Marks	L2	CO1
	b)	Write a short note on jaundice and its types.	8 Marks	L1	CO1

(OR)

3.	a)	What is ulcer? Discuss different types of ulcers.	8 Marks	L3	CO1
	b)	Discuss the details, causes, diagnosis and treatment of gall stones.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the mechanism of urine formation.	8 Marks	L3	CO2
	b)	Explain cystometrogram with graphical representation.	8 Marks	L3	CO2

(OR)

5.	a)	Discuss the mechanism of artificial kidney.	8 Marks	L3	CO2
	b)	What is renal failure and explain its types.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the functions and regulation of of secretion of insulin.	8 Marks	L4	CO3
	b)	Discuss diabetes mellitus and its types.	8 Marks	L4	CO3
		(OR)			
7.	a)	What are female sex hormones and mention their function.	8 Marks	L2	CO3
	b)	Explain various types of contraceptive methods in males and females.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Give an account on connections, functions and lesions of basal ganglia. Write a short note on Parkinson's disease.	8 Marks	L1	CO4
	b)	Describe the functions of cerebral cortex. Add a note on frontal lobe syndrome.	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe in detail about pyramidal tracts. Add a note on kluver-bucy syndrome.	8 Marks	L3	CO4
	b)	Discuss the differences between UMNL and LMNL. Add a note on tabes dorsalis.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain auditory pathway with a suitable diagram.	8 Marks	L4	CO5
	b)	Write a detailed note on auditory defects.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss about 'Trace gustatory pathway'.	8 Marks	L2	CO5
	b)	Write a detailed note on abnormalities of taste sensation.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

HUMAN ANATOMY

[Optometry, Dialysis Technology, Respiratory Therapy Technology, Radiology & Imaging Technology,]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is prone position and mention its uses?	2 Marks	L2	CO1
	b)	What is an angular movement and give examples?	2 Marks	L1	CO1
	c)	What is a motor point?	2 Marks	L3	CO2
	d)	Define synovial joint.	2 Marks	L1	CO2
	e)	Write differences between artery and vein.	2 Marks	L3	CO3
	f)	List out the muscles responsible for respiration.	2 Marks	L1	CO3
	g)	Write the functions of seminal vesicles.	2 Marks	L2	CO4
	h)	Mention the ligaments of uterus.	2 Marks	L3	CO4
	i)	List out the types of neuroglial cells.	2 Marks	L2	CO5
	j)	Write the functions of cerebrospinal fluid.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define connective tissue and mention the types of connective tissue with examples.	8 Marks	L2	CO1
	b)	Enumerate the terms used in relation to trunk.	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe movements possible in upper limb.	8 Marks	L1	CO1
	b)	Define cell. Explain the structure and functions of any four cell organelles.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain features of humerus bone and its muscle attachments.	8 Marks	L1	CO2
	b)	Explain structural classification of joints with examples.	8 Marks	L3	CO2
		(OR)			
5.	a)	Describe composition of bone and functions of bone.	8 Marks	L3	CO2
	b)	Define origin, insertion, nerve supply, action, and applied anatomy of biceps brachii muscle.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain heart under the following headings i) External features ii) Chambers and Internal features iii) Blood supply and Nerve supply iv) Applied anatomy	8 Marks	L2	CO3
	b)	Explain types of circulation with a neat labelled diagram.	8 Marks	L3	CO3

(OR)

7.	a)	Enumerate the structure of spleen under following headings. i) External features ii) Internal features iii) Relations iv) Blood supply and Nerve supply v) Applied anatomy.	8 Marks	L3	CO3
	b)	Write the differences between right lung and left lung.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the structure of thyroid gland under following headings. i) External features ii) Internal features iii) Relations iv) Blood supply and Nerve supply v) Applied anatomy	8 Marks	L3	CO4
	b)	Describe the functions of liver and gall bladder.	8 Marks	L3	CO4

(OR)

9.	a)	List out the organs of reproductive system. Explain the structure of testis under following headings. i) External features ii) Internal features iii) Relations iv) Blood supply and Nerve supply v) Applied anatomy.	8 Marks	L3	CO4
	b)	Define the structure of urinary bladder under following headings. i) External features ii) Internal features iii) Relations iv) Blood supply and Nerve supply v) Applied anatomy.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the structure of spinal cord under following headings. i) External features ii) Internal features iii) coverings iv) Blood supply and Nerve supply v) Applied anatomy	8 Marks	L1	CO5
	b)	Describe visual pathway and mention visual defects.	8 Marks	L3	CO5

(OR)

11.	a)	Name the parts of cerebellum and list out the functions of cerebellum?	8 Marks	L3	CO5
	b)	What are the parts of the cerebrum and list out the functional areas?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

HUMAN PHYSIOLOGY

[Optometry, Dialysis Technology, Respiratory Therapy Technology, Radiology and Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Mention different degrees of nerve injury.	2 Marks	L2	CO1
	b)	Define ESR and mention its uses.	2 Marks	L2	CO1
	c)	What are the different types of proteolytic enzymes?	2 Marks	L3	CO2
	d)	Enumerate the functions of JGA.	2 Marks	L1	CO2
	e)	Write a short note on Goiter.	2 Marks	L3	CO3
	f)	List out the hormones secreted by adrenal gland.	2 Marks	L1	CO3
	g)	Write a note on surfactant.	2 Marks	L1	CO4
	h)	Define cyanosis and its types.	2 Marks	L1	CO4
	i)	Add a note on learning.	2 Marks	L2	CO5
	j)	Mention the pigments in retina along with their functions.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Trace intrinsic and extrinsic mechanisms of blood clotting.	8 Marks	L2	CO1
	b)	Describe various stages of erythropiesis and factors affecting it.	8 Marks	L4	CO1

(OR)

3.	a)	Discuss the steps involved in phagocytosis.	8 Marks	L2	CO1
	b)	Write a detailed note on bleeding and clotting disorders.	8 Marks	L4	CO1

MODULE-II

4.		Discuss different types of movements in small intestine, Briefly explain the process of digestion and absorption in small intestine	16 Marks	L2	CO2

(OR)

5.		Describe the mechanism of urine formation. Explain cystometrogram with graphical representation.	16 Marks	L2	CO2

MODULE-III

6.	a)	Explain the functions and regulation of secretion of insulin.	8 Marks	L3	CO3
	b)	Discuss diabetes mellitus and its types.	8 Marks	L4	CO3

(OR)

7.	a)	What are female sex hormones and mention their function.	8 Marks	L3	CO3
	b)	Explain various types of contraceptive methods in males and females.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Add a note on oxygen hemoglobin dissociation curve.	8 Marks	L3	CO4
	b)	Explain different types of lung capacities.	8 Marks	L4	CO4

(OR)

9.	a)	Define cardiac output. Explain the physiological and pathological variations of cardiac output/	8 Marks	L3	CO4
	b)	Define ECG. Explain the waves of ECG.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the structure of neuron and properties of nerve fiber.	8 Marks	L3	CO5
	b)	Classify receptors and explain their properties.	8 Marks	L2	CO5

(OR)

11.	a)	Explain auditory pathway with a suitable diagram.	8 Marks	L3	CO5
	b)	Write a detailed note on auditory defects.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

HUMAN ANATOMY - I

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Emergency Medical and Critical Care Technology, Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define sagittal plane and its axis.	2 Marks	L2	CO1
	b)	What are the components of connective tissue?	2 Marks	L1	CO1
	c)	Name the ear ossicles.	2 Marks	L3	CO2
	d)	What are cartilaginous joints and mention its types?	2 Marks	L1	CO2
	e)	Define angina pectoris.	2 Marks	L3	CO3
	f)	Demonstrate the location of apex of heart on the surface of human body.	2 Marks	L1	CO3
	g)	Name any four applied anatomy related to stomach.	2 Marks	L2	CO4
	h)	What are the various positions of appendix?	2 Marks	L3	CO4
	i)	Mention the types of epithelia.	2 Marks	L2	CO5
	j)	What is an osteon?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Draw a neat labelled diagram of cell and explain structure and functions of cell organelles.	8 Marks	L2	CO1
	b)	What are the terms used for describing muscles?	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe movements possible in lower limb.	8 Marks	L1	CO1
	b)	Define anatomy. What are the branches of anatomy?	8 Marks	L3	CO1

MODULE-II

4.	a)	What is a synovial joint? Explain the features of a synovial joint with a neat labelled diagram.	8 Marks	L1	CO2
	b)	Explain features of scapula bone and its muscle attachments.	8 Marks	L3	CO2
		(OR)			
5.	a)	Define a muscle. Explain the structure of sarcomere.	8 Marks	L3	CO2
	b)	Define cartilage. Explain types of cartilage with examples.	8 Marks	L1	CO2

MODULE-III

6.	a)	What is a circulatory system? Describe types of circulation with a diagram.	8 Marks	L2	CO3
	b)	Define reticulo-endothelial system and list out the functions of reticulo-endothelial system?	8 Marks	L3	CO3

(OR)

7.	a)	Describe external features of heart and internal features of right atrium.	8 Marks	L3	CO3
	b)	Illustrate the major blood vessels of heart and its branches/tributaries.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Name the parts of respiratory system? And Explain lung under the following headings: i) Introduction ii) External features iii) Blood supply & Nerve supply iv) Applied anatomy	8 Marks	L3	CO4
	b)	Discuss the structure of pancreas under following headings. i) External features ii) Internal features iii) Relations iv) Blood supply & Nerve supply v) Applied anatomy?	8 Marks	L3	CO4

(OR)

9.	a)	Write the differences between right lung and left lung with a neat labelled diagram.	8 Marks	L3	CO4
	b)	Enumerate the structure of spleen under following headings. i) External features ii) Internal features iii) Relations iv) Blood supply & Nerve supply v) Applied anatomy?	8 Marks	L1	CO4

MODULE-V

10.	a)	What is cell division? Explain stages of Mitosis with a neat labelled diagram?	8 Marks	L1	CO5
	b)	Enumerate the microscopic structure of cardiac muscle with a diagram?	8 Marks	L3	CO5

(OR)

11.	a)	Describe the parts of a compound microscope? With a neat labelled diagram?	8 Marks	L3	CO5
	b)	Discuss histology of white fibrous cartilage with a neat labelled diagram?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

HUMAN PHYSIOLOGY – I

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Medical Lab Technology, Emergency Medical and Critical Care Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Landsteiner's law.	2 Marks	L2	CO1
	b)	Define ESR and mention its uses.	2 Marks	L2	CO1
	c)	Add a note on rigor mortis.	2 Marks	L3	CO2
	d)	Mention different degrees of nerve injury.	2 Marks	L1	CO2
	e)	What are the different types of proteolytic enzymes?	2 Marks	L3	CO3
	f)	Hypogonadism.	2 Marks	L1	CO3
	g)	Composition of CSF.	2 Marks	L1	CO4
	h)	Different types of neuroglia.	2 Marks	L1	CO4
	i)	Compartments of cochlea.	2 Marks	L2	CO5
	j)	Features of night blindness.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the classification of anemia.	8 Marks	L2	CO1
	b)	Briefly explain the structure and functions of hemoglobin.	8 Marks	L2	CO1

(OR)

3.	a)	Describe about erythroblastosis fetalis.	8 Marks	L3	CO1
	b)	Add a note on hazards of blood transfusion.	8 Marks	L2	CO1

MODULE-II

4.		Discuss the structure of sarcomere with a neat labeled diagram.	16 Marks	L2	CO2

(OR)

5.		Explain the classification of nerve fiber with suitable examples.	16 Marks	L2	CO2

MODULE-III

6.	a)	Explain different phases of gastric secretion.	8 Marks	L3	CO3
	b)	Add a note on jaundice and its types.	8 Marks	L4	CO3

(OR)

7.	a)	What is ulcer? Discuss different types of ulcers.	8 Marks	L3	CO3
	b)	Discuss the details, causes, diagnosis and treatment of gall stones.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the mechanism of respiration.	8 Marks	L3	CO4
	b)	Add a note on surfactant.	8 Marks	L4	CO4

(OR)

9.	a)	Explain the effect of exercise on respiration.	8 Marks	L3	CO4
	b)	Add a note on physiological anatomy of respiratory tract.	8 Marks	L2	CO4

MODULE-V

10.	a)	Trace the steps involved in micturion reflex.	8 Marks	L3	CO5
	b)	Discuss about JGA with a neat labelled diagram.	8 Marks	L2	CO5

(OR)

11.	a)	Write the composition of urine, add a note on renal calculi.	8 Marks	L3	CO5
	b)	Draw a neat labeled diagram of urinary bladder along with nerve innervations.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

FUNDAMENTALS OF MEDICAL PHYSICS AND ELECTRONICS

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology,]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Semiconductors?	2 Marks	L2	CO1
	b)	Define Extrinsic and Intrinsic Semiconductors.	2 Marks	L2	CO1
	c)	What is Logic gates.	2 Marks	L3	CO2
	d)	Define Op-Amp.	2 Marks	L1	CO2
	e)	What are the Characteristics of Laser?	2 Marks	L3	CO3
	f)	What are the Application of Lasers in Medical?	2 Marks	L1	CO3
	g)	Define Coulomb`s law.	2 Marks	L2	CO4
	h)	What is Ohm's law?	2 Marks	L1	CO4
	i)	Define Magnetic Field?	2 Marks	L2	CO5
	j)	Write a short note on Current - Ampere's Law.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the classification of Semiconductors.	8 Marks	L2	CO1
	b)	What is p-n Junction diode Explain charactertics of p-n Junction diode.	8 Marks	L2	CO1

(OR)

3.	a)	What is Transistor and explain the types of Transistor configurations.	8 Marks	L2	CO1
	b)	Draw and explain full wave rectifier with efficiency.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is Logic gates? Explain OR, AND, NOT,AND and NOR Gates with truth tables.	8 Marks	L2	CO2
	b)	What are the Universal gates and Explain.	8 Marks	L2	CO2

(OR)

5.	a)	Explain the differential amplifier.	8 Marks	L2	CO2

	b)	Explain the Inverting Amplifier.	8 Marks	L2	CO2

MODULE-III

6.	a)	What are the Characteristics of Lasers?	8 Marks	L2	CO3
	b)	Explain Absorption and Spontaneous emissions.	8 Marks	L3	CO3

(OR)

7.	a)	Explain working of Nd-YAG Laser.	8 Marks	L2	CO3
	b)	Explain working of Semiconductor laser.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain Conductors and insulators on the basis of conduction of electricity.	8 Marks	L2	CO4
	b)	State and Explain Coulomb`s law.	8 Marks	L2	CO4

(OR)

9.	a)	Derive exprerssion for the resultant capacitor of a parallel plate capacitor in parallel.	8 Marks	L3	CO4
	b)	What is a capacitor ? Define capacity of a capacitor.	8 Marks	L3	CO4

MODULE-V

10.	a)	What are the properties of Magnetic lines of force.	8 Marks	L2	CO5
	b)	Explain Magnetic Induction and Magnetic Flux.	8 Marks	L1	CO2

(OR)

11.	a)	Explain the Direction of Magnetic Field and Current.	8 Marks	L3	CO5
	b)	State and explain the Ampere s Law.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

RADIOLOGICAL PHYSICS

[Radiology and Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Illustrate Isotones.	2 Marks	L3	CO1
	b)	Write about frequency and velocity of X-rays.	2 Marks	L3	CO1
	c)	Define capacitor.	2 Marks	L2	CO2
	d)	Outline Coulomb's law.	2 Marks	L1	CO2
	e)	Apply your knowledge Heat dissipation X-ray tubes.	2 Marks	L3	CO3
	f)	Explain Specific Heat capacity and its units.	2 Marks	L1	CO3
	g)	Discuss about focal spot size.	2 Marks	L2	CO4
	h)	Demonstrate line focus principle.	2 Marks	L3	CO4
	i)	Short notes on grid control x-ray tube.	2 Marks	L2	CO5
	j)	Apply your knowledge on rectifier.	2 Marks	L3	CO6

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Outline Man made sources with annual effective doses.	8 Marks	L1	CO1
	b)	Sketch the diagram of EM spectrum and explain advantages and disadvantages of all types of radiation.	8 Marks	L3	CO1

(OR)

3.	a)	Explain about different atomic theories.	8 Marks	L2	CO1
	b)	Write the difference between self and mutual induction.	8 Marks	L4	CO2

MODULE-II

4.	a)	Summarize series and parallel plate capacitors.	8 Marks	L4	CO2
	b)	Add note on conductors, Insulators and semiconductors.	8 Marks	L3	CO2

(OR)

5.	a)	Define temperature and explain types of scales.	8 Marks	L1	CO3
	b)	Summarize Newton's law of cooling.	8 Marks	L4	CO3

MODULE-III

6.	a)	Define: i) Thermal expansion ii) Evaporation iii) Vaporization	8 Marks	L1	CO3
	b)	Explain about X-ray interactions routinely happened in radiology department.	8 Marks	L2	CO4

(OR)

7.	a)	Summarize production of X-rays.	8 Marks	L4	CO4
	b)	Apply your knowledge on Properties of X-rays.	8 Marks	L3	CO4

MODULE-IV

8.	a)	Apply your knowledge on conventional X ray tubes.	8 Marks	L3	CO5
	b)	Add a long note on Heavy duty and Micro focus X-ray tubes.	8 Marks	L3	CO5

(OR)

9.	a)	Explain about X-ray tube in portable x ray equipment.	8 Marks	L2	CO5
	b)	Apply your knowledge on X-ray circuit.	8 Marks	L3	CO6

MODULE-V

10.	a)	Write a long note on Single phase X-ray generator.	8 Marks	L4	CO6
	b)	Distinguish between Step-up and step-down transformer.	8 Marks	L4	CO6

(OR)

11.	a)	Explain about maintenance and care of all X-Ray equipment and accessories.	8 Marks	L2	CO5
	b)	Summarize about autotransformer with diagram.	8 Marks	L4	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

FUNDAMENTALS OF RADIOLOGY AND RADIATION PROTECTION

[Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Apply your knowledge on IAEA and ICRP.	2 Marks	L2	CO1
	b)	Define effective dose and its units.	2 Marks	L1	CO1
	c)	List out advantages and disadvantages of film badge.	2 Marks	L3	CO2
	d)	What is the principle of Ionization chamber and Scintillation detector?	2 Marks	L1	CO2
	e)	List out any four PPE for Radiation.	2 Marks	L3	CO3
	f)	Explain Acute radiation syndrome.	2 Marks	L2	CO3
	g)	Discuss about Exposure switches.	2 Marks	L2	CO4
	h)	Apply your knowledge on Added filtration to X-ray tube.	2 Marks	L3	CO4
	i)	Describe Sensitometry.	2 Marks	L2	CO5
	j)	Write short notes on Types of fogs.	2 Marks	L3	CO6

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define MPD and explain dose limits recommended by ICRP.	8 Marks	L1	CO1
	b)	List out National radiation regulating bodies.	8 Marks	L1	CO1

(OR)

3.	a)	List out Radiation quantities and its units.	8 Marks	L1	CO1
	b)	Explain briefly about TLD badge.	8 Marks	L2	CO2

MODULE-II

4.	a)	What are the advantages and disadvantages of Personal monitoring devices?	8 Marks	L1	CO2
	b)	Explain briefly about Scintillation detector.	8 Marks	L2	CO2

(OR)

5.	a)	As a Radiation technologist, in which way you protect from radiation?	8 Marks	L3	CO3
	b)	Distinguish between Stochastic effects and Non-stochastic effects.	8 Marks	L4	CO3

MODULE-III

6.	a)	Summarize the flow chart of radiation when it interacts with tissue that causes damage.	8 Marks	L2	CO3
	b)	Define Grids and types of grids.	8 Marks	L1	CO4

(OR)

7.	a)	Define a) Focal spot size b) Focal film distance c) KvP d) mAs	8 Marks	L1	CO4
	b)	Outline AEC.	8 Marks	L1	CO4

MODULE-IV

8.	a)	Define testing of cassette for light leakage and sizes of radiographic cassette.	8 Marks	L1	CO5
	b)	What is the definition of Radiographic cassette and explain care and management of cassette during procedures?	8 Marks	L2	CO5

(OR)

9.	a)	Write about construction of radiographic cassette.	8 Marks	L3	CO5
	b)	Define radiographic film and write types of film.	8 Marks	L1	CO6

MODULE-V

10.	a)	Outline the layers of radiographic film with diagram.	8 Marks	L1	CO6
	b)	Define the Intensifying screen and write about its layers with diagram.	8 Marks	L1	CO6

(OR)

11.	a)	Draw the characteristic curve with explanation.	8 Marks	L3	CO5
	b)	Demonstrate latent image formation in X-ray film.	8 Marks	L3	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations April – 2024

OPTICAL PHYSICS

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain Airy Disc Phenomenon in human vision.	2 Marks	L1	CO1
	b)	Write a short note on birefringence.	2 Marks	L1	CO1
	c)	Explain the Applications of Polarization.	2 Marks	L1	CO2
	d)	Why sea appears blue?	2 Marks	L2	CO2
	e)	Write a short note on Lambert's law.	2 Marks	L2	CO3
	f)	Give some examples of sources of light.	2 Marks	L1	CO3
	g)	Give some examples of diffuse reflection.	2 Marks	L1	CO4
	h)	What is the anti-reflection coating used for?	2 Marks	L1	CO4
	i)	What is polarization and its types?	2 Marks	L2	CO5
	j)	Use of cylindrical lens.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Compare the Corpuscular theory and the wave theory of light.	9 Marks	L2	CO1
	b)	State Huygens principle.	7 Marks	L1	CO1

(OR)

3.	a)	Deduce the condition of constructive and destructive interference.	8 Marks	L3	CO1
	b)	Define coherent sources of light.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write the construction of Nicol's prism.	10 Marks	L3	CO2
	b)	Write short notes on half-wave and quarter-wave retardation plates.	6 Marks	L3	CO2

(OR)

5.	a)	Prove that the tangent of the polarization angle is equal to the refractive index of the medium.	8 Marks	L3	CO2
	b)	What do you mean by laser? What are the differences between laser light and normal light?	8 Marks	L2	CO2

MODULE-III

6.	a)	Why is the center of Newton's rings for a reflected system dark?	9 Marks	L4	CO3
	b)	In Newton's rings experiment the diameter of the 15th ring was found to be 0.590 cm and that of the 5th ring was 0.336 cm. The radius of curvature of the *plano-convex* lens is 100 cm. Find the wavelength of light used	7 Marks	L4	CO3

(OR)

7.	a)	State Brewster's law. Find the angle of polarization for the crown glass of refractive index 3/2.	10 Marks	L2	CO3
	b)	Elaborate circular polarization.	6 Marks	L4	CO3

MODULE-IV

8.	a)	Explain the formation of coherent sources with the help of Lloyd's mirror.	7 Marks	L1	CO4
	b)	A biprism, placed 5 cm from a slit is illuminated by sodium light of wavelength 5890 Å. The width of the fringes obtained on a screen placed at a distance 75 cm from the biprism, is $9{\cdot}424 \times 10^{-2}$ cm. What is the distance between the two virtual sources?	9 Marks	L3	CO4

(OR)

9.	a)	Define the resolving power and dispersive power of a grating.	8 Marks	L3	CO4
	b)	Compare prism spectra and grating spectra.	8 Marks	L3	CO4

MODULE-V

10.	a)	State the principle of superposition.	7 Marks	L4	CO5
	b)	Explain Einstein's three coefficient	9 Marks	L3	CO5

(OR)

11.	a)	What do you mean by the resolving power of an optical instrument?	6 Marks	L2	CO5
	b)	Distinguish between the following : Positive crystal and Negative crystal interference and diffraction	10 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Supplementary Examinations, April – 2024

GEOMETRICAL OPTICS-I

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define prentice's rule.	2 Marks	L2	CO1
	b)	What is Decentring?	2 Marks	L1	CO1
	c)	What is the Major reference point of a spectacle?	2 Marks	L3	CO2
	d)	Calculate the angle of deviation for the prism of 30° Refracting angle.	2 Marks	L1	CO2
	e)	Define the use of the ultraviolet spectrum.	2 Marks	L3	CO3
	f)	What is an electromagnetic oscillation of waves?	2 Marks	L1	CO3
	g)	State the relation between frequency and wavelength of light.	2 Marks	L2	CO4
	h)	Advantages and disadvantages of high-index lenses.	2 Marks	L3	CO4
	i)	What is abbe's value?	2 Marks	L2	CO5
	j)	Use of convex mirror.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are the lens materials available in the market?	8 Marks	L2	CO1
	b)	What is retroreflection? Give some examples.	8 Marks	L3	CO1

(OR)

3.	a)	Define Strum's conoid. Mention the uses of a cylindrical lens.	10 Marks	L1	CO1
	b)	Define the power of a lens. What is the unit of measurement?	6 Marks	L3	CO1

MODULE-II

4.	a)	Explain Photoelectric effect.	6 Marks	L1	CO2
	b)	Explain refraction through a glass slab of RI 1.5 with a ray diagram.	10 Marks	L3	CO2

(OR)

5.	a)	State Fermat's principle.	6 Marks	L3	CO2
	b)	The distance between two points in a medium is 30 cm. Find out the optical path distance. (The RI of the medium is 1·5) with a diagram.	10 Marks	L1	CO2

MODULE-III

6.	a)	Three lenses of focal lengths +3D, +5D, –6D are kept in contact. Find out the equivalent power and the equivalent focal length of the combination.	10 Marks	L2	CO3
	b)	Define optical path and geometrical path.	6 Marks	L3	CO3

(OR)

7.	a)	Two thin lenses of focal lengths $f1$ and $f2$ are separated by a distance 'a'. Find the equivalent power of the combination.	8 Marks	L3	CO3
	b)	Explain image formation through the cylindrical lens with a proper ray diagram.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Compare Crown and Flint Glass.	8 Marks	L3	CO4
	b)	What do you understand as high refractive index lenses?	8 Marks	L3	CO4

(OR)

9.	a)	Derive laws of refraction from Fermat's principle.	8 Marks	L3	CO4
	b)	Explain the laws of refraction.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the units of Photometry.	7 Marks	L1	CO5
	b)	Derive laws of reflection from Huygens's principle.	9 Marks	L3	CO5

(OR)

11.	a)	Define the types of refraction.	6 Marks	L3	CO5
	b)	State the relation between the Refractive index and wavelength.	10 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2024

NATIONAL HEALTH CARE DELIVERY SYSTEM AND MEDICAL RECORDS MANAGEMENT

[Bachelor of Physiotherapy, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write any four root words used in medical terminology?	2 Marks	L2	CO1
	b)	What is the full form of BLS & CPR?	2 Marks	L1	CO1
	c)	Name any four contents in operation notes.	2 Marks	L3	CO2
	d)	Add a note on retention of medical records.	2 Marks	L1	CO2
	e)	Prepare a note on Sub center.	2 Marks	L3	CO3
	f)	Define CHC and DMHO.	2 Marks	L1	CO3
	g)	Illustrate Vital events?	2 Marks	L2	CO4
	h)	Write a brief note on Pradhan Mantri Jan Arogya Yojana?	2 Marks	L3	CO4
	i)	List out any two spine curvature disorders.	2 Marks	L2	CO1
	j)	Add a note on Acharya Charak.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain pathologies, lab investigations related to respiratory system.	8 Marks	L2	CO1
	b)	Identify any 16 common abbreviations used in medical terminology.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain lab investigations and procedures related to cardiovascular system.	8 Marks	L2	CO1
	b)	Discuss about various pathological conditions and diagnostic investigations related to pancreas.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define Medical ethics and explain about principles of medical ethics.	8 Marks	L1	CO2
	b)	Discuss about euthanasia and its types.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain flow of medical records.	8 Marks	L3	CO2
	b)	Define EMR. Discuss about components in EMR.	8 Marks	L1	CO2

MODULE-III

6.	a)	Identify Organization of health services at central level.	8 Marks	L3	CO3
	b)	Evaluate various functions of DGHS.	8 Marks	L3	CO3
		(OR)			
7.	a)	What are the steps for implantation and key elements of health policy?	8 Marks	L1	CO3
	b)	Apply your knowledge on National health programs related to welfare or system strengthening.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Apply your knowledge on Yoga system of medicine.	8 Marks	L3	CO4
	b)	Explain about Ayurveda.	8 Marks	L2	CO4
		(OR)			
9.	a)	Define demography and explain scope of demography.	8 Marks	L2	CO4
	b)	Demonstrate census collection.	8 Marks	L4	CO4
		MODULE-V			
10.	a)	Elaborate full forms of STD, NS, RL, OP, IP, JVD, ICP, & IA.	8 Marks	L3	CO1
	b)	What is Irrational drug usage and explain about reasons and hazards of irrational use of drugs?	8 Marks	L2	CO2
		(OR)			
11.	a)	Outline National health programs for Non-communicable diseases.	8 Marks	L3	CO3
	b)	Discuss about ancient scientists of bharath.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2024

MEDICAL BIOCHEMISTRY

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name the properties of monosaccharides.	2 Marks	L2	CO1
	b)	Draw neat labeled structure of maltose.	2 Marks	L1	CO1
	c)	Define AVHILLMPTT.	2 Marks	L3	CO2
	d)	Add note on structural classification of amino acids.	2 Marks	L1	CO2
	e)	Mention the significance of SGOT and SGPT.	2 Marks	L3	CO3
	f)	What is importance of feedback regulation.	2 Marks	L1	CO3
	g)	List out the types of nutrients with examples.	2 Marks	L2	CO4
	h)	Mention few points on semi-essential and pseudo-essential amino acids.	2 Marks	L3	CO4
	i)	Define steatorrhea.	2 Marks	L2	CO5
	j)	List any two muscular dystrophies.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Enumerate the mucopolysaccharides. Short note on chondroitin sulfate.	8 Marks	L2	CO1
	b)	Discuss the monosaccharides explain properties of glucose and fructose.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss the biological functions of starch, glycogen, cellulose and Inulin.	8 Marks	L1	CO1
	b)	What are the disaccharides explain with suitable structures?	8 Marks	L3	CO1

MODULE-II

4.	a)	Elaborate on secondary structure of proteins.	8 Marks	L1	CO2
	b)	Explain the biological importance of essential fatty acids.	8 Marks	L3	CO2
		(OR)			
5.	a)	Discuss the classification of protein based on the structure functional and nutritional.	8 Marks	L3	CO2
	b)	Explain the urea cycle pathway write short on clinical significance.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the competitive and non competitive inhibitions.	8 Marks	L2	CO3
	b)	Define Km and explain the effect of substrate concentration on enzyme activity.	8 Marks	L3	CO3
		(OR)			
7.	a)	Develop knowledge on isoenzymes and explain their structure, organ distribution and diagnostic Importance.	8 Marks	L3	CO3
	b)	What is Km and explain the factors effecting enzyme activity.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe the factors that affect the BMR of an Individual.	8 Marks	L3	CO4
	b)	What is the Special dynamic action of food? Mention SDA for all Macronutrients. Define thermodynamic action of food.	8 Marks	L3	CO4
		(OR)			
9.	a)	What is a balanced diet? List out all the components of a balanced diet.	8 Marks	L3	CO4
	b)	What are the nutritional risks during pregnancy? Define the nutritional needs during pregnancy.	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe about MYPT proteins.	8 Marks	L1	CO5
	b)	Elaborate on any two muscular dystrophies.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain about dystrophin complex	8 Marks	L3	CO5
	b)	Give a note on tetany and rigor mortis.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2024

BASIC CLINICAL BIOCHEMISTRY AND ANALYTICS

[Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write few points on simple distillation technique.	2 Marks	L2	CO1
	b)	Mention few points on fire safety	2 Marks	L1	CO1
	c)	What are the normal solutions?	2 Marks	L3	CO2
	d)	Draw neat labeled structure of Burettes	2 Marks	L1	CO2
	e)	What are the standard solutions?	2 Marks	L3	CO3
	f)	What is Pka value	2 Marks	L1	CO3
	g)	Write any four gel electrophoresis applications.	2 Marks	L2	CO4
	h)	Four points on zone electrophoresis.	2 Marks	L3	CO4
	i)	Bio-affinity Chromatography add a note on significance	2 Marks	L2	CO5
	j)	What is Isoelectric focusing?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the preparation of method for double distilled water.	8 Marks	L2	CO1
	b)	What are the methods of distillation water in laboratory?	8 Marks	L3	CO1
		(OR)			
3.	a)	Summarize the descriptive details of a medical laboratory request form.	8 Marks	L1	CO1
	b)	What are the various types of laboratory records, and how are they utilized?	8 Marks	L3	CO1

MODULE-II

4.	a)	What types of volumetric apparatus are there, and could you include diagrams for explanation?	8 Marks	L1	CO2
	b)	How do you differentiate between the conversion of SI Units and CGS units?	8 Marks	L3	CO2
		(OR)			
5.	a)	What are the types of flasks and beakers, and how are they used in laboratory?	8 Marks	L3	CO2
	b)	How would you go about preparing a 0.1 Molar H2SO4 solution?	8 Marks	L1	CO2

MODULE-III

6.	a)	What is the mechanism behind reverse osmosis, and could you elaborate on it?	8 Marks	L2	CO3
	b)	What are the different factors that influence osmosis?	8 Marks	L3	CO3

(OR)

7.	a)	Can you provide a conclusion and describe Vant Hoff's equation?	8 Marks	L3	CO3
	b)	Define osmotic pressure and discuss isotonic, hypertonic, and hypotonic solutions.	8 Marks	L1	CO3

MODULE-IV

8.	a)	What is the importance of SDS-PAGE electrophoresis, and could you provide an outline highlighting its significance?	8 Marks	L3	CO4
	b)	What is Immuno-electrophoresis? Write its clinical application.	8 Marks	L3	CO4

(OR)

9.	a)	Which method is typically employed for separating DNA by electrophoresis in experiments?	8 Marks	L3	CO4
	b)	Elaborate procedure and principles of DNA separation by electrophoresis?	8 Marks	L1	CO4

MODULE-V

10.	a)	What is the operational principle of chromatography depicted in schematic representations?	8 Marks	L1	CO5
	b)	Elaborate the principle, construction and working of Gas Chromatography.	8 Marks	L3	CO5

(OR)

11.	a)	Discuss the application of flow cytometry.	8 Marks	L3	CO5
	b)	Discuss in detail on Ion exchange and Gel Chromatography with neat representative illustrations	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. I Semester (MBU-22) Regular Examinations, May – 2024

MEDICAL BIOCHEMISTRY - I

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Draw the structure of hyaluronic acid.	2 Marks	L2	CO1
	b)	Write note on chondroitin sulfate.	2 Marks	L1	CO1
	c)	List any two properties of proteins.	2 Marks	L3	CO2
	d)	Mention any four points on biological important peptides.	2 Marks	L1	CO2
	e)	Mention few points on Iron Deficiency anemia.	2 Marks	L3	CO3
	f)	Define Cerebral Beri Beri.	2 Marks	L1	CO3
	g)	Define antioxidant.	2 Marks	L2	CO4
	h)	List any four points on hyperbilirubinemia.	2 Marks	L3	CO4
	i)	Define Clearance and write a formula.	2 Marks	L2	CO5
	j)	List any four abnormalities of acid base imbalance.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the Triglycerides? Mention their biological importance.	8 Marks	L2	CO1
	b)	Discuss the structural and functional characteristics of heparin and dermatan sulphate.	8 Marks	L3	CO1

(OR)

3.	a)	Elaborate glycogen metabolism. Add brief note on importance of glycogen.	8 Marks	L1	CO1
	b)	Explain the biologically importance of Lipids.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the physical properties of denaturation.	8 Marks	L1	CO2
	b)	How would you classify proteins functionally?	8 Marks	L3	CO2

(OR)

5.	a)	Explain the classification of Proteins. Add brief note on importance of proteins..	8 Marks	L3	CO2
	b)	Explain the classification of amino acids. Discuss the properties amino acid.	8 Marks	L1	CO2

MODULE-III

6.	a)	What is a hematopoietic vitamin? Name their active form and biomedical function.	8 Marks	L2	CO3
	b)	Mention the absorption and metabolism of iron. Explain its clinical significance.	8 Marks	L3	CO3

(OR)

7.	a)	Elucidate the roles and functions of zinc, iron, iodine and selenium.	8 Marks	L3	CO3
	b)	Explain the functions and clinical conditions of sodium and potassium.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the various factors which influence enzyme activity.	8 Marks	L3	CO4
	b)	Discuss the diagnostic importance of the enzymes. Add short note on Transaminase and Alkaline phosphatase	8 Marks	L3	CO4

(OR)

9.	a)	Elaborate on the role of diagnostic enzymes in clinical diagnosis?	8 Marks	L3	CO4
	b)	What are the characteristics of enzyme catalysis that you can contrast based on your knowledge?	8 Marks	L1	CO4

MODULE-V

10.	a)	Classify liver function tests. Describe tests based on excretory and synthetic function of liver.	8 Marks	L1	CO5
	b)	Discuss thyroid function tests along with its clinical interpretation.	8 Marks	L3	CO5

(OR)

11.	a)	Elaborate the Metabolic Acidosis and Respiratory Acidosis.	8 Marks	L3	CO5
	b)	What hyperbilirubinemia. Explain the clinical manifestations of Jaundice.	8 Marks	L1	CO5

Reg. No. | | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. & BPT I Semester (MBU-22) Regular Examinations, May – 2024

TELUGU

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology, Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	ధ్రువుని తల్లిదండ్రులు ఎవరు?	2 Marks	L1	CO3
	b)	కృషీవలుడు పాఠ్యభాగ రచయిత ఎవరు?	2 Marks	L2	CO4
	c)	నరుని శక్తి ఎలాంటిది?	2 Marks	L1	CO4
	d)	దేవేంద్రుడు – సంధికార్యము రాయండి.	2 Marks	L1	CO5
	e)	త్రినేత్రుడు – విగ్రహ వాక్యము రాయండి.	2 Marks	L1	CO5
	f)	ఇరుగు పొరుగుతో ఎలా ఉండాలి?	2 Marks	L1	CO1
	g)	ఉత్తమ వ్యక్తిత్వం ఎలా అలవడుతుంది?	2 Marks	L1	CO1
	h)	ఉత్తాన పాదుడి భార్యలు ఎవరు?	2 Marks	L1	CO2
	i)	నాడీజంఘుడు ఎవరు?	2 Marks	L2	CO2
	j)	పోతన భిరుదులు ఏవి?	2 Marks	L1	CO3

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	ఎవడు అంధుడు కాడు ?	8 Marks	L3	CO1
	b)	వేటి వలన శాంతి లభించును ?	8 Marks	L3	CO1
		(OR)			
3.	a)	ఎటువంటి చదువు శాంతిని కలిగించదు?	8 Marks	L3	CO1
	b)	మూర్ఖులు దేనిని ఓర్చుకోలేరు ?	8 Marks	L3	CO1

MODULE-II

4.	a)	ఫలముల్ మెక్కెడివాడు తత్ఫల రసాస్వాద క్రియాలోలుడై పలుమాఱమ్మధురత్వము న్నుతుల సంభావింతురేగాని, త త్ఫల హేతుక్రమ వృక్షముందలపరెవ్వారైన, నట్లే రమా కలితుల్భోగములన్ భుజించుచు నినుంగన్నెత్తియుంజూతురే ప్రతిపదార్థం వ్రాయండి.	8 Marks	L2	CO2
	b)	గౌతముని వృత్తాంతాన్ని తెలియచేయండి ?	8 Marks	L3	CO2

(OR)

5.	a)	నా విని నారదుండు నరనాథువ కిట్లను నీ కుమారుడా దేవకిరీట రత్నరుచిదీపిత పాదపరోజుడైన రా జీవదళాక్ష రక్షితు డశేష జగత్పరికీర్తనీయ కీ ర్తీ విభవ ప్రశస్త సుచరిత్రుడు వానికి దు:ఖ మేటికిన్? ప్రతిపదార్థం వ్రాయండి	8 Marks	L2	CO2
	b)	నాడీ జంఘుని స్నేహశీలతను తెలియజేయండి?	8 Marks	L2	CO2

MODULE-III

6.	a)	మత్తేభం, శార్దూలం పద్యాల లక్షణాలు రాయండి ?	10 Marks	L3	CO3
	b)	సంస్కృత సంధులను వివరించండి?	6 Marks	L2	CO3

(OR)

7.	a)	"హరి పరమాత్మ కేశవ చరాచర భూతశరీర ధారివై పరుగుదు వీవు, నిట్టులుగ బ్రాణనిరోధ మెఱుంగ మెందు ముం దిరవుగ దేవదేవ జగదీశ్వర! సర్వశరణ్య! నీ పదాం బురుహము లర్థిమై శరణు బొందెద మార్తి హరించి కావవే" ప్రతిపదార్థం వ్రాయండి?	10 Marks	L3	CO3
	b)	ధ్రువునికి నారదుడు ఏమని ఉపదేశించాడు?	6 Marks	L2	CO3

MODULE-IV

8.	a)	కర్షకుని జీవితాన్ని కవి ఎలా చిత్రించాడు.	8 Marks	L2	CO4
	b)	వానికి దు:ఖ మేటికిన్! నిందావాక్యములవ్వల్కరే! వీటికి సందర్భాలను వివరించండి?	8 Marks	L2	CO4

(OR)

9.	a)	'ధృవుడు విష్ణువును ఎలా కీర్తించాడో వివరించండి ?	8 Marks	L2	CO4
	b)	ఉత్తానపాదుని కుమారులు ఎందరు ? వారి పేర్లు ఏమి?	8 Marks	L2	CO4

MODULE-V

10.	a)	ఏవేని నాలుగు తత్పురుష సమాసాలను వివరించండి?	8 Marks	L3	CO5
	b)	అనుప్రాసాలంకారాలను లక్షలక్షణ సమన్వయం చేయండి ?	8 Marks	L3	CO5

(OR)

11.	a)	దువ్వూరి రామిరెడ్డి జీవిత విశేషాలను తెలియజేయండి	8 Marks	L3	CO5
	b)	ప్రకృతి భావంబు నూత్నపథముగాదు సందర్భవాఖ్యం రాయండి.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BPT & B.Sc. I Semester (MBU-22) Regular Examinations, May – 2024

SANSKRIT

[Bachelor of Physiotherapy, Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	रामस्य माता का ?	2 Marks	L2	CO1
	b)	दशरथस्य कति पुत्राः ?	2 Marks	L1	CO1
	c)	रामस्य पत्नी का ?	2 Marks	L3	CO2
	d)	महाभरतस्य लेखकः कः ?	2 Marks	L1	CO2
	e)	आकाशात् उन्नतः कः ?	2 Marks	L3	CO3
	f)	यक्षस्य उत्तराणि कः ददाति ?	2 Marks	L1	CO3
	g)	चम्पूरामायणस्य लेखकः कः ?	2 Marks	L2	CO4
	h)	गङ्गां भोलोकं प्रति कः आनीतवान् ?	2 Marks	L3	CO4
	i)	मोहापनोदः पाठे राजा कः ?	2 Marks	L2	CO5
	j)	गुरुपत्न्याः नाम किम् ?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	आर्यपादुकाभिषेकः पाठ्यभागस्य साराशं लिखत ?	8 Marks	L2	CO1
	b)	आर्यपादुकाभिषेकः इति शीर्षिकायाः औचित्यं विवृणुत ?	8 Marks	L3	CO1
		(OR)			
3.	a)	यक्षयुधिष्ठिर सम्भाषणं लिखत ?	8 Marks	L1	CO1
	b)	यक्षप्रश्नाः पाठ्यभागस्य साराशं लिखत ?	8 Marks	L3	CO1

MODULE-II

4.	a)	गङ्गावतरणम् पाठ्यभागस्य साराशं लिखत ?	8 Marks	L1	CO2
	b)	गङ्गावतरणम् पाठ्यभागे उक्त विषयान् समुपस्थापयत ?	8 Marks	L3	CO2

(OR)

5.	a)	मोहापनोदः पाठ्यभागस्य साराशं लिखत ?	8 Marks	L3	CO2
	b)	गुरुपत्नी कथं सुनन्दयाः मोहापनोदं कृतवती लिखत ?	8 Marks	L1	CO2

MODULE-III

6.	a)	अत्युत्कटैः पापपुण्यैः इहैव फलमश्नुते विशदयत ?	8 Marks	L2	CO3
	b)	शृगालः कथं मारितः लिखत ?	8 Marks	L3	CO3

(OR)

7.	a)	शूद्रकवीरवर कथा पाठ्यभागस्य साराशं लिखत ?	8 Marks	L3	CO3
	b)	वीरवरस्य त्यागभुद्धिं लिखत ?	8 Marks	L1	CO3

MODULE-IV

8.	a)	अकारान्तः पुल्लिङ्गः "देव" शब्दरूपं लिखत	8 Marks	L3	CO4
	b)	इकारान्तः पुल्लिङ्गः "हरि" शब्दरूपं लिखत	8 Marks	L3	CO4

(OR)

9.	a)	उकारान्तः पुल्लिङ्गः "गुरु" शब्दरूपं लिखत	8 Marks	L3	CO4
	b)	ऋकारन्तः पुल्लिङ्गः "पितृ" शब्दरूपं लिखत	8 Marks	L1	CO4

MODULE-V

10.	a)	पाणिनि कविपरिचयं लिखत	8 Marks	L1	CO5
	b)	कौटिल्य कविपरिचयं लिखत	8 Marks	L3	CO5

(OR)

11.	a)	आदिशङ्कराचार्य कविपरिचयं लिखत	8 Marks	L3	CO5
	b)	भरतमुनि कविपरिचयं लिखत	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T & B.Sc. I Semester (MBU-22) Regular Examinations May– 2024

PROFESSIONAL ENGLISH

[Bachelor of Physiotherapy, Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Change the following sentences as directed: i) Mittaiah was angry. Mittaih kept smiling. (into compound) ii) The lesson was difficult so Urwashi could not understand it. (into complex)	2 Marks	L1	CO1
	b)	Fill in the blanks with appropriate articles: i) Rajan is ____ cleverest boy. ii) I want to join____ university for higher studies.	2 Marks	L1	CO1
	c)	Underline the content and structure words in these sentences: i) I am going to Delhi tomorrow. ii) They are swimming now.	2 Marks	L1	CO2
	d)	Write the phonetic transcriptions of the following words: i) Student ii) Master	2 Marks	L1	CO2
	e)	Write the past and past participle of the following base verbs: i) Draw ii) Swim	2 Marks	L1	CO3
	f)	Write the meaning of the following words: i) Highway ii) Scrub	2 Marks	L1	CO3
	g)	Recall the letters to form meaningful words: i) S-R-D-W-O ii) R-E-D-G-A-N	2 Marks	L1	CO4
	h)	Find the type of sentence: i) I am an Indian. ii) Hurrah! We won the match.	2 Marks	L1	CO4
	i)	Find the error in the sentences: i) Does you see it? ii) I am seeing the sun rise this morning.	2 Marks	L1	CO5
	j)	Fill in the blanks with appropriate preposition: i) The ball fell _____ the well. (into, below) ii) I am meeting Jaya _____ 5pm. (on, at)	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the significance of the line "Keep up your courage, though the road be long." From 'Be the best whatever you are'.	8 Marks	L2	CO1
	b)	How does the poem 'Be the best whatever you are' emphasize the importance of perseverance and determination?	8 Marks	L3	CO1

(OR)

3.	a)	How does the poet address the idea of comparison with others in the pursuit of excellence in 'Be the best whatever you are'?	8 Marks	L1	CO1
	b)	In what ways does the poem 'Be the best whatever you are' inspire readers to strive for greatness regardless of their circumstances?	8 Marks	L3	CO1

MODULE-II

4.	a)	Why pronunciation is important in reading? List out the important measures to be followed in order to read a passage in English effectively.	8 Marks	L1	CO2
	b)	What is interrogative sentence? Explain information questions and Yes-No type questions with examples.	8 Marks	L3	CO2

(OR)

5.	a)	Analyze the line from the short essay "Be the Best of Whatever You Are". 'It was a question of 'Please'. The complainant entering the lift, said, 'Top'.	8 Marks	L3	CO2
	b)	What are the ill-effects of impolite behavior in our everyday life?	8 Marks	L1	CO2

MODULE-III

6.	a)	What lesson does this poem "If You Forget Me" make about the nature of unrequited love?	8 Marks	L2	CO3
	b)	Write a short note on Tone Group with examples.	8 Marks	L3	CO3

(OR)

7.	a)	The second stanza of the poem "If You Forget Me" contains eloquent and beautiful language about love – Explain its significance.	8 Marks	L3	CO3
	b)	Write a conversation between two friends helping each other while applying to universities for their Post-Graduation.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Analyze the line from the short story "After the Sunset". 'What can I do? Who do I ask? Heavy crowd and the police… still wading through the mass of people she reached Gokul Chat but could not find her husband'.	8 Marks	L3	CO4
	b)	What are conditional sentences? Give suitable examples.	8 Marks	L3	CO4

(OR)

9.	a)	Analyze these lines from the short story "After the Sunset". 'All the people who died here are ordinary citizens. This is not executed by a single individual. Must have been carried out by a mob".	8 Marks	L3	CO4
	b)	Explain the line from the short story "After the Sunset". 'Then, you do one thing. Please go into your mother's womb and take birth again in the family of a rich woman.'	8 Marks	L1	CO4

MODULE-V

10.	a)	Write on the significance of the title "Man's Peril".	8 Marks	L1	CO5
	b)	Analyze the lines from the essay "Man's Peril". 'The general public, and even many men in positions of authority, have not realized what would be involved in a war with hydrogen bombs'.	8 Marks	L3	CO5

(OR)

11.	a)	What is Bertrand Russell's opinion about the importance of humanity and the futility of war? Explain.	8 Marks	L3	CO5
	b)	What are collocations? Give examples.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. I Semester (MBU-22) Regular Examinations May – 2024

ANATOMY – I

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write a brief note on nutrient artery.	2 Marks	L2	CO1
	b)	Name the carpal bones.	2 Marks	L1	CO1
	c)	Write a brief note on median cubital vein.	2 Marks	L3	CO2
	d)	Name the branches of axillary artery.	2 Marks	L1	CO2
	e)	Write a brief note on femoral canal.	2 Marks	L3	CO3
	f)	Name the tarsal bones in foot.	2 Marks	L1	CO3
	g)	Write a brief note on pleural effusion.	2 Marks	L2	CO4
	h)	Define bronchopulmonary segment of the lung.	2 Marks	L3	CO4
	i)	What is centromere? And its importance.	2 Marks	L2	CO5
	j)	Prepare a note on abnormal sites of implantation.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe types of cartilage with examples?	8 Marks	L2	CO1
	b)	Compare the features of skeletal muscle and smooth muscle.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain different types of movements possible in upper limb?	8 Marks	L1	CO1
	b)	Write in detail about blood supply of a long bone with a neat labeled diagram?	8 Marks	L3	CO1

MODULE-II

4.	a)	Enumerate mammary gland under the following headings. i) Location & extent ii) Structure iii) Blood supply & nerve supply iv) Applied anatomy	8 Marks	L1	CO2
	b)	What are intermuscular spaces? Explain boundaries and contents of intermuscular spaces?	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain features of humerus bone and its muscle attachments	8 Marks	L3	CO2
	b)	What is cubital fossa? Explain boundaries and contents of cubital fossa?	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe Hip joint under the following headings? i) Type & Variety ii) Articular surfaces, ligaments & Relations iii) Blood supply & Nerve supply iv) Applied anatomy.	8 Marks	L2	CO3

	b)	Explain saphenous nerve under the following headings? i) Origin ii) Course & Relations iii) Branches iv) Applied anatomy	8 Marks	L3	CO3
		(OR)			
7.	a)	What are hamstring muscles? Describe origin, insertion, nerve supply, action and applied aspects of hamstring muscles?	8 Marks	L3	CO3
	b)	Describe popliteal fossa and its contents?	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Describe conducting system of heart and its clinical importance?	8 Marks	L3	CO4
	b)	What is aorta? Explain parts of aorta, relations of aorta & its branches?	8 Marks	L3	CO4
		(OR)			
9.	a)	Write a note on blood supply of heart with a diagram?	8 Marks	L3	CO4
	b)	Explain structures passing through hilum of right lung and left lung?	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Define connective tissue? Types of connective tissue with examples?	8 Marks	L1	CO5
	b)	Illustrate the microscopic structure of a bone T.S. & L.S.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the histology of a skeletal muscle	8 Marks	L3	CO5
	b)	Define fertilization? What are the factors affecting fertilization?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. I Semester (MBU-22) Regular Examinations, May – 2024

PHYSIOLOGY - I

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Add a note on Diffusion.	2 Marks	L2	CO1
	b)	Mention a few points about carrier protein.	2 Marks	L1	CO1
	c)	Add a note on Erythroblastosis fetalis.	2 Marks	L3	CO2
	d)	Write in detail about various clotting factors.	2 Marks	L1	CO2
	e)	Draw a neat labeled diagram of sarcomere	2 Marks	L3	CO3
	f)	What are the various types of muscle proteins?	2 Marks	L1	CO3
	g)	What are the functions of SA node?	2 Marks	L2	CO4
	h)	Write in detail about various types of Heart block.	2 Marks	L3	CO4
	i)	Define cyanosis and mention its types.	2 Marks	L2	CO5
	j)	Add a note on Dysbarism.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is active transport? Describe types of active transport?	8 Marks	L2	CO1
	b)	Illustrate the structure of mitochondria and functions of it with a neat labeled diagram.	8 Marks	L3	CO1
		(OR)			
3.	a)	Define cell. Describe the structure and functions of cell.	8 Marks	L1	CO1
	b)	Explain different types of active transport.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define Erythropoiesis. Explain stages of Erythropoiesis.	8 Marks	L1	CO2
	b)	Add a note on composition of blood.	8 Marks	L3	CO2
		(OR)			
5.	a)	Define hemopoiesis. Explain the stages of leucopoiesis.	8 Marks	L3	CO2
	b)	Explain structure, functions and derivatives of haemoglobin.	8 Marks	L1	CO2

MODULE-III

6.	a)	Define neuromuscular junction. Explain the structure of neuromuscular junction.	8 Marks	L2	CO3
	b)	Define action potential. Enumerate the mechanism of transmission of action potential.	8 Marks	L3	CO3
		(OR)			
7.	a)	Define muscle. Describe types of muscle with examples.	8 Marks	L3	CO3
	b)	Explain the properties of skeletal muscle.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain conducting system of the heart.	8 Marks	L3	CO4
	b)	Define cardiac cycle? Explain stages of cardiac cycle.	8 Marks	L3	CO4
		(OR)			
9.	a)	Define heart rate. Explain the physiological and pathological variations of heart rate.	8 Marks	L3	CO4
	b)	Explain the properties of Autorhythmacity in cardiac muscle.	8 Marks	L1	CO4

MODULE-V

10.	a)	Define vital capacity. Explain physiological and pathological variations of vital capacity.	8 Marks	L1	CO5
	b)	Explain the muscles of respiration.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the mechanism of respiration	8 Marks	L3	CO5
	b)	Add a note on surfactant.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. I Semester (MBU-22) Regular Examinations, May – 2024

SOCIOLOGY

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Sociology.	2 Marks	L1	CO1
	b)	Who are founding fathers of Sociology?	2 Marks	L1	CO1
	c)	What are types of survey?	2 Marks	L1	CO1
	d)	Enlist pre-requisites of social system.	2 Marks	L2	CO2
	e)	How anticipatory socialization occurs?	2 Marks	L2	CO2
	f)	Define community.	2 Marks	L1	CO3
	g)	What is tribe?	2 Marks	L1	CO3
	h)	Who are disabled?	2 Marks	L1	CO4
	i)	Define prostitution.	2 Marks	L1	CO4
	j)	Outline unemployment.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are methods of sociological investigation?	8 Marks	L1	CO1
	b)	What do you understand by interview method?	8 Marks	L2	CO1
		(OR)			
3.	a)	Relate Sociology and Anthropology.	8 Marks	L4	CO1
	b)	Discuss Sociology and Psychology.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define meaning and nature of socialization.	8 Marks	L2	CO2
	b)	Discuss agencies of socialization.	8 Marks	L2	CO2
		(OR)			
5.	a)	What is the influence of social groups on an individual's health?	8 Marks	L2	CO2
	b)	How social groups affect an individual's ill-health?	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss about community as a concept.	8 Marks	L2	CO3
	b)	What are the characteristics of community?	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss characteristics of rural communities.	8 Marks	L2	CO3
	b)	Discuss characteristics of urban communities.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What is the role of medical social worker?	8 Marks	L2	CO4
	b)	Discuss provisions of social security.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain problems of population explosion.	8 Marks	L2	CO4
	b)	Narrate problems of employed women.	8 Marks	L4	CO4

MODULE-V

10.	a)	Narrate Sociology and Social Psychology.	8 Marks	L3	CO1
	b)	Why is questionnaire required?	8 Marks	L1	CO1
		(OR)			
11.	a)	What is the scope of Sociology?	8 Marks	L1	CO1
	b)	How observation method is relevant for medical professionals?	8 Marks	L2	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations May – 2024

HUMAN ANATOMY

[Optometry, Dialysis Technology, Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are anatomical terms?	2 Marks	L2	CO1
	b)	Explain in brief about nervous tissue.	2 Marks	L2	CO1
	c)	Explain in brief about nutrient foramen.	2 Marks	L2	CO2
	d)	Name the types of muscles present along with their location.	2 Marks	L1	CO2
	e)	What is the two function of diaphragm?	2 Marks	L2	CO3
	f)	List out different parts of large intestine.	2 Marks	L1	CO3
	g)	What are exocrine glands, give two examples?	2 Marks	L2	CO4
	h)	Give the dimensions of urinary bladder, along with its functions.	2 Marks	L1	CO4
	i)	What are sense organs? Name them.	2 Marks	L2	CO5
	j)	Mention any two functions of the cerebellum.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss about Muscular tissues in detail.	8 Marks	L2	CO1
	b)	Explain about: Diagrammatic representation of Neuron Extra cellular matrix of connective tissues.	8 Marks	L2	CO1

(OR)

3.	a)	Enumerate the terms related to movements with diagrams.	8 Marks	L1	CO1
	b)	Write a note on: Liquid connective tissues Types of Muscle tissue	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the ossification of bones with diagrams.	8 Marks	L2	CO2
	b)	Elaborate on types of bones based on their shape.	8 Marks	L2	CO2

(OR)

5.	a)	Write about the features of a typical rib.	8 Marks	L2	CO2
	b)	Elaborate on types of muscles.	8 Marks	L2	CO2

MODULE-III

6.	a)	Elaborate on the digestive system.	8 Marks	L2	CO3
	b)	Discuss about pericardium with a neat diagram.	8 Marks	L2	CO3

(OR)

7.	a)	Summarize on small intestine and its parts.	8 Marks	L2	CO3
	b)	Elaborate liver in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the scrotal sac and testis with a schematic diagram.	8 Marks	L2	CO4
	b)	Give a detailed note on the pituitary gland.	8 Marks	L1	CO4
		(OR)			
9.	a)	Describe about the anatomy of the urethra with a sketch.	8 Marks	L1	CO4
	b)	Write about the male reproductive system in detail with appropriate diagrams.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the sulci and gyri present on inferior surface of the cerebrum under the following headings: i) External features. ii) Internal features iii) Coverings iv) Blood supply and nerve supply Applied anatomy.	8 Marks	L1	CO5
	b)	Explain the structure of the cerebellum under the following headings: i) External features. ii) Internal features iii) Coverings iv) Blood supply and nerve supply Applied anatomy.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the olfactory pathway and mention olfactory defects.	8 Marks	L1	CO5
	b)	What are basal ganglia? And write the functions of basal ganglia.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2024

HUMAN PHYSIOLOGY

[Optometry, Dialysis Technology, Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Polycythemia and mention its types with examples.	2 Marks	L2	CO1
	b)	What are steps involved in collection & storage of blood?	2 Marks	L1	CO1
	c)	Mention the types of Summation in nerve fiber	2 Marks	L3	CO2
	d)	What are various types of muscle contraction?	2 Marks	L1	CO2
	e)	Add a note on defecation reflex.	2 Marks	L3	CO3
	f)	Add a note on peristalsis	2 Marks	L1	CO3
	g)	Write a few points on Chloride shift.	2 Marks	L2	CO4
	h)	Add a note on Haldane effect.	2 Marks	L3	CO4
	i)	Add a note on vasa recta.	2 Marks	L2	CO5
	j)	Write about composition of Urine.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain various functions of plasma proteins.	8 Marks	L2	CO1
	b)	Add a note on abnormal haemoglobins.	8 Marks	L3	CO1
		(OR)			
3.	a)	List out various clotting factors. Add a note on afibrinigenemia.	8 Marks	L1	CO1
	b)	Explain the composition, formation, circulation and functions of lymph.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain excitation – contraction coupling.	8 Marks	L1	CO2
	b)	Define excitability. Describe the excitability curve.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the stages in action potential with a neat labeled diagram.	8 Marks	L3	CO2
	b)	Add a note on Myasthenia gravis and rigor mortis.	8 Marks	L1	CO2

MODULE-III

6.	a)	What is ulcer? Discuss different types of ulcers.	8 Marks	L2	CO3
	b)	Discuss the details, causes, diagnosis and treatment of gall stones.	8 Marks	L3	CO3
		(OR)			
7.	a)	Write an essay on gastric motility. What are the factors influencing gastric emptying?	8 Marks	L3	CO3
	b)	Add a note on vomiting reflex and defecation reflex.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define cyanosis and it's types.	8 Marks	L3	CO4
	b)	Add a note on SCUBA.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the effect of exercise on respiration.	8 Marks	L3	CO4
	b)	Add a note on physiological anatomy of respiratory tract.	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe the absorption of Na^+ in nephron with suitable diagrams.	8 Marks	L1	CO5
	b)	Discuss the Significance of renal circulation.	8 Marks	L3	CO5
		(OR)			
11.	a)	Write the composition of urine, add a note on renal calculi.	8 Marks	L3	CO5
	b)	Draw a neat labeled diagram of urinary bladder along with nerve innervations.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations May – 2024

HUMAN ANATOMY – I

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention any four terms used in relation to the upper limb.	2 Marks	L1	CO1
	b)	What is ***"itis"?*** give any two examples.	2 Marks	L2	CO1
	c)	Prepare a brief note on ***"fixators"*** and "***synergists".***	2 Marks	L3	CO2
	d)	List out the functions of synovial fluid.	2 Marks	L1	CO2
	e)	Write a brief note on lymphadenopathy.	2 Marks	L3	CO3
	f)	Define crista terminalis and musculi pectinati.	2 Marks	L1	CO3
	g)	Name the ligaments of spleen attached to it.	2 Marks	L2	CO4
	h)	What is a bronchopulmonary segment?	2 Marks	L3	CO4
	i)	Write a brief note on periosteum and its functions.	2 Marks	L2	CO5
	j)	Outline the coverings of blood vessels.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe movements possible in trunk?	8 Marks	L2	CO1
	b)	Interpret the terms used in relation to upper limb?	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain in detail about the movements of neck?	8 Marks	L3	CO1
	b)	Enumerate the terms used in relation to trunk?	8 Marks	L2	CO1

MODULE-II

4.	a)	Write a note on biceps brachii muscle under following headings. i) Origin & insertion ii) action iii) Nerve supply iv) applied anatomy	8 Marks	L1	CO2
	b)	Describe parts of a young bone and adult long bone with a neat labeled diagram?	8 Marks	L2	CO2
		(OR)			
5.	a)	Compare the features of skeletal muscle with smooth muscle.	8 Marks	L3	CO2
	b)	Explain the structure of knee joint under the following headings? i) Type & Variety ii) Articular surfaces iii) Ligaments iv) Muscles & Movements v) Blood supply & Nerve supply vi) Applied anatomy	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the arterial supply of heart with a diagram.	8 Marks	L2	CO3
	b)	Define lymph. Add a note on the structure of lymph node and its functions.	8 Marks	L1	CO3
		(OR)			
7.	a)	Outline the parts of circulatory system and write a note on functions of heart.	8 Marks	L3	CO3
	b)	Illustrate the major blood vessels of heart and its branches/tributaries?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the boundaries and contents of posterior mediastinum.	8 Marks	L2	CO4
	b)	Prepare a note on the origin, insertion, nerve supply and action of diaphragm muscle with a diagram.	8 Marks	L3	CO4
		(OR)			
9.	a)	What is mediastinum? Explain types of mediastinum and its contents.	8 Marks	L3	CO4
	b)	Illustrate the structure of tongue under following headings. i) External features ii) Parts iii) Muscles iv) Blood supply & Nerve supply v) Applied anatomy?	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain microscopic structure of a lymph node with a diagram?	8 Marks	L3	CO5
	b)	Enumerate the types of simple epithelia with examples.	8 Marks	L2	CO5
		(OR)			
11.	a)	Draw a neat labeled diagram of microscopic T.S. and L.S. of peripheral nerve.	8 Marks	L2	CO5
	b)	Define gland. Write a note on types of glands with examples.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2024

HUMAN PHYSIOLOGY - I

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define homeostasis and mention an example for it.	2 Marks	L2	CO1
	b)	Add a note on various types of haemoplilias.	2 Marks	L1	CO1
	c)	Write in detail about contractility.	2 Marks	L3	CO2
	d)	Classify various types of nerve fibers.	2 Marks	L1	CO2
	e)	Add a note on jaundice.	2 Marks	L3	CO3
	f)	Write the composition of Bile juice.	2 Marks	L1	CO3
	g)	Add a note on Hering-Breur reflex.	2 Marks	L2	CO4
	h)	Mention the importance of Hb-O2 dissociation curve.	2 Marks	L3	CO4
	i)	Add a note on filtration membrane.	2 Marks	L2	CO5
	j)	Write the functions of renin.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the steps involved in platelet plug formation.	8 Marks	L2	CO1
	b)	Explain physiological and pathological variations in RBC count.	8 Marks	L3	CO1
		(OR)			
3.	a)	Define polycythemia and explain various types of polycythemias.	8 Marks	L1	CO1
	b)	Explain the pathological variations in each WBC.	8 Marks	L3	CO1

MODULE-II

4.	a)	What is refractory period? Explain Types of refractory period with examples.	8 Marks	L1	CO2
	b)	Explain wallerian degeneration and retrograde regeneration in nerve fibre.	8 Marks	L3	CO2
		(OR)			
5.	a)	Earlanger and grasser classification of nerve fibers.	8 Marks	L3	CO2
	b)	Define sarcomere. Describe the structure of a sarcomere with a diagram.	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe the composition, functions and regulation of bile.	8 Marks	L2	CO3
	b)	Enumerate the differences between the liver bile and gall bladder bile.	8 Marks	L3	CO3

		(OR)			
7.	a)	Elaborate about different types of gastric glands.	8 Marks	L3	CO3
	b)	Describe the steps in the process of deglutition.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Explain the mechanism of carbon dioxide transport.	8 Marks	L3	CO4
	b)	Add a note on Chloride shift.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the mechanism of oxygen transport.	8 Marks	L3	CO4
	b)	Add a note on P50.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Explain tubular reabsorption in nephron.	8 Marks	L1	CO5
	b)	Discuss the functions of skin.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss the mechanism of artificial kidney.	8 Marks	L3	CO5
	b)	What is renal failure and explain its types.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2024

GEOMETRICAL OPTICS-I

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Why does light get referred to as an electromagnetic wave?	2 Marks	L2	CO1
	b)	When two are called to be in phase?	2 Marks	L1	CO1
	c)	What is retroreflection?	2 Marks	L3	CO2
	d)	Explain the image formation by a convex mirror.	2 Marks	L1	CO2
	e)	Define the Prentice rule in short.	2 Marks	L3	CO3
	f)	Mention the technique for avoiding dispersion in a prism	2 Marks	L1	CO3
	g)	Mention the refractive index of i) Air, ii) cornea iii) Crystalline lens iv) Aqueous and vitreous humor.	2 Marks	L2	CO4
	h)	Give any two differences between convex and concave lenses.	2 Marks	L3	CO4
	i)	Mention the different types of thick lens.	2 Marks	L2	CO5
	j)	Write about combination lens.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain any two important theories of light	8 Marks	L2	CO1
	b)	Write short note on: i) Amplitude ii) Wavelength iii) Frequency iv) Wave velocity	8 Marks	L3	CO1

(OR)

3.	a)	Define light. What is the electromagnetic spectrum?	8 Marks	L1	CO1
	b)	Explain Corpuscular theory and also mention the points favoring and opposing this theory.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the mirror formula.	8 Marks	L1	CO2
	b)	Elaborate on the process of calculating magnification in a mirror.	8 Marks	L3	CO2

(OR)

5.	a)	Compare concave and convex mirrors.	8 Marks	L3	CO2
	b)	Define reflection and its types with a proper diagram.	8 Marks	L1	CO2

MODULE-III

6.	a)	Compare between thin and thick prism.	8 Marks	L2	CO3
	b)	Explain the units of prism power calculation	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the principle of direct vision spectroscope	8 Marks	L3	CO3
	b)	What do you understand by an achromatic combination of prism?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define the lens and mention its types.	8 Marks	L3	CO4
	b)	Explain the cardinal data for a thin lens.	8 Marks	L3	CO4
		(OR)			
9.	a)	Establish the lens maker formula and Gauss formula.	8 Marks	L3	CO4
	b)	Discuss the formulas of different magnifications in a lens system.	8 Marks	L1	CO4

MODULE-V

10.	a)	Illustrate the changes of the principle plane by changing the distance of two lenses.	8 Marks	L1	CO5
	b)	Obtain system matrix in case of two thin lens separated by a distance and also find out the formula of its focal length.	8 Marks	L3	CO5
		(OR)			
11.	a)	Define matrix method. Explain refraction and translation matrix.	8 Marks	L3	CO5
	b)	What do you understand by system matrix?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

BASIC PHARMACOLOGY AND DRUG ADMINISTRATION

[Optometry, Emergency Medical and Critical Care Technology, Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the actions of Anticholinergic drugs in CVS.	2 Marks	L2	CO1
	b)	Write the advantages of oral ingestion of drugs.	2 Marks	L1	CO1
	c)	Define neurotransmitters.	2 Marks	L3	CO2
	d)	What are the various routes of drug administration?	2 Marks	L1	CO2
	e)	Enlist the uses of Benzodiazepines.	2 Marks	L3	CO3
	f)	List the various clinical uses of Hypnotics.	2 Marks	L1	CO3
	g)	Enlist the uses of Furosemide.	2 Marks	L2	CO4
	h)	List the various clinical uses of Mucolytic.	2 Marks	L3	CO4
	i)	Add a short note on Osmotic diuretics.	2 Marks	L2	CO5
	j)	Define Angina Pectoris.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write the classification of parasympathomimetics. Explain the pharmacological actions, side effect ,uses of Acetylcholine.	8 Marks	L2	CO1
	b)	Write the principle and add a note on mechanism of drug action?	8 Marks	L3	CO1
		(OR)			
3.	a)	What are the types of drug interactions? Explain the factors affecting the pharmacokinetics drug-drug interaction.	8 Marks	L1	CO1
	b)	Describe the mechanism of action and common adverse effects of cholinomimetic alkaloids.	8 Marks	L3	CO1

MODULE-II

4.	a)	Write the classification of Adrenagic drugs. Explain the pharmacological actions, side effects and uses of adrenaline	8 Marks	L1	CO2
	b)	Describe the Mechanism of action of succinylcholine.	8 Marks	L3	CO2
		(OR)			
5.	a)	What are adverse drug reactions? Enlist the types of adverse drug reaction.	8 Marks	L3	CO2
	b)	Enlist the sources of drugs and give examples	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the classification , Therapeutic uses and side effects of Aspirin.	8 Marks	L2	CO3
	b)	Write the classification of General anesthetics. Give on Examples.	8 Marks	L3	CO3

(OR)

7.	a)	Describe the Mechanism of action of Paracetamol.	8 Marks	L3	CO3
	b)	Explain the pharmacological actions, side effects and uses of Paracetamol.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the classification , Therapeutic uses and side effects of metaprolol.	8 Marks	L3	CO4
	b)	Describe the Mechanism of action of Paracetamol and give an examples.	8 Marks	L3	CO4

(OR)

9.	a)	Explain the Therapeutic uses and side effects of Diuretics.	8 Marks	L3	CO4
	b)	Discuss about the uses and adverse effects of spironolactone.	8 Marks	L1	CO4

MODULE-V

10.	a)	Classify the Antibiotics.	8 Marks	L1	CO5
	b)	Describe briefly on pharmacological actions, side effects, uses of Drugs for Diabetes Mellitus.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the Differences between Antibacterial agents & Antiseptic.	8 Marks	L3	CO5
	b)	Describe detail about the Vaccines.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

APPLIED PHARMACOLOGY RELATED TO DT

[Dialysis Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the Chemical Disinfectants used in Dialysis.	2 Marks	L2	CO1
	b)	Name any two Nephrotoxic antibiotics	2 Marks	L1	CO1
	c)	List the uses of Erythropoietin.	2 Marks	L3	CO2
	d)	What are hemodialysis concentrate ? Give examples.	2 Marks	L1	CO2
	e)	Enlist the types of heparin.	2 Marks	L3	CO3
	f)	Define vitamin D analogues.	2 Marks	L1	CO3
	g)	Enlist the uses of the Dopamine .	2 Marks	L2	CO4
	h)	Define Homeostasis.	2 Marks	L3	CO4
	i)	What are histamines and their function?	2 Marks	L2	CO5
	j)	Define lipid lowering agents.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the indications for Antibiotics in dialysis patients. Add a note on two antibiotics.	8 Marks	L2	CO1
	b)	Define Erythropoiesis. Describe the process involved in Erythropoiesis. Describe about Erythropoietin, its uses and side effects.	8 Marks	L3	CO1

(OR)

3.	a)	Classify Diuretics. Write in detail about Loop diuretics and Potassium sparing diuretics.	8 Marks	L1	CO1
	b)	Classify Antihypertensive drugs. Enumerate the antihypertensive commonly used in dialysis patients. Mention their doses and important side effects.	8 Marks	L3	CO1

MODULE-II

4.	a)	Enumerate in detail about Hyperkalemia. Add a note an management of Hyperkalemia.	8 Marks	L1	CO2
	b)	Explain in detail in Thiazide Diuretics.	8 Marks	L3	CO2

(OR)

5.	a)	Write in detail about Heparin and its molecular weight.	8 Marks	L3	CO2
	b)	Enumerate about Low molecular weight heparins.	8 Marks	L1	CO2

MODULE-III

6.	a)	Enlist the protamine sulphate and explain in detail about its uses and adverse effects.	8 Marks	L2	CO3
	b)	Enumerate in detail about regional citrate. Add a note an management of regional citrate overdose .	8 Marks	L3	CO3
		(OR)			
7.	a)	Write in detail about Erythropoietin and its process.	8 Marks	L3	CO3
	b)	Enumerate about IV Iron therapy in dialysis patients.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Classify Inotropic agents. Write in detail about Digoxin	8 Marks	L3	CO4
	b)	Classify vasodilators. Enumerate the vasodilators commonly used in dialysis patients. Mention their doses and important side effects.	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe about Renin-Angiotensin/aldosterone axis and its role in regulation of blood pressure.	8 Marks	L3	CO4
	b)	Add a note on metabolic acidosis.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Explain detail about the Role of Kidney in Bone formation.	8 Marks	L1	CO5
	b)	Add a note Sodium on its functions.	8 Marks	L3	CO5
		(OR)			
11.	a)	Enumerate detail about Mechanism of antihistamines	8 Marks	L3	CO5
	b)	Explain the Role of Kidney in Acid – Base balance.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

TOXICOLOGY AND ENVIRONMENTAL EMERGENCY

[Emergency Medical and Critical Care Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the different inhalation method for using hydrocarbons?	2 Marks	L2	CO1
	b)	Define coma cocktail.	2 Marks	L1	CO1
	c)	Write any five common poisonous snakes in India.	2 Marks	L3	CO2
	d)	Write the pathway of Transmission of rabies virus.	2 Marks	L1	CO2
	e)	Draw the landmark for venro gluteal IM injection.	2 Marks	L3	CO3
	f)	List out six R's for proper medical procedure in hospital.	2 Marks	L1	CO3
	g)	Clasiction of poisonous pland .	2 Marks	L2	CO4
	h)	Steps taken after cat bite.	2 Marks	L3	CO4
	i)	How to identify the severity of injury?	2 Marks	L2	CO5
	j)	What is cardinal rule of production against radiation?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are the primary sources of exposure to CO and its treatment?	8 Marks	L2	CO1
	b)	Detail note on paracetamol toxicity and its treatment	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the methylene blue in hydrocarbon toxicity.	8 Marks	L1	CO1
	b)	What is the role of naloxone in the management of opiate overdose, and how is it administered to reverse respiratory depression?	8 Marks	L3	CO1

MODULE-II

4.	a)	How does a leech bite cause bleeding, and why does the bleeding often continue after the leech detaches?	8 Marks	L1	CO2
	b)	What is the recommended initial management for a person who has been bitten by another humans?	8 Marks	L3	CO2
		(OR)			
5.	a)	What are the common pathogens associated with cat bites?	8 Marks	L3	CO2
	b)	Write down the difference between neurotoxic, hemotoxic, and cytotoxic venoms in snake bite.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the different types of beta blockers and their specific indications, such as non-selective versus selective beta blockers and lipophilic versus hydrophilic beta blockers.	8 Marks	L2	CO3
	b)	What is a scorpion sting, and what are the primary species of scorpions known to cause stings in humans?	8 Marks	L3	CO3

(OR)

7.	a)	Explain the long-term complications associated with repeated exposure to bee or wasp stings, such as hypersensitivity or anaphylaxis.	8 Marks	L3	CO3
	b)	Explain the importance of public health initiatives and education campaigns in preventing heat-related disorders, particularly during periods of extreme heat.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Detail note on plant poisoning treatment and proper identification	8 Marks	L3	CO4
	b)	Write the role of leeches in traditional medicine.	8 Marks	L3	CO4

(OR)

9.	a)	What is hypothermia, and how is it defined in terms of body temperature?	8 Marks	L3	CO4
	b)	Discuss the complications that may arise from drowning incidents, such as hypoxia-induced brain injury, pulmonary edema, aspiration pneumonia, or multi-organ dysfunction	8 Marks	L1	CO4

MODULE-V

10.	a)	Difference between START and jump START triage.	8 Marks	L1	CO5
	b)	Describe the pathophysiology of HAPE, including the role of hypoxia, pulmonary vasoconstriction, and increased capillary permeability in its development.	8 Marks	L3	CO5

(OR)

11.	a)	What are radiation injuries, and how are they defined in terms of exposure to ionizing radiation?	8 Marks	L3	CO5
	b)	Elaborate the management strategies for electrical injuries, including first aid measures, medical interventions, and surgical treatment for severe burns.	8 Marks	L1	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

MEDICAL PSYCHOLOGY

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Respiratory Therapy Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Discuss briefly on disadvantages of the observation method in psychology.	2 Marks	L2	CO1
	b)	Define 'Psychoanalysis'.	2 Marks	L1	CO1
	c)	Comment briefly on the role of alleles in the expression of disease via genetic transmission.	2 Marks	L3	CO2
	d)	Name any two principles related to 'Human development'.	2 Marks	L1	CO2
	e)	Comment briefly on the role of valence (positive and negative emotions) on attention.	2 Marks	L3	CO3
	f)	Describe briefly on 'selective attention'.	2 Marks	L1	CO3
	g)	Define 'Need' in the context of motivation cycle.	2 Marks	L2	CO4
	h)	Prepare a brief note on the 'frustration-aggression principle'.	2 Marks	L3	CO4
	i)	Discuss briefly on secondary emotions with an example.	2 Marks	L2	CO5
	j)	List out any two defense mechanisms.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define 'Psychology'. Describe about different branches of 'General Psychology'.	8 Marks	L2	CO1
	b)	Prepare a note about the different methods used in Psychology.	8 Marks	L3	CO1
		(OR)			
3.	a)	Enumerate the 'Schools of Psychology' in detail.	8 Marks	L1	CO1
	b)	Define 'Psychology'. List out the different branches of 'Applied Psychology'.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the various factors affecting the development	8 Marks	L1	CO2
	b)	Differentiate the concepts of 'Growth' and 'Development'	8 Marks	L3	CO2
		(OR)			
5.	a)	Comment on 'Nature' versus 'Nurture' controversy.	8 Marks	L3	CO2
	b)	Describe the middle age changes in the perspective of development.	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe the factors affecting the process of 'perception'.	8 Marks	L2	CO3
	b)	Prepare a note on the process and different stages involved in the process of perception.	8 Marks	L3	CO3
		(OR)			
7.	a)	Define 'attention' and compare different types of attention.	8 Marks	L3	CO3
	b)	Describe the factors affecting attention.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Illustrate the Abraham Maslow's humanistic theory of "The Hierarchy of Needs".	8 Marks	L3	CO4
	b)	Define 'conflict' and prepare a comparative note on different types of conflicts.	8 Marks	L3	CO4
		(OR)			
9.	a)	Compare 'intrinsic motivation' and 'extrinsic motivation' with relevant examples.	8 Marks	L3	CO4
	b)	Mention the various features of 'motivation cycle'	8 Marks	L1	CO4

MODULE-V

10.	a)	Define intelligence. Describe the multiple intelligences theory by Howard Gardner.	8 Marks	L1	CO5
	b)	What is 'stress'? Comment on various physical, psychological and social implications of stress.	8 Marks	L3	CO5
		(OR)			
11.	a)	Define 'emotion' and comment on the three levels of analysis of emotions according to the response they do generate.	8 Marks	L3	CO5
	b)	Describe the classical conditioning theory of learning.	8 Marks	L1	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

POLYSOMNOGRAPHY - I

[Respiratory Therapy Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Give any two sleep hygiene recommendation.	2 Marks	L2	CO1
	b)	Write two causes for Insomnia.	2 Marks	L2	CO1
	c)	Give any two examples for sleep disorder.	2 Marks	L2	CO2
	d)	List any two disease condition related to sleep.	2 Marks	L2	CO2
	e)	Illustrate beta waveform and write its findings.	2 Marks	L3	CO3
	f)	Define tidal volume.	2 Marks	L1	CO3
	g)	Write a brief note on tachycardia.	2 Marks	L1	CO4
	h)	List out few salient features of sleep.	2 Marks	L2	CO4
	i)	Define bradycardia.	2 Marks	L1	CO5
	j)	State breathlessness.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain CPAP and BIPAP indication and contraindication.	8 Marks	L3	CO1
	b)	Describe the sleeping hygiene and positions for patients in sleep apnoea.	8 Marks	L2	CO1
		(OR)			
3.	a)	Write Short notes on : i) Sleep awareness ii) Patient education	8 Marks	L2	CO1
	b)	How would you write a prescription for sleep hygiene after patient assessment.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the normal sleep architecture.	8 Marks	L2	CO2
	b)	Illustrate oral cavity with Mallampati score.	8 Marks	L3	CO2
		(OR)			
5.	a)	List out the adverse effect of melatonin and cortisol.	8 Marks	L2	CO2
	b)	Explain Anti-Arithmetic drug and its effect on sleep.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe any two types of sleep apnoea,	8 Marks	L3	CO3
	b)	What is “Chyne Stroke Breathing”,Explain with waveform of CSB.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss AHI and its importance in diagnosing the patient.	8 Marks	L3	CO3
	b)	Summarize all three sleep apnoea pattern of waveform.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain any two local anesthesia drug with example.	8 Marks	L2	CO4
	b)	What is a sleep arousal pathway and its importance in sleep?	8 Marks	L1	CO4
		(OR)			
9.	a)	Discuss the importance of circadian rhythm and lifestyle modification in sleep hygiene	8 Marks	L2	CO4
	b)	Discuss patient assessment and patients history for sleep disruption.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the sleep pathway, with a suitable diagram.	8 Marks	L3	CO5
	b)	Discuss sleep disturbance, sleep arousal, and its associated RR.	8 Marks	L3	CO5
		(OR)			
11.	a)	How do you relate sleep hygiene and sleep quality with the use of CPAP.	8 Marks	L3	CO5
	b)	Explain PEEP, PS and its importance in CPAP and BIPAP.	8 Marks	L2	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

CONGENENTAL HEART DISEASE - I

[Cardio Vascular Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define cardiogenic area.	2 Marks	L1	CO1
	b)	Name 4 shunt lesions of acyanotic congenital heart diseases.	2 Marks	L2	CO1
	c)	Enlist the features of morphological left ventricle.	2 Marks	L2	CO2
	d)	Differentiate between situs solitus and situs inversus.	2 Marks	L3	CO2
	e)	What is acyanotic and its types?	2 Marks	L2	CO3
	f)	Write about clinical features of AVSD.	2 Marks	L2	CO3
	g)	What are the symptoms of ebsteins anomaly?	2 Marks	L2	CO4
	h)	Add a brief note on AP window.	2 Marks	L3	CO4
	i)	Define annuloplasty.	2 Marks	L1	CO5
	j)	What is the most common etiology of tricuspid regurgitation?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain in detail about splitting of S2 and its types.	8 Marks	L2	CO1
	b)	Describe mechanism of murmurs and enlist its types.	8 Marks	L1	CO1
		(OR)			
3.	a)	Describe in detail about diastolic murmurs and its types.	8 Marks	L2	CO1
	b)	Define 3rd heart sound and enlist its causes.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain in detail about the projection of X ray and add a note on exposure of X ray.	8 Marks	L2	CO2
	b)	Describe the structures seen in anterior and lateral view of chest X ray and add a note on cardiomegaly.	8 Marks	L1	CO2
		(OR)			
5.	a)	Explain in detail about ventriculoarterial connections and add a note on its types.	8 Marks	L2	CO2
	b)	Describe univentricular connections and its types.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe embryological development of the ventricular septal defects.	8 Marks	L3	CO3
	b)	Explain medical management, surgical repair techniques, and postoperative care strategies for atrioventricular septal defect.	8 Marks	L2	CO3

(OR)

7.	a)	Write in detail on clinical manifestations and symptoms associated with atrioventricular septal defect, and explain characteristics auscultatory findings and physical examination findings.	8 Marks	L2	CO3
	b)	Discuss in detail about embryological development of atrial septal defects.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe pathophysiology, and anatomical features of Ebstein's anomaly.	8 Marks	L1	CO4
	b)	Compare and contrast aortopulmonary window with congenital cardiac anomalies.	8 Marks	L3	CO4

(OR)

9.	a)	Investigate the advancements in medical imaging technology, and management of aortopulmonary window.	8 Marks	L2	CO4
	b)	Evaluate the surgical management options available for treating partial anomalous pulmonary venous connection.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe pathophysiology of mitral stenosis and the hemodynamic consequences on left atrial and ventricular function.	8 Marks	L2	CO5
	b)	Discuss in detail about etiology and classification of pulmonary stenosis.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss in detail about clinical manifestations, and symptoms of itral regurgitation, considering the acute and chronic presentations	8 Marks	L2	CO5
	b)	Elaborate the clinical manifestations, and surgical interventions of pulmonary regurgitation.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

CLINICAL PHARMACOLOGY RELATED TO AOTT-II

[Anaesthesia & Operation Theatre Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define adenosine.	2 Marks	L1	CO1
	b)	Write two indications for satalol.	2 Marks	L2	CO1
	c)	Define vascular tone	2 Marks	L1	CO2
	d)	What is volume of circulation?	2 Marks	L1	CO2
	e)	Define Auto-Immune disease.	2 Marks	L2	CO3
	f)	Name two drugs for Rheumatoid Arthritis.	2 Marks	L2	CO3
	g)	List out four lifestyle changes.	2 Marks	L2	CO4
	h)	Define estrogen.	2 Marks	L1	CO4
	i)	List any two types of chemotherapy	2 Marks	L1	CO5
	j)	Define sulfonamides	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write in detail about alpha and beta receptor blockers.	8 Marks	L2	CO1
	b)	Enumerate the choline receptor blocking agents.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe autonomic pharmacology.	8 Marks	L2	CO1
	b)	Write short notes on: i) Calcium channel blocker ii) Nitric Oxide	8 Marks	L2	CO1

MODULE-II

4.	a)	Enumerate the various tests done for peripheral vascular diseases.	8 Marks	L2	CO2
	b)	Write down the medications used for PAD.	8 Marks	L2	CO2
		(OR)			
5.	a)	Enumerate nitroglycerin mode of action and its uses.	8 Marks	L2	CO2
	b)	Discuss about the pre hospital care for a myocardial infarction	8 Marks	L2	CO2

MODULE-III

6.	a)	List out the migraine triggers and describe its management.	8 Marks	L2	CO3
	b)	Give a detail description of diphenhydramine and its uses.	8 Marks	L2	CO3
		(OR)			
7.	a)	Enumerate the Mechanism of action of Histamine.	8 Marks	L2	CO3
	b)	List and explain the parameters for diagnosing GOUT disease condition.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Identify the differences between androgen and estrogen	8 Marks	L3	CO4
	b)	Summarize the effects of estrogen and the changes in a human body.	8 Marks	L3	CO4
		(OR)			
9.	a)	List out the available form of medications used for estrogen therapy.	8 Marks	L2	CO4
	b)	Enumerate the benefits and complications of hormone replacement therapy.	8 Marks	L2	CO4

MODULE-V

10.	a)	Write short notes on: i) Quinolones ii) sulfonamides	8 Marks	L1	CO5
	b)	Write short notes on: i) Chloramphenicol ii) Oxazolidinones	8 Marks	L1	CO5
		(OR)			
11.	a)	Enumerate any two types of chemotherapy.	8 Marks	L2	CO5
	b)	Summarize the uses of combined chemotherapy.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

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B.Sc. IV Semester (MBU-22) Regular Examinations May – 2024

CONCEPTS OF DISEASE RELATED TO DIALYSIS TECHNOLOGY - II

[Dialysis Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is HELLP syndrome?	2 Marks	L2	CO1
	b)	Write the Causes of Polycystic Kidney Diseases.	2 Marks	L1	CO1
	c)	Define Obstructive nephropathy.	2 Marks	L3	CO2
	d)	Write the Investigations in reflux nephropathy.	2 Marks	L1	CO2
	e)	Write the differences between Metabolic Alkalosis and Metabolic Acidosis.	2 Marks	L3	CO3
	f)	Define Anorexia.	2 Marks	L1	CO3
	g)	Mention the causes of Proteinuria.	2 Marks	L2	CO4
	h)	Write the Causes of Uremic syndrome.	2 Marks	L3	CO4
	i)	Mention the causes of Alport syndrome.	2 Marks	L2	CO5
	j)	Define Hydronephrosis.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Mention the causes of Alport syndrome.	8 Marks	L2	CO1
	b)	Describe about Hydronephrosis.	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe detail about the clinical features, pathogenesis and management of Poly cystic kidney disease.	8 Marks	L1	CO1
	b)	Explain the causes, clinical features, pathogenesis and management of Systemic infectious diseases.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe detail about the clinical features, pathogenesis and management of Poly cystic kidney disease.	8 Marks	L1	CO2
	b)	Explain the causes, clinical features, pathogenesis and management of Systemic infectious diseases.	8 Marks	L3	CO2
		(OR)			
5.	a)	Enumerate the list of Post Renal causes of obstructive uropathy and example the each causes.	8 Marks	L3	CO2
	b)	Write a detail about management of obstructive uropathy.	8 Marks	L1	CO2

MODULE-III

6.	a)	Enumerate briefly about Urinary tract infection – sampling methods for culture and sensitivity.	8 Marks	L2	CO3
	b)	Illustrate in detail about Laboratory diagnosis of urinary tract infections.	8 Marks	L3	CO3

(OR)

7.	a)	Discuss the Etiology and clinical features of Hypokalemia.	8 Marks	L3	CO3
	b)	Explain the causes, clinical features and management of hypernatremia.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Write in detail about the pathology of hypertension.	8 Marks	L3	CO4
	b)	Enumerate the types of poly cystic kidney diseases.	8 Marks	L3	CO4

(OR)

9.	a)	Write in detail about the balanced diet for dialysis patients.	8 Marks	L3	CO4
	b)	Explain in detail about Renal function in Congestive heart failure and explain detail about its management.	8 Marks	L1	CO4

MODULE-V

10.	a)	Illustrate the types of Congenital renal diseases and explain it.	8 Marks	L1	CO5
	b)	What is polycystic kidney disease? Discuss the Etiology, Pathogenesis and its Management.	8 Marks	L3	CO5

(OR)

11.	a)	Explain in detail about Renal stone and explain detail about its management.	8 Marks	L3	CO5
	b)	Explain in detail about Renal involvement in Systemic diseases and explain detail about its management.	8 Marks	L1	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

APPLIED DIALYSIS TECHNOLOGY - I

[Dialysis Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name the newer types of fistula in HD patients	2 Marks	L2	CO1
	b)	Enlist the catheter configuration and its types.	2 Marks	L1	CO1
	c)	List the uses of Erythropoietin.	2 Marks	L3	CO2
	d)	What are hemodialysis concentrate ? Give examples.	2 Marks	L1	CO2
	e)	What are all the steps in dialyzer reprocessing?	2 Marks	L3	CO3
	f)	Draw the structure of Dialyzer and label its parts.	2 Marks	L1	CO3
	g)	What are all the clinical manifestations of inadequate dialysis?	2 Marks	L2	CO4
	h)	Define High venous pressure alarm. What does it indicate?	2 Marks	L3	CO4
	i)	What is the Transport processes involved in Peritoneal Dialysis?	2 Marks	L2	CO5
	j)	Name the different types of Peritoneal Dialysis therapies.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define dialysis. Describe the principles in detail with an example.	8 Marks	L2	CO1
	b)	Give an account on the various electrolyte imbalance and acid base disorders in CKD.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain in detail about hemodialysis vascular access.	8 Marks	L1	CO1
	b)	Discuss in detail about the peritoneal cavity.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the advantages and disadvantages of hemo-dialysis in detail.	8 Marks	L1	CO2
	b)	Define peritoneal dialysis. Describe the principles in detail and give an example.	8 Marks	L3	CO2
		(OR)			
5.	a)	What are the various types of Hemodialysis?	8 Marks	L3	CO2
	b)	What are mechanisms of solute transport in hemodialysis?	8 Marks	L1	CO2

MODULE-III

6.	a)	Write briefly on dialyzer reactions.	8 Marks	L2	CO3
	b)	What are high flux and high efficiency dialyzers?	8 Marks	L3	CO3
		(OR)			
7.	a)	What are the differences between synthetic and cellulosic dialyzer membranes?	8 Marks	L3	CO3
	b)	What are the chemicals used in reuse process?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Enumerate the various anticoagulant protocols and monitoring in hemodialysis. Write briefly on newer anticoagulants and their use in hemodialysis.	8 Marks	L3	CO4
	b)	Draw, label and explain the hemodialysis circuit.	8 Marks	L3	CO4
		(OR)			
9.	a)	Write briefly on protocol for maintenance of hemodialysis machines.	8 Marks	L3	CO4
	b)	Write a note about monitors and alarms in hemodialysis machine.	8 Marks	L1	CO4

MODULE-V

10.	a)	Briefly describe the care of Exit site after peritoneal dialysis catheter placement.	8 Marks	L1	CO5
	b)	Describe the various steps in percutaneous CAPD catheter insertion.	8 Marks	L3	CO5
		(OR)			
11.	a)	What are the different types of PD available? Describe the CAPD catheter care following insertion.	8 Marks	L3	CO5
	b)	Describe the complications of acute PD catheter insertion.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations May – 2024

EMERGENCY ORTHOPEDICS-I

[Emergency Medical and Critical Care Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out the Methods for control the bleeding.	2 Marks	L2	CO1
	b)	Write down any five complication of fracture.	2 Marks	L1	CO1
	c)	Define leforts fracture ll.	2 Marks	L3	CO2
	d)	Classification of clavicle fracture.	2 Marks	L1	CO2
	e)	Expand the SIRS in sepsis patients.	2 Marks	L3	CO3
	f)	List out the tiles classification in acetabular fracture.	2 Marks	L1	CO3
	g)	What is Styloid process test in colles fracture.	2 Marks	L2	CO4
	h)	Write down the John wein's classification in forearm fracture.	2 Marks	L3	CO4
	i)	Define quadriceps contraction.	2 Marks	L2	CO5
	j)	List out common landmark for femur fracture.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	How to assessment pediatric trauma patients, detail note on "ABCDE" approach?	8 Marks	L2	CO1
	b)	Define sprains and strains, and distinguish between these two types of soft tissue injuries.	8 Marks	L3	CO1

(OR)

3.	a)	List out common splinting used for trauma patient, and discuss the potential complications associated with splinting,	8 Marks	L1	CO1
	b)	Difference between primary and secondary surveys in trauma assessment. Discuss the components of focused history and physical examination.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the clinical presentation of aortic rupture, including the signs and symptoms commonly observed in affected individuals.	8 Marks	L1	CO2
	b)	What is a clavicle fracture? Describe the types and its treatment.	8 Marks	L3	CO2

(OR)

5.	a)	Explain the diagnostic approach to acromioclavicular joint dislocations, including the role of physical examination findings.	8 Marks	L3	CO2
	b)	Explore the treatment options available for sternoclavicular joint dislocations, including conservative management and surgical interventions.	8 Marks	L1	CO2

MODULE-III

6.	a)	What are the nursing priorities in caring for a patient with abdominal trauma, including assessment, monitoring, and interventions?	8 Marks	L2	CO3
	b)	What are the nursing considerations for patients with pelvic trauma, including assessment, monitoring, and interventions to prevent complications and promote recovery?	8 Marks	L3	CO3
		(OR)			
7.	a)	What are the potential complications of shock, including multi-organ dysfunction syndrome (MODS), acute respiratory distress syndrome (ARDS), and disseminated intravascular coagulation (DIC)?	8 Marks	L3	CO3
	b)	What are the long-term outcomes and prognosis for patients with acetabular fractures, and how do they vary based on factors such as fracture pattern, severity of injury, and treatment approach?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe the anatomy of a nerve and how it functions in transmitting signals within the body.	8 Marks	L3	CO4
	b)	What are Galeazzi and Monteggia fractures, and how do they differ in terms of location and mechanism of injury?	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the rehabilitation and physical therapy protocols used to promote healing and restore function after a Smith fracture.	8 Marks	L3	CO4
	b)	Outline the initial management and emergency treatment options for a patient with a suspected humerus fracture.	8 Marks	L1	CO4

MODULE-V

10.	a)	What is a patellar fracture, and what are the common causes of this type of injury?	8 Marks	L1	CO5
	b)	Explore the management of foot injuries, such as minimally invasive surgical techniques, biologic therapies, or custom orthotics and footwear	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the rehabilitation and physical therapy protocols used to promote healing and restore function after a meniscal injury.	8 Marks	L3	CO5
	b)	Give a note on advancements and innovations in the management of femur shaft fractures, such as minimally invasive surgical techniques.	8 Marks	L1	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

EMERGENCY SURGERY - I

[Emergency Medical and Critical Care Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out the signs six P's of compartment syndrome	2 Marks	L2	CO1
	b)	Define Smiling death.	2 Marks	L1	CO1
	c)	Write abbreviation of Four f's in cholecystitis	2 Marks	L3	CO2
	d)	Define Murphy's sign.	2 Marks	L1	CO2
	e)	What is dysphagia?	2 Marks	L3	CO3
	f)	List out the cause of lower GI bleeding	2 Marks	L1	CO3
	g)	Define PREHN's sign.	2 Marks	L2	CO4
	h)	Define Gangrene.	2 Marks	L3	CO4
	i)	Define anal incontinence.	2 Marks	L2	CO5
	j)	What is altemeier procedure in prolapsed rectum?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	How is an ulcer diagnosed, and what diagnostic tests may be used?	8 Marks	L2	CO1
	b)	Describe the vascular injury.	8 Marks	L3	CO1
		(OR)			
3.	a)	What is the recommended initial management for a child suspected of having ingested a button battery?	8 Marks	L1	CO1
	b)	What are the techniques used for chocking in child and adult?	8 Marks	L3	CO1

MODULE-II

4.	a)	What preventive measures can be taken to reduce the risk of pancreatic fistula, particularly in individuals undergoing pancreatic surgery or those with pancreatic disease?	8 Marks	L1	CO2
	b)	Describe the differences between acute and chronic pancreatitis.	8 Marks	L3	CO2
		(OR)			
5.	a)	Define appendicitis and describe its pathophysiology.	8 Marks	L3	CO2
	b)	Detail note on sprain and stain and its grades.	8 Marks	L1	CO2

MODULE-III

6.	a)	Elaborate the gastro-Oesophageal Reflux Disease.	8 Marks	L2	CO3
	b)	Detail note on suture, and write about five types.	8 Marks	L3	CO3
		(OR)			
7.	a)	List the types of peptic Ulcer Clinical features	8 Marks	L3	CO3
	b)	Define jaundice and write in detail about its pathology.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define urethral stricture and describe its significance in clinical practice. What are the common causes of it.	8 Marks	L3	CO4
	b)	Explain the diagnostic evaluation for phimosis.	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the clinical presentation of prostatitis, including signs and symptoms and diagnosis.	8 Marks	L3	CO4
	b)	Explain the diagnostic evaluation for kidney injuries, including history and physical examination.	8 Marks	L1	CO4

MODULE-V

10.	a)	What is prostatitis and write its causes and complications?	8 Marks	L1	CO5
	b)	Describe about cystitis, write its pathophysiology and causes.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss about urethral injury, mention its causes and clinical presentations.	8 Marks	L3	CO5
	b)	What is AKI, write in detail about its classification?	8 Marks	L1	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

EMERGENCY OBSTRATIC AND GYENACOLOGY

[Emergency Medical and Critical Care Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out Four opening in vestibule in female reproductive system.	2 Marks	L1	CO1
	b)	Draw the diagram of internal genital organ in femal reproductive system.	2 Marks	L3	CO1
	c)	Define Occult prolapse.	2 Marks	L1	CO2
	d)	Draw flow chart of Mechanism of oxitocin in uterus and breast.	2 Marks	L3	CO2
	e)	List out the types of breech presentation.	2 Marks	L1	CO3
	f)	What is Fundal grip in breech presentation?	2 Marks	L2	CO3
	g)	List out any four Common cause of antepartum hemorrhage.	2 Marks	L1	CO4
	h)	Define abruption placenta.	2 Marks	L1	CO4
	i)	What is the Position for pregnant CPR?	2 Marks	L2	CO5
	j)	List out the Degree of perineum.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Elaborate the Antenatal assessment of mother and fetus.	8 Marks	L2	CO1
	b)	Describe the structure and function of the internal genital in the female reproductive system.	8 Marks	L2	CO1

(OR)

3.	a)	Detail note on typical signs and symptoms of antepartum hemorrhage that a pregnant woman might experience.	8 Marks	L2	CO1
	b)	Explain briefly about anatomical structures of the breast.	8 Marks	L2	CO1

MODULE-II

4.	a)	How is hyperemesis gravidarum diagnosed, and what criteria are used to distinguish it from milder forms of pregnancy?	8 Marks	L1	CO2
	b)	What is miscarriage and classify its types? Explain about missed abortion.	8 Marks	L3	CO2

(OR)

5.	a)	Elaborate the types and treatment options for cord prolapsed.	8 Marks	L3	CO2
	b)	Explain the different types of hypertensive disorders that can occur during pregnancy.	8 Marks	L2	CO2

MODULE-III

6.	a)	Define breech presentation and describe the different types of breech presentations with treatment.	8 Marks	L2	CO3
	b)	Describe the clinical presentation of postpartum hemorrhage (PPH), including signs and symptoms experienced by women after delivery.	8 Marks	L2	CO3

(OR)

7.	a)	Elaborate the clinical presentation of uterine inversion, How is uterine inversion diagnosed and management.	8 Marks	L2	CO3
	b)	What is retained placenta and describe its clinical significance in obstetrics? What are the primary types and causes of retained placenta?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define abruptio placenta and explain the types and its management.	8 Marks	L3	CO4
	b)	What is pre-eclampsia and discuss about trophoblast inversion and its treatment of preeclampsia?	8 Marks	L3	CO4

(OR)

9.	a)	Elaborate the intrauterine fetal death (IUFD).	8 Marks	L2	CO4
	b)	What is placenta previa and how does it differ from other placental conditions?	8 Marks	L1	CO4

MODULE-V

10.	a)	What are the common injuries happen in birth canal during labor and its treatment?	8 Marks	L1	CO5
	b)	Describe the role of oxytocin in childbirth. How does oxytocin contribute to the initiation and progression of labor?	8 Marks	L2	CO5

(OR)

11.	a)	Detail note on uterus rupture and perineum tear.	8 Marks	L2	CO5
	b)	Describe the role of oxytocin in childbirth. How does oxytocin contribute to the initiation and progression of labor.	8 Marks	L1	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

CLINICAL PROCEDURE IN EMERGENCY CARE

[Emergency Medical and Critical Care Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Draw the diagram of nebulizer with parts.	2 Marks	L3	CO1
	b)	Define mean arterial pressure with formula.	2 Marks	L1	CO1
	c)	List the method of diagnosis of cardiac tamponade in echocardiography.	2 Marks	L1	CO2
	d)	Draw the landmark for cricothyrotomy.	2 Marks	L3	CO2
	e)	Expand the "PNALD" complication of parenteral nutrients.	2 Marks	L1	CO3
	f)	List out four types of IO injection.	2 Marks	L1	CO3
	g)	Identify the acid base status: a) HCO3 | & pH | b) Pco2 | & pH |	2 Marks	L1	CO4
	h)	What is the mechanism of activated charcoal?	2 Marks	L2	CO4
	i)	What are the veins used for transvenous pacing?	2 Marks	L2	CO5
	j)	List out any five complication of NG tube.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Classify the degree of hyperthermia in terms of temperature regulation.	8 Marks	L3	CO1
	b)	Describe the surgical technique for creating an AV shunt.	8 Marks	L2	CO1
		(OR)			
3.	a)	Elaborate the difference between elective and emergent cardioversion.	8 Marks	L2	CO1
	b)	Describe the technique for measuring blood pressure using a manual sphygmomanometer and stethoscope.	8 Marks	L2	CO1

MODULE-II

4.	a)	What are the anatomical landmarks used to guide thoracentesis needle placement? Describe the steps involved in performing thoracentesis procedure?	8 Marks	L1	CO2
	b)	Describe the steps involved in placing a central venous catheter for CVP monitoring.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the arterial line catheterization, how is the correct placement of an arterial line confirmed?	8 Marks	L2	CO2
	b)	Describe the measurement of Ryle's tube, and explain the insertion procedure.	8 Marks	L2	CO2

MODULE-III

6.	a)	Elaborate the process of administering parenteral nutrition to a patient, including technique for preparation and administration.	8 Marks	L2	CO3
	b)	Describe three potential complications associated with intramuscular injections explain the sites.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the role of patient education in IV line management.	8 Marks	L2	CO3
	b)	Explain the process of securing and maintaining intraosseous access, including methods for stabilizing the IO device.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the role of patient education in capillary blood glucose (CBG) monitoring.	8 Marks	L2	CO4
	b)	Detail note on technique for performing female urethral catheterization.	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss the advantages and disadvantages of peritoneal dialysis compared to hemodialysis for the management of ESRD.	8 Marks	L2	CO4
	b)	Describe the procedure for monitoring and assessing the effectiveness of activated charcoal therapy in patients with acute poisoning.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is nasogastric (NG) tube and write the steps involved in NG tube inseration?	8 Marks	L1	CO5
	b)	Describe the nursing considerations during and after a paracentesis.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss the advantages and limitations of transcutaneous pacing compared to other methods of cardiac pacing.	8 Marks	L2	CO5
	b)	Enumerate the process of obtaining informed consent from patients undergoing a lumbar puncture procedure.	8 Marks	L2	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

APPLIED PATHOLOGY

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Respiratory Therapy Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Cardiac Hypertrophy.	2 Marks	L1	CO1
	b)	Mention two types of pseudo aneurysm.	2 Marks	L2	CO1
	c)	What are the investigations for asthma?	2 Marks	L2	CO2
	d)	Write a brief note on thoracocentesis.	2 Marks	L3	CO2
	e)	What are the platelet disorders?	2 Marks	L2	CO3
	f)	List any five clotting factors.	2 Marks	L1	CO3
	g)	Mention the causes of Proteinuria, What is the nephritic range of proteinuria?	2 Marks	L3	CO4
	h)	What is an AKIN criterion?	2 Marks	L2	CO4
	i)	Define cerebral edema.	2 Marks	L1	CO5
	j)	Mention any four musculoskeletal disorders.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Elaborate the acyanotic congenital heart diseases.	8 Marks	L3	CO1
	b)	Enumerate the clinical condition of Patent Ductus Arteriosus.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discus the pathophysiology, clinical manifestations of aortic and maternal valvular heart diseases.	8 Marks	L1	CO1
	b)	Describe cyanotic congenital heart diseases.	8 Marks	L2	CO1

MODULE-II

4.	a)	List out the primary causes of bronchiectasis,how is bronchiectasis diagnosed, and what tests are typically used.	8 Marks	L3	CO2
	b)	Elaborate pathophysiology of COPD, write about its investigations.	8 Marks	L2	CO2
		(OR)			
5.	a)	What are the differences between bacterial, viral, and fungal pneumonia? How is pneumonia diagnosed?	8 Marks	L3	CO2
	b)	Elaborate pathogenesis of pulmonary edema, write any five clinical presentations of pulmonary edema.	8 Marks	L2	CO2

MODULE-III

6.	a)	Mention all clotting factors, how are bleeding disorders typically managed or treated?	8 Marks	L3	CO3
	b)	Describe CML, How it is diagnosed and managed?	8 Marks	L3	CO3

(OR)

7.	a)	Define trauma induced coagulopathy, andexplain its pathophysiology.	8 Marks	L3	CO3
	b)	Explain different types of coagulopathies,what are its clinical manifestations?	8 Marks	L3	CO3

MODULE-IV

8.	a)	What is Acute Pyelonephritis? Explain its causes and management.	8 Marks	L2	CO4
	b)	Give an account on hereditary renal diseases.	8 Marks	L3	CO4

(OR)

9.	a)	Write a note on Polycystic kidney disease.	8 Marks	L3	CO4
	b)	Define chronic kidney disease, what are the causes, stages, pathogenesis and management of CKD?	8 Marks	L1	CO4

MODULE-V

10.	a)	Define osteoporosis, and list out the causes?	8 Marks	L1	CO5
	b)	What are the main causes, and risk factors associated with developing meningitis? What are the typical tests involved?	8 Marks	L3	CO5

(OR)

11.	a)	What is encephalitis? How does it differ from meningitis, and what are the common symptoms of encephalitis?	8 Marks	L2	CO5
	b)	Define brain abscess, and what are its clinical features? How it is treated?	8 Marks	L1	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations May – 2024

EMERGENCY MEDICIEN AND CARDIAC LIFE SUPPORT – I

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Respiratory Therapy Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name two alternative airway.	2 Marks	L2	CO1
	b)	Define Opiods	2 Marks	L1	CO1
	c)	List out the normal vitals parameter.	2 Marks	L2	CO2
	d)	Write any two causes of cardiac failure.	2 Marks	L2	CO2
	e)	Define defibrillator.	2 Marks	L1	CO3
	f)	Mention two drugs of chemical cardioverter.	2 Marks	L2	CO3
	g)	List two indication for electrical cardio version.	2 Marks	L2	CO4
	h)	Name any two drug for arrhythmia	2 Marks	L2	CO4
	i)	Write any two drug for calcium blockers.	2 Marks	L2	CO5
	j)	What is a refractive period?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Table down the algorithm of BLS.	8 Marks	L3	CO1
	b)	Describe opiods management. Give any two opiods drug name.	8 Marks	L2	CO1
		(OR)			
3.	a)	Table down the algorithm of pregnant life support.	8 Marks	L3	CO1
	b)	Explain the management of any two life threatening emergencies in a causality.	8 Marks	L2	CO1

MODULE-II

4.	a)	Differentiate respiratory and cardiac arrest.	8 Marks	L3	CO2
	b)	Table down the symptoms of bradycardia and tachycardia.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the two forms of PEA.	8 Marks	L2	CO2
	b)	Discuss the plus less electrical activity.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the stepwise procedure of a AED.	8 Marks	L2	CO3
	b)	Differentiate the difference between the implantable defibrillator and wearable defibrillator.	8 Marks	L3	CO3
		(OR)			
7.	a)	Enumerate the complications of the defibrillator.	8 Marks	L2	CO3
	b)	Enumerate the indications of a defibrillator.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain chemical cardio version with an example.	8 Marks	L2	CO4
	b)	Enumerate the steps involved before electrical cardio version.	8 Marks	L2	CO4
		(OR)			
9.	a)	Enumerate the risks associated with implantable cardioverter.	8 Marks	L2	CO4
	b)	Describe the uses of HOLTER monitoring.	8 Marks	L2	CO4

MODULE-V

10.	a)	Table down the algorithm of BLS.	8 Marks	L3	CO5
	b)	Table down the algorithm of ACLS.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss metabolic acidosis and metabolic alkalosis, and indicate its value.	8 Marks	L2	CO5
	b)	Discuss any two-emergency drug used during an intubation.	8 Marks	L2	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

STERILIZATION AND INFECTION CONTROL

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Respiratory Therapy Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List four standard precautions to be followed to combat hospital acquired infections.	2 Marks	L2	CO1
	b)	Name four bacteria causing late onset VAP.	2 Marks	L1	CO1
	c)	Define pulmonary & Extra pulmonary tuberculosis?	2 Marks	L3	CO2
	d)	List four personal protective equipment's and its uses.	2 Marks	L1	CO2
	e)	Write the precautions to be followed while handling hot air oven	2 Marks	L3	CO3
	f)	Name Four materials sterilized by hot air oven?	2 Marks	L1	CO3
	g)	Mention the blood collections methods commonly used for blood drawing?	2 Marks	L2	CO4
	h)	Name four materials to be discarded in Yellow color coded bin.	2 Marks	L3	CO4
	i)	Define ART and its role in HIV infected people.	2 Marks	L2	CO2
	j)	List the different types of urinary catheters.	2 Marks	L3	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define Catheter. Describe different types of urinary catheters, add note on precautions to be followed while inserting a urinary catheter.	8 Marks	L2	CO1
	b)	Describe the procedure for management of a blood spill.	8 Marks	L3	CO1
		(OR)			
3.	a)	Define CAUTI, enumerate the causes & pathogenesis of CAUTI.	8 Marks	L1	CO1
	b)	Define Ventilator associated pneumoniae (VAP). Discuss the pathogenesis of VAP.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define ART. Mention its role in HIV infected people, add note on Lab diagnosis of HIV infection.	8 Marks	L1	CO2
	b)	Explain the mode of transmission, Diseases caused, prevention of Salmonella infections in Health care professionals.	8 Marks	L3	CO2
		(OR)			
5.	a)	Enumerate the mode of transmission, pathogenesis of Hepatitis B Infection. Also add note on Hepatitis B vaccination.	8 Marks	L3	CO2
	b)	Classify Tuberculosis. Discuss the mode of transmission and preventive measures to be taken by a person infected with tuberculosis.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the procedure to operate Hot air oven, list the Materials sterilized by it.	8 Marks	L2	CO3
	b)	Enumerate i. Ethylene oxide ii. Formaldehyde Gas Sterilization methods.	8 Marks	L3	CO3
		(OR)			
7.	a)	List the concentrations of disinfectants commonly used, Discuss the disinfection of i) Critical materials ii) Semi-critical materials iii) Noncritical materials	8 Marks	L3	CO3
	b)	Discuss the construction & working of Hot air oven.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Elucidate Universal health precautions.	8 Marks	L3	CO4
	b)	List the different color coded bins used in Biomedical waste management, explain the waste products discarded into them in a neat tabular column.	8 Marks	L3	CO4
		(OR)			
9.	a)	Discuss the standard precautions, standard procedure to be followed while performing vein puncture for blood drawing.	8 Marks	L3	CO4
	b)	Enumerate various categories included in Biomedical waste, explain the treatment protocol for the same.	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe the pathogenesis and diseases caused by Herpes simplex virus, Add note on Herpatic witflow.	8 Marks	L1	CO2
	b)	List various practices followed in infection prevention and control, explain hand hygiene and PPE.	8 Marks	L3	CO2
		(OR)			
11.	a)	Discuss the various modes of transmission of HIV Infection, add note on preventive measures.	8 Marks	L3	CO2
	b)	Describe the pathogenesis and treatment of salmonella infection.	8 Marks	L1	CO2

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B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

CARDIOPULMONARY REHABILITATION

[Respiratory Therapy Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out any two cough assisted technique..	2 Marks	L2	CO1
	b)	Name any two breathing exercises used for obstructive pulmonary diseases.	2 Marks	L2	CO1
	c)	Name two medications for Hypertension.	2 Marks	L2	CO2
	d)	Illustrate SVT.	2 Marks	L3	CO2
	e)	List any two causes of pleural effusion.	2 Marks	L2	CO3
	f)	Give two conditions of chest deformity.	2 Marks	L2	CO3
	g)	Define AV node.	2 Marks	L1	CO4
	h)	Illustrate atrial fibrillation.	2 Marks	L3	CO4
	i)	Define flail chest.	2 Marks	L1	CO5
	j)	Write brief note on chest x-ray findings for pneumothorax.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	List out the contraindications of chest physio therapy in patients with pulmonary hypertension..	8 Marks	L2	CO1
	b)	Describe diaphragmatic breathing exercises in volume reduction surgery.	8 Marks	L3	CO1
		(OR)			
3.	a)	Write goals and aims of performing cardiac rehabilitation.	8 Marks	L2	CO1
	b)	Discuss supine and standing position breathing exercise, and its effect on blood pressure.	8 Marks	L3	CO1

MODULE-II

4.	a)	Enumerate cyanotic and acyanotic congenital heart disease.	8 Marks	L2	CO2
	b)	Discuss mitral valve insufficiency,and write its clinical manifestation.	8 Marks	L3	CO2
		(OR)			
5.	a)	Enumerate CPT indications and contraindications for a patient with PVD.	8 Marks	L2	CO2
	b)	Discuss patients assessment for cardiovascular system.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss about the breathing exercises in supine position after a right lobectomy surgery.	8 Marks	L3	CO3
	b)	What are the precautions to be taken, while doing Cough assisted technique for abdominal surgery patient.	8 Marks	L2	CO3
		(OR)			
7.	a)	Enumerate the breathing exercises for patients with segmentectomy.	8 Marks	L2	CO3
	b)	Describe the use of Incentive spirometry for ICU patients,with illustration.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Enhance the importance of mobilization in ICU for post-surgery patients and why mobilization is important to the surgery patients?	8 Marks	L2	CO4
	b)	Write down the objectives of chest physiotherapy in treating patients with implantable pace- maker.	8 Marks	L2	CO4
		(OR)			
9.	a)	Illustrate atrial fibrillation, atrial Flutter, Mobitz-I, and Mobitz - II	8 Marks	L3	CO4
	b)	How do you manage and prescribe physical exercises to patient after a cardiac by pass surgery.Explain?	8 Marks	L2	CO4

MODULE-V

10.	a)	Write short notes on: i) Rib fracture , ii) Flail chest	8 Marks	L2	CO5
	b)	Explain pulmonary obstructive disease conditions, and its air-flow limitations.	8 Marks	L3	CO5
		(OR)			
11.	a)	Differentiate chest expansion exercises in ILD cases,with suitable airway barrier devices.	8 Marks	L3	CO5
	b)	Illustrate the normal ECG waveform.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

CARDIAC INSTRUMENTATION

[Cardio Vascular Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name the types of bio potential electrodes.	2 Marks	L2	CO1
	b)	Define ECG artifacts.	2 Marks	L1	CO1
	c)	Write a brief on sound wave.	2 Marks	L2	CO2
	d)	Define contrast resolution.	2 Marks	L1	CO2
	e)	Define QRS complex.	2 Marks	L1	CO3
	f)	Illustrate artifacts in ECG.	2 Marks	L3	CO3
	g)	Write two types of Pacemakers.	2 Marks	L2	CO4
	h)	Name two procedure done in a Cath Lab.	2 Marks	L2	CO4
	i)	What is coronary balloon?	2 Marks	L1	CO5
	j)	What are the use of a x-ray in a Cath imaging?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain surface electrodes and enlist its types.	8 Marks	L2	CO1
	b)	Draw neat labeled block diagram of ECG machine.	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe the internal and external causes of ECG artifacts .	8 Marks	L2	CO1
	b)	Illustrate neat labeled diagram of high-resolution ECG instrument.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe sound wave mechanics.	8 Marks	L2	CO2
	b)	Explain the different characteristics of interaction of US beam with tissue.	8 Marks	L2	CO2
		(OR)			
5.	a)	Define resolution and describe in detail about spatial resolution.	8 Marks	L2	CO2
	b)	Differentiate between specular and scattered echo's.	8 Marks	L3	CO2

MODULE-III

6.	a)	Summarize procedure and its importance of a stress Echo-cardiography.	8 Marks	L3	CO3
	b)	Describe any two type of Echo-cardiography and its uses in diagnosing congenental heart disease.	8 Marks	L2	CO3
		(OR)			
7.	a)	Enumerate advantages and disadvantages of TEE.	8 Marks	L2	CO3
	b)	Describe parasternal long Axis view in a Echocardiography.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe parasternal short axis view with illustration.	8 Marks	L3	CO4
	b)	Enumerate the structure visible in Apical Four Chamber.	8 Marks	L2	CO4
		(OR)			
9.	a)	Distinguish between the Sub costal view and Supra- Steranal view in a Echocardiography.	8 Marks	L3	CO4
	b)	Summarize the importance of a X-Ray imaging in a Cath machine.and list any two procedure in Cath lab.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain procedure of a AED.	8 Marks	L2	CO5
	b)	Differentiate difference between the implantable defibrillator and wearable defibrillator.	8 Marks	L3	CO5
		(OR)			
11.	a)	Enumerate complications of the defibrillator.	8 Marks	L2	CO5
	b)	List out indications and contraindications of a defibrillator.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

FUNDAMENTALS OF ANESTHETIC TECHNIQUES

[Anaesthesia & Operation Theatre Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What do you mean by safe handling of instruments?	2 Marks	L1	CO1
	b)	Name the three angles using the instruments in OT.	2 Marks	L1	CO1
	c)	What are the sizes of a blade?	2 Marks	L1	CO2
	d)	What is a power surgical instrument?	2 Marks	L1	CO2
	e)	Write down any two indications for the use of prosthetics and orthotics.	2 Marks	L1	CO3
	f)	Write any two indications for endoscopic procedure.	2 Marks	L1	CO3
	g)	Define tissue translation.	2 Marks	L1	CO4
	h)	List any two important instruments used in organ transplant.	2 Marks	L1	CO4
	i)	Write a brief note on theater cleaning.	2 Marks	L1	CO5
	j)	List any two-infection control practice in an OT.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is an Angle? Discuss the importance of the Angle used in instrumentation of OT.	8 Marks	L2	CO1
	b)	Enumerate the principle of triangulation with an example.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe sterilization. Give a short note on why sterilization is important in OT.	8 Marks	L2	CO1
	b)	List out the common complications in OT while using instrument tools.	8 Marks	L2	CO1

MODULE-II

4.	a)	Illustrate the targeted muscle re innervation.	8 Marks	L3	CO2
	b)	Discuss about the general anesthesia given during an electrocautery.	8 Marks	L2	CO2
		(OR)			
5.	a)	Give details of ovum forceps and give a schematic diagram.	8 Marks	L2	CO2
	b)	Enlist the indications and uses bowel surgical instruments.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the logistic regression model.	8 Marks	L2	CO3
	b)	List out the instruments needed for a thoracic surgery.	8 Marks	L2	CO3
		(OR)			
7.	a)	What is laparoscopy? Write down the uses of laparoscopy.	8 Marks	L1	CO3
	b)	Enumerate the benefits of robotic surgery.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe Murray's score,and list the patients criteria for using an ECMO machine.	8 Marks	L3	CO4
	b)	Table down the advantage and disadvantage of an ECMO machine	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the two implantable cardiac pacing.	8 Marks	L2	CO4
	b)	Illustrate: i) Normal ECG ii) Atrial Flutter iii) Atrial fibrillation iv)Ventricular fibrillation	8 Marks	L3	CO4

MODULE-V

10.	a)	Summarize the use of Heat sterilization in CSSD.	8 Marks	L3	CO5
	b)	Enumerate any two types of gas sterilization process in CSSD.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss about the pre-operative preparation and the surgical team in OT.	8 Marks	L2	CO5
	b)	Enlist the anesthesia management in OT and give an example of any one technique in AM.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

APPLIED CLINICAL BIOCHEMISTRY

[Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	How would you protect yourself from biological hazards?	2 Marks	L2	CO1
	b)	What is the normal range of urea and uric acid?	2 Marks	L1	CO1
	c)	What is the normal range of serum calcium.	2 Marks	L3	CO2
	d)	Write the Full form of ELISA and RIA	2 Marks	L1	CO2
	e)	What is the Standard?	2 Marks	L3	CO3
	f)	Write full form of TSH and brief note on it important in healthy life.	2 Marks	L1	CO3
	g)	What is the normal range of ALP?	2 Marks	L2	CO4
	h)	Name serum acid phosphate estimation used method.	2 Marks	L3	CO4
	i)	What is the color filter name at 520 nm?	2 Marks	L2	CO5
	j)	Define Achlorhydria.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the safety measures for biological hazards.	8 Marks	L2	CO1
	b)	Explain the continuous improvement and ongoing quality monitoring.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss on Introduction and common hazards in the laboratory.	8 Marks	L1	CO1
	b)	Write the roles and responsibilities of following laboratory personnel. i) Lab Director ii) Quality Assurance Manager	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain standard operating procedure of flame photometer.	8 Marks	L4	CO2
	b)	Explain the applications of radioisotopes in clinical biochemistry.	8 Marks	L4	CO2
		(OR)			
5.	a)	How would you estimate serum calcium from the given blood sample?	8 Marks	L4	CO2
	b)	Illustrate the RIA use in biochemistry lab.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the steps involved in operation of semi-auto analyzer.	8 Marks	L2	CO3
	b)	How would you perform glucose estimation by oxidase method?	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the Importance of oral glucose tolerance test.	8 Marks	L3	CO3
	b)	Write the criteria for the diagnosis of Diabetes Mellitus.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Write method, preparation of reagents, procedure and normal range for SGPT test.	8 Marks	L3	CO4
	b)	What is the rapid diagnosis, explain various rapid techniques used in biochemistry laboratory?	8 Marks	L3	CO4

(OR)

9.	a)	Illustrate the clinical significance, method, principle, normal range reagents of serum acid phosphatase.	8 Marks	L3	CO4
	b)	Illustrate the test procedure and interpretation of Oxalate stones and Uric acid stones.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the patient preparation, specimen collection, assay procedure and calculations of creatinine clearance.	8 Marks	L1	CO5
	b)	Explain the test procedure for identification of carbonate stones.	8 Marks	L3	CO5

(OR)

11.	a)	How would you collect gastric sample and explain procedure?	8 Marks	L3	CO5
	b)	Illustrate clinical significance, principle, requirements reagents, test procedure and normal range of estimation of serum protein by Biuret method.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations May – 2024

IMMUNOLOGY AND BACTERIAL SEROLOGY

[Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Opportunistic pathogen with example.	2 Marks	L2	CO1
	b)	Define Carriers.	2 Marks	L1	CO1
	c)	Define Sensitivity.	2 Marks	L3	CO2
	d)	Give two examples of Heterophile agglutination test.	2 Marks	L1	CO2
	e)	Define Primary dose.	2 Marks	L3	CO3
	f)	Add note on Dendritic cell.	2 Marks	L1	CO3
	g)	Define Hypersensitivity.	2 Marks	L2	CO4
	h)	Add note on Mediators of Anaphylaxis.	2 Marks	L3	CO4
	i)	Define Transplantation.	2 Marks	L2	CO5
	j)	Define Donor & Recipient.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the virulence factors exhibited by pathogens in causing a disease.	8 Marks	L2	CO1
	b)	Define Nosocomial infections. Name the nosocomial infections posing challenge to healthcare workers, add note on preventive measures to combat these infections.	8 Marks	L3	CO1

(OR)

3.	a)	Define and classify Immunity and Describe in detail Innate immunity	8 Marks	L1	CO1
	b)	Define antigen, list the determinants of antigenicity, explain any four in detail.	8 Marks	L3	CO1

MODULE-II

4.	a)	Classify immune response, add note on T cell maturation.	8 Marks	L1	CO2
	b)	Add note on Prozone phenomenon.	8 Marks	L3	CO2

(OR)

5.	a)	Define Precipitation, list various precipitation tests, add note on ring test with example.	8 Marks	L3	CO2
	b)	Describe B cell maturation with a neat labelled diagram.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the various phases of Antibody Production during primary immune response with graphical representation.	8 Marks	L2	CO3
	b)	Explain Humoral Immune response.	8 Marks	L3	CO3

(OR)

7.	a)	Enumerate the differences between primary and secondary immune response	8 Marks	L3	CO3
	b)	Define & Classify Immunodeficiency Diseases. List the various Immunodeficiency diseases.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define Hypersensitivity, Explain the mechanism of Type I Hypersensitivity in Detail.	8 Marks	L3	CO4
	b)	Explain Erythroblastosisfetalis.	8 Marks	L3	CO4

(OR)

9.	a)	Define Sensitizing & Shocking Dose, Enumerate the differences between Immediate & Delayed Hypersensitivity reactions.	8 Marks	L3	CO4
	b)	List the Clinical conditions where Type II hypersensitivity reactions are seen, Explain any one in detail.	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe the distribution of ABO antigens on RBCs & isoantibodies in serum in a neat tabular column.	8 Marks	L1	CO5
	b)	Discuss the standard procedure to perform Widal test by slide agglutination method give its interpretation.	8 Marks	L3	CO5

(OR)

11.	a)	Enumerate Graft – versus host reaction.	8 Marks	L3	CO5
	b)	Discuss the standard procedure for performing Blood grouping test.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

APPLIED HEAMATOLOGY

[Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the use of Salah / Klema needles?	2 Marks	L2	CO1
	b)	What are the risk factors involved in bone marrow aspiration?	2 Marks	L1	CO1
	c)	Define enzymopathies abnormalities of RBCs.	2 Marks	L3	CO2
	d)	What is blood borne pathogenesis?	2 Marks	L1	CO2
	e)	Elaborate WHO.	2 Marks	L1	CO3
	f)	Write clinical significance of APTT.	2 Marks	L1	CO3
	g)	Name any four auto analyzer's used in hematology laboratory.	2 Marks	L1	CO4
	h)	Write the full form of CBC.	2 Marks	L1	CO4
	i)	Define karyotyping.	2 Marks	L1	CO2
	j)	Define chemical safety.	2 Marks	L2	CO2

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the procedure of patient preparation for coagulation studies.	8 Marks	L3	CO1
	b)	Write the safety precautions in the hematology laboratory.	8 Marks	L3	CO1
		(OR)			
3.	a)	Write the normal range for bone marrow deferential cell count.	8 Marks	L3	CO1
	b)	Write the principle and procedure of automated cell counter.	8 Marks	L3	CO1

MODULE-II

4.	a)	Write clinical significance, principle, requirements, procedure and result of LE preparation.	8 Marks	L3	CO2
	b)	How will you diagnose reticulocyte count?	8 Marks	L3	CO2
		(OR)			
5.	a)	Determine the RBCs changes of shape and size its clinical condition.	8 Marks	L2	CO2
	b)	Explain the instrumentation of coagulometer and add note on its applications.	8 Marks	L3	CO2

MODULE-III

6.	a)	Determine the bleeding time, and add note on clinical significance.	8 Marks	L3	CO3
	b)	List out the methods used for blood clotting time estimation, and write principle, and procedure of capillary method.	8 Marks	L3	CO3
		(OR)			
7.	a)	Write the principles of coagulation studies according to NCCLS.	8 Marks	L2	CO3
	b)	How will you calculate international normalized ratio and ISI?	8 Marks	L3	CO3

MODULE-IV

8.	a)	How would you diagnose leukemia?	8 Marks	L2	CO4
	b)	Explain the basic principles of coagulation testing.	8 Marks	L2	CO4
		(OR)			
9.	a)	How would you estimate quantification of inhibitors?	8 Marks	L4	CO4
	b)	Summarize the care of post bone marrow aspiration procedure.	8 Marks	L3	CO4

MODULE-V

10.	a)	Which are the parameters analyzed by hematology analyzer and add note on normal values of each parameter.	8 Marks	L2	CO3
	b)	Illustrate the quality control and calibration of coagulometer.	8 Marks	L3	CO3
		(OR)			
11.	a)	Explain inherited hemophilia, add brief note on its types.	8 Marks	L3	CO3
	b)	How will you prepare brain thromboplastin? And add brief note on its uses.	8 Marks	L3	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

APPLIED HISTOPATHOLOGY

[Medical Lab Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the gross examination?	2 Marks	L2	CO1
	b)	Define Histopathology.	2 Marks	L1	CO1
	c)	Write brief note on tissue floating bath.	2 Marks	L3	CO2
	d)	What are the special safety precautions for pathological specimens?	2 Marks	L1	CO2
	e)	Name any two equipment's that used for staining procedure?	2 Marks	L3	CO3
	f)	Write a short note on dyes.	2 Marks	L1	CO3
	g)	What is temperature of cryostat microtome?	2 Marks	L2	CO4
	h)	Write full form PTAH add note on Principle of it.	2 Marks	L3	CO4
	i)	Name any four stains which are used in histopathology lab.	2 Marks	L2	CO5
	j)	Write a brief note on Ionic binding.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the basic concept and routine methods of tissue examination.	8 Marks	L2	CO1
	b)	What are the characteristics for Ideal fixatives and explain it?	8 Marks	L3	CO1
		(OR)			
3.	a)	How would you label histopathological specimens?	8 Marks	L1	CO1
	b)	Explain the types of biopsy procedures its important.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the colloid in Embedding and its disadvantages.	8 Marks	L4	CO2
	b)	Determine the automation tissue procedure schedule and add brief note on advantages of it.	8 Marks	L4	CO2
		(OR)			
5.	a)	Illustrate the honing and stropping procedure.	8 Marks	4	CO2
	b)	Demonstrate the instrumentation of microtome.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain classification of dye based on their action on tissue.	8 Marks	L2	CO3
	b)	Demonstrate the trouble shooting in H&E Stain.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the automatic cover slipper and add note on advantages of it.	8 Marks	L3	CO3
	b)	Write the composition and preparation of Glycerin jelly, Apathy's medium and Highman's modification of Apathy's medium.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Write Clinical significance, method, principle and reagents to determine connective tissue staining.	8 Marks	L3	CO4
	b)	Write the principle, reagents, procedure, precautions and result of silver nitrate method.	8 Marks	L3	CO4

(OR)

9.	a)	Explain the general working procedure of cryostat.	8 Marks	L3	CO4
	b)	Which of the tissue particle observed by Weigert-van Gieson stain, explain the procedure and interpretation?	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the periodic acid-schiff stain.	8 Marks	L1	CO5
	b)	How would you prepare tissue for electron microscopy.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the scanning electron microscope and Transmission electron microscope.	8 Marks	L3	CO5
	b)	How would you prepare specimen for museum.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

ERGONOMICS AND HEALTH PROMOTION

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define ergonomics.	2 Marks	L1	CO1
	b)	What is organizational ergonomics?	2 Marks	L1	CO1
	c)	Mention any two occupations in which trigger finger can occur.	2 Marks	L2	CO2
	d)	What are the risk factors of hamstring strain?	2 Marks	L1	CO2
	e)	What are the environmental factors in ergonomics?	2 Marks	L1	CO3
	f)	Define REBA.	2 Marks	L2	CO3
	g)	Define health.	2 Marks	L1	CO4
	h)	What is agility?	2 Marks	L1	CO4
	i)	What is monotomyallowances ?	2 Marks	L2	CO3
	j)	Write the classification of BMI.	2 Marks	L2	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Elucidate the cognitive ergonomics.	8 Marks	L2	CO1
	b)	Describe the workmen's compensation act.	8 Marks	L1	CO1
		(OR)			
3.	a)	Elucidate the sagittal plane analysis of standing posture.	8 Marks	L3	CO1
	b)	Explain about the scoliosis.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain the primary causes, symptoms and job roles in which the rotator cuff injuries are more susceptible. What preventive measures can be taken to mitigate these risks?	8 Marks	L1	CO2
	b)	What are the specific occupational tasks or job roles that exacerbate upper cross syndrome? How can employers modify work practices to reduce the risk?	8 Marks	L2	CO2
		(OR)			
5.	a)	Elaborate in which occupation lateral epicondylitis occur. Write the symptoms, management of lateral epicondylitis in workplace.	8 Marks	L1	CO2
	b)	Elucidate the risk factors, symptoms, prevention strategies that causes cervical spondylosis in desk job workers.	8 Marks	L2	CO2

MODULE-III

6.	a)	What is RULA? Explain in detail about RULA method.	8 Marks	L3	CO3
	b)	Elaborate about the process of selecting and utilizing the assistive technology in workplaces.	8 Marks	L2	CO3

(OR)

7.	a)	Evaluation of psychosocial measures in workplaces.	8 Marks	L1	CO3
	b)	Elucidate the following SHARP study exposure assessment methods. i) Job sampling ii) Onsite data collection	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss the physiological changes occur with aging.	8 Marks	L1	CO4
	b)	Elaborate about warm up and cool down period in physical activity.	8 Marks	L1	CO4

(OR)

9.	a)	Explain about types of flexibility training.	8 Marks	L2	CO4
	b)	Discuss about principles and physiological effects of plyometrics.	8 Marks	L3	CO4

MODULE-V

10.	a)	What are the guidelines should be implemented to design computer workstation?	8 Marks	L3	CO3
	b)	Describe about visual factors and its measurement.	8 Marks	L2	CO3

(OR)

11.	a)	Explain in detail about quadriceps strain in workplace.	8 Marks	L1	CO2
	b)	Describe in which occupation thoracic outlet syndrome can occur. Explain the types, symptoms of thoracic outlet syndrome.	8 Marks	L1	CO2

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

PHARMACOLOGY

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out various sources of drugs.	2 Marks	L1	CO1
	b)	Distinguish sympathetic and parasympathetic nervous system.	2 Marks	L4	CO2
	c)	Make a note on adrenergic receptors.	2 Marks	L3	CO2
	d)	Describe the indications of benzodiazepines.	2 Marks	L2	CO3
	e)	Summarize the mechanism of action of digoxin.	2 Marks	L4	CO4
	f)	Make a note on anticoagulants.	2 Marks	L3	CO4
	g)	Write the pharmacological management of osteoarthritis.	2 Marks	L1	CO5
	h)	What is chronic obstructive airway disease.	2 Marks	L2	CO5
	i)	Explain the mechanism of action of proton pump inhibitors.	2 Marks	L2	CO6
	j)	Justify the reason for occurrence of dementia in elders.	2 Marks	L5	CO6

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Mention a detail note on routes of drug administration.	8 Marks	L4	CO1
	b)	Elaborate the concept of pharmacodynamics of a drug.	8 Marks	L6	CO1
		(OR)			
3.	a)	Define adverse drug reaction and add a note on classification and causes of adverse drug reactions.	8 Marks	L2	CO1
	b)	Give a detail presentation on metabolism and excretion of drug in the body.	8 Marks	L3	CO1

MODULE-II

4.	a)	Outline the process of neurotransmission.	8 Marks	L3	CO2
	b)	Summerize the classification of sympatholytics and explain the pharmacology of metoprolol.	8 Marks	L2	CO2
		(OR)			
5.	a)	Illustrate the detailed pharmacology of anxiolytics.	8 Marks	L2	CO2
	b)	Demonstrate the role of antipsychotics in normalizing psychotic episodes.	8 Marks	L3	CO2

MODULE-III

6.	a)	Elaborate the pharmacology of anticonvulsants.	8 Marks	L6	CO3
	b)	Justify the pharmacological role of dopamine precursor levodopa in parkinson's disease.	8 Marks	L5	CO3

(OR)

7.	a)	Illustrate the detailed pharmacology of alpha 1 antagonists.	8 Marks	L2	CO4
	b)	Demonstrate the role of antiarrhythmics in normalizing arrhythmia.	8 Marks	L3	CO4

MODULE-IV

8.	a)	Discuss the mechanism of action, pharmacological actions, indications and side effects of glucocorticoids.	8 Marks	L2	CO5
	b)	Relate the role of xanthine oxidase inhibitors in gout management	8 Marks	L3	CO5

(OR)

9.	a)	Explain in detail about rheumatoid arthritis.	8 Marks	L3	CO5
	b)	Make a overview on drugs used in management of allergic rhinitis.	8 Marks	L5	CO5

MODULE-V

10.	a)	Define constipation and elaborate the drugs used in constipation.	8 Marks	L3	CO6
	b)	Make a detail presentation on pharmacology of insulin in diabetes mellitus management.	8 Marks	L5	CO6

(OR)

11.	a)	What is postural hypotension and mention a note on drugs causing postural hypotension with mechanism.	8 Marks	L3	CO6
	b)	Explain the pharmacology of antidiarrheal agents.	8 Marks	L2	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

EXERCISE THERAPY - II

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write about Convex-Concave Rule.	2 Marks	L1	CO1
	b)	Differentiate between nuclear bag and nuclear chain fibers.	2 Marks	L3	CO1
	c)	Define Prosthesis.	2 Marks	L1	CO2
	d)	Write about Floor walking rules in crutch gait pattern.	2 Marks	L2	CO2
	e)	Add a note on Deconditioning.	2 Marks	L2	CO3
	f)	What are Anti gravity muscles?	2 Marks	L1	CO3
	g)	Write about equines gait.	2 Marks	L2	CO4
	h)	What is Hydrotherapy ?	2 Marks	L1	CO4
	i)	Name the crutch muscles.	2 Marks	L1	CO2
	j)	Define Orthosis.	2 Marks	L1	CO2

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe kinematics. Explain about its types.	8 Marks	L1	CO1
	b)	Describe joint receptors. Mention about its types.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain about the uses and indications of proprioceptive neuromuscular facilitation.	8 Marks	L3	CO1
	b)	Discuss about the indications and contraindications of stretching.	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss about Classification of Orthosis	8 Marks	L3	CO2
	b)	Describe wheel chair and discuss about its parts.	8 Marks	L2	CO2
		(OR)			
5.	a)	What are principles of inco-ordination and add a brief note on cerebellar ataxia?	8 Marks	L3	CO2
	b)	Elucidate about pre crutch training.	8 Marks	L2	CO2

MODULE-III

6.	a)	What are the key principles behind utilizing postural mechanism?	8 Marks	L2	CO3
	b)	Interpretation of Postural Reflexes.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain about COG, LOG and BOS.	8 Marks	L1	CO3
	b)	Describe Good and Poor Posture. Discuss about predisposing factors.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain about Rancho Los Angious (RLA) method of gait cycle.	8 Marks	L3	CO4
	b)	Describe in detail about improper gait patterns due to Muscular Weakness.	8 Marks	L3	CO4

(OR)

9.	a)	Explain about Whirlpool and Hubbard tank.	8 Marks	L1	CO4
	b)	Elaborate about the physiological effects of hydrotherapy.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain about characteristics of postural muscles.	8 Marks	L2	CO3
	b)	Explain about Postural Mal alignment.	8 Marks	L2	CO3

(OR)

11.	a)	Interpretation of improper gait patterns due to Neurological problems.	8 Marks	L3	CO4
	b)	Discuss about the normal movement and muscle action in stance and swing phase of knee.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations May – 2024

ELECTROTHERAPY - II

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the Dangerous of MWD?	2 Marks	L1	CO1
	b)	List out the indications of SWD.	2 Marks	L1	CO1
	c)	Write any two contraindications of ultrasound.	2 Marks	L1	CO2
	d)	What are the effects of phonophoresis?	2 Marks	L1	CO2
	e)	Define Super luminous diode laser.	2 Marks	L1	CO3
	f)	Draw the diagram PUVA apparatus.	2 Marks	L1	CO3
	g)	Different methods of application of paraffin wax.	2 Marks	L1	CO4
	h)	Define moist heat therapy.	2 Marks	L1	CO4
	i)	Draw a diagram of electro diagnostic equipment.	2 Marks	L2	CO5
	j)	Define Evoked Potential.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss different methods of application of shortwave diathermy. Explain the dangerous and, contraindications of shortwave diathermy.	8 Marks	L2	CO1
	b)	Summarize the production of micro wave diathermy. Add a note on technique of application.	8 Marks	L2	CO1

(OR)

3.	a)	Discuss microwave diathermy (MWD) and, its therapeutic and physiological effects.	8 Marks	L2	CO1
	b)	Explain in detail about application of various high-frequency currents.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the physical effects of heat and, laws governing radiations.	8 Marks	L2	CO2
	b)	Brief about the cervical spondylosis and, effects of traction in Cervical Spine.	8 Marks	L2	CO2

(OR)

5.	a)	Mention the indications and, contra indications of thoracic traction.	8 Marks	L2	CO2
	b)	Explain the lumbar spondyloses and, effects of lumbar traction	8 Marks	L2	CO2

MODULE-III

6.	a)	What is fluorescent tubes? Discuss their construction and, principles of fluorescent tube.	8 Marks	L2	CO3
	b)	Describe the production of laser and, write about physiological effects.	8 Marks	L2	CO3

(OR)

7.	a)	Enumarate the techniques and, application methods of UVR.	8 Marks	L2	CO3
	b)	Describe the techniques of application of ultraviolet radiation. Add a note on its indications and, contra indications.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Write about advance application techniques of moist heat therapy.	8 Marks	L2	CO4
	b)	Discuss in detail about physiological effects and, various application of paraffin wax. Add note on contra indications.	8 Marks	L2	CO4

(OR)

9.	a)	Mention about physiological effects of Nerve conduction velocity.	8 Marks	L3	CO4
	b)	Write about electro-diagnostic test.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss about applications of EMG in biofeedback therapy for muscle rehabilitation and, motor control training.	8 Marks	L2	CO5
	b)	Write the types of ultra violet lamps. Discuss in detail mercury vapor lamp. Add a note on the physiological effects of UVR.	8 Marks	L3	CO5

(OR)

11.	a)	Define biofeedback? Explain the technique of application and, effects of EMG biofeedback.	8 Marks	L3	CO5
	b)	Elaborate physiological and, therapeutic effects of hydrotherapy.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

BIOMECHANICS - II

[Bachelor of Physiotherapy]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the primary movement function of the hip complex?	2 Marks	L1	CO1
	b)	Identify the type of joint found in the hip complex.	2 Marks	L1	CO1
	c)	List out four ligaments of the knee complex.	2 Marks	L1	CO2
	d)	Write function of the meniscus in the knee.	2 Marks	L2	CO2
	e)	Why is ankle joint motion considered triplanar?	2 Marks	L3	CO3
	f)	List out the any four intrinsic muscles of foot and its function.	2 Marks	L1	CO3
	g)	Define posture.	2 Marks	L2	CO4
	h)	Write the phases of the gait cycle.	2 Marks	L2	CO4
	i)	Mention any four pathological gaits.	2 Marks	L1	CO4
	j)	What is cadence?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the structure of the hip joint and its role in kinematics.	8 Marks	L1	CO1
	b)	Recall the ligaments of the hip joint and their functions.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the biomechanical principles involved in hip stability and mobility.	8 Marks	L2	CO1
	b)	Compare and contrast the functions of the acetabular labrum and the ligamentum teres in the hip joint.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the structural components of the knee Complex and their roles in functional ability.	8 Marks	L2	CO2
	b)	Compare and contrast the mechanics of the knee joint in weight-bearing and non-weight-bearing activities.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the kinematics of the knee during common activities like walking, running, and squatting.	8 Marks	L2	CO2
	b)	Discuss the mechanical changes in the knee joint associated with aging and how these changes affect functionality.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the components of the ankle complex, and how do they work together in mechanics.	8 Marks	L2	CO3
	b)	Describe the structure of the foot complex contribute to its function in weight-bearing and locomotion.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explore the differences between dynamic and static stability of the ankle complex.	8 Marks	L3	CO3
	b)	Analyze the kinetic and kinematics of walking and running with respect to the ankle complex.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the biomechanical principles involved in the analysis of human gait.	8 Marks	L2	CO4
	b)	Describe the concept of double support phase during the gait cycle.	8 Marks	L2	CO4
		(OR)			
9.	a)	Describe the kinematics of the hip joint during the stance and swing phases of gait.	8 Marks	L2	CO4
	b)	Analyze the impact of footwear on gait pattern.	8 Marks	L3	CO4

MODULE-V

10.	a)	Evaluate the functions and movements of running and compare it to walking.	8 Marks	L3	CO5
	b)	Describe the role of proprioception in maintaining balance during walking.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the kinematics of normal human gait and its phases.	8 Marks	L3	CO5
	b)	Explain the mechanical differences between walking, running, and sprinting gaits	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations May – 2024

CLINICAL ORTHOPAEDICS

[Orthopedics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Difference between a soft callus and a hard callus.	2 Marks	L2	CO1
	b)	Define Gibbus.	2 Marks	L1	CO1
	c)	Define fluorosis.	2 Marks	L3	CO2
	d)	Differentiate spondylolisthesis and Retrolisthesis.	2 Marks	L1	CO2
	e)	Which joints are fused in triple arthrodesis?	2 Marks	L3	CO3
	f)	How to measure the cobb angle on a radiograph?	2 Marks	L1	CO3
	g)	What is deltoid fibrosis?	2 Marks	L2	CO4
	h)	Add a note on phalens test.	2 Marks	L3	CO4
	i)	Demonstrate how to perform windlass test on a patient.	2 Marks	L2	CO5
	j)	Who is more susceptible to developing sciatica?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is the difference between a Colles fracture and a Smith fracture? Add a note on causes, clinical features, management, and complications of colles fracture.	8 Marks	L2	CO1
	b)	How would you apply the Bado classification to a patient with a Monteggia fracture dislocation?.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the management of fracture neck of femur.	8 Marks	L1	CO1
	b)	Write the causes, types, clinical features, and management of patella fractures.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define osteomyelitis. Write the clinical features, and pathology of osteomyelitis.	8 Marks	L1	CO2
	b)	Discuss the Medical and surgical management of osteomyelitis.	8 Marks	L3	CO2
		(OR)			
5.	a)	Elaborate the causes, clinical features, and management of lumbar spondylosis.	8 Marks	L3	CO2
	b)	Explain the pathophysiology and management of cervical spondylosis.	8 Marks	L1	CO2

MODULE-III

6.	a)	Compare and contrast the radiographic features of chondrosarcoma and osteosarcoma.	8 Marks	L2	CO3
	b)	Imagine you encounter a child with congenital club foot. What intervention would you recommend?	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss the causes, clinical features, and management of cerebral palsy.	8 Marks	L3	CO3
	b)	Describe the causes, and clinical syndromes of spinal cord injury.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Discuss the causes, clinical features, and management of torticollis.	8 Marks	L3	CO4
	b)	Name the rotator cuff muscles. Write the causes, clinical features, and management of rotator cuff injury.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the causes, clinical features, and management of ganglion cyst.	8 Marks	L3	CO4
	b)	Identify the causes, clinical features, and management of painful arc syndrome.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Write the causes, clinical features, and management of Paget's disease.	8 Marks	L1	CO5
	b)	Discuss the causes, clinical features, and management of spinal stenosis.	8 Marks	L3	CO5
		(OR)			
11.	a)	Write the clinical features, and investigations of IVDP.	8 Marks	L3	CO5
	b)	Explain the causes, clinical features, and management of Perthes disease.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations May – 2024

CLINICAL SPORTS MEDICINE

[Sports]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the difference between subluxation and dislocation.	2 Marks	L2	CO1
	b)	Name any six complications of shoulder dislocations.	2 Marks	L3	CO1
	c)	Differentiate between strain and sprain.	2 Marks	L1	CO2
	d)	What is pitcher's elbow?	2 Marks	L1	CO2
	e)	Define corns and calluses.	2 Marks	L1	CO3
	f)	Write about Ingrown toenails.	2 Marks	L1	CO3
	g)	Define laminectomy.	2 Marks	L2	CO4
	h)	Define cauda equina syndrome.	2 Marks	L1	CO4
	i)	Define Osteochondrities dissecans.	2 Marks	L1	CO3
	j)	Define Jumper's Knee.	2 Marks	L2	CO3

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is tibial tubercle avulsion fracture? Discuss about its classification, epidemiology and management?	8 Marks	L1	CO1
	b)	Mention about the pathoanatomy and diagnostic procedures of shoulder dislocation.	8 Marks	L1	CO1

(OR)

3.	a)	Write about the ligaments, mechanism of injury, complications of sternoclavicular joint injuries.	8 Marks	L1	CO1
	b)	Explain about medical management and surgical corrections of Rotator cuff injuries.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain about relevant anatomy, clinical features, etiology and medical management of Olecranon bursitis.	8 Marks	L2	CO2
	b)	Elaborate carpel bones fractures. Discuss in detail about hamate fracture.	8 Marks	L1	CO2

(OR)

5.	a)	Explain about Boutonniere Deformity and Pseudo Boutonniere Deformity.	8 Marks	L1	CO2
	b)	Define ganglion cyst. Mention about its medical and surgical management.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe PFPS. Mention about its clinical features, etiology and medical management.	8 Marks	L2	CO3
	b)	Explain about causes, MOI, grades of sprain, prevention and medical management of PCL injury.	8 Marks	L2	CO3
		(OR)			
7.	a)	Differentiate between acute and chronic compartment syndrome and mention about its Pathophysiology and management.	8 Marks	L2	CO3
	b)	Explain about classification, Pathophysiology, etiology and management of metatarsal stress fracture.	8 Marks	L2	CO3

MODULE-IV

8.	a)	What is overuse injuries? Mention about its risk factors, consequences and management.	8 Marks	L2	CO4
	b)	Elaborate about common Running Related Injuries to the Knee.	8 Marks	L2	CO4
		(OR)			
9.	a)	Interpretation of Common Running Related Injuries to the Lower leg.	8 Marks	L2	CO4
	b)	Elaborate about clinical features, Pathomechanics and medical management of Plantar Fascitis.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe colles fracture. Discuss about its clinical features, complications and treatment procedures.	8 Marks	L1	CO2
	b)	Explain about anatomy, clinical features, pathophysiology and medical management of trigger finger.	8 Marks	L2	CO2
		(OR)			
11.	a)	Describe tarsal tunnel syndrome. Mention about its clinical features, complications and medical management.	8 Marks	L2	CO3
	b)	Explain about causes, clinical presentation, epidemiology and management of Tennis Leg.	8 Marks	L2	CO3

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, May – 2024

BASIC SCIENCE - ORTHOPAEDICS

[Orthopedics]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is dermatome and myotome?	2 Marks	L1	CO1
	b)	List the names of the bones in the axial skeleton.	2 Marks	L1	CO1
	c)	What is wartenbergs sign?	2 Marks	L2	CO2
	d)	Add a note on olecranon bursitis.	2 Marks	L1	CO2
	e)	What is Hoffa's fat pad syndrome?	2 Marks	L2	CO3
	f)	Where is the zone of weakness on femur?	2 Marks	L1	CO3
	g)	What is spondyloptosis?	2 Marks	L3	CO4
	h)	Define lumbosacral angle.	2 Marks	L1	CO4
	i)	Write about grasshopper eye patella.	2 Marks	L3	CO5
	j)	Define perturbation.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Draw and explain the structure and formation of brachial plexus.	8 Marks	L2	CO1
	b)	Describe ulnar nerve under the following headings. i) Root value ii) Course iii) Relations iv) Clinical Anatomy	8 Marks	L1	CO1
		(OR)			
3.	a)	Enumerate the shoulder joint under the following headings. i) Type ii) Articulations iii) Ligaments iv) Nerve supply v) Movements	8 Marks	L1	CO1
	b)	Explain root value, course, relations, clinical anatomy of radial nerve.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain about mechanics and pathomechanics of rotator cuff muscles.	8Marks	L2	CO2
	b)	What is prehension? Explain powergrip and precision handling with examples.	8 Marks	L1	CO2
		(OR)			
5.	a)	Describe palmar aponeurosis with neat labelled diagram.add a note on dupuytrens contracture.	8 Marks	L2	CO2
	b)	Explain the mechanics of the muscles required for pinch. add a note on pathomechanics of pinch.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain about mechanics of angulations of femur.	8 Marks	L2	CO3
	b)	List out the flexor muscles of hip.describe about pathomechanics of flexor muscles of hip.	8 Marks	L1	CO3
		(OR)			
7.	a)	Explain about mechanics and pathomechanics of lateral ankle sprain.	8 Marks	L2	CO3
	b)	Elucidate the mechanics of metatarsal break.Add a note on hammer toe deformity.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss about mechanics of flexors of trunk.	8 Marks	L1	CO4
	b)	What are the functions of sacrum? Explain about how disruptions in this mechanics affect the functions.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the mechanics and pathomechanics of quadratus lumborum and multifidus	8 Marks	L2	CO4
	b)	Elucidate the mechanics and pathomechanics of trapezius and levator scapulae muscles.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the parameters of gait.	8 Marks	L2	CO5
	b)	Explain about stair gait cycle.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss about scoliosis.	8 Marks	L1	CO5
	b)	Explain about flat back posture and kyphosis.	8 Marks	L1	CO5

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, May – 2024

BASIC SCIENCE IN SPORTS MEDICINE

[Sports]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define pedicles .	2 Marks	L1	CO1
	b)	Name the shoulder flexors muscles.	2 Marks	L1	CO1
	c)	What is eaton lambort syndrome?	2 Marks	L2	CO2
	d)	Give an example of multipennate muscle.	2 Marks	L2	CO2
	e)	Write about spring ligament.	2 Marks	L2	CO3
	f)	What is calcaneovalgus and calcaneovarus?	2 Marks	L1	CO3
	g)	Define isokinetic exercise	2 Marks	L2	CO4
	h)	Define sinus tarsi syndrome	2 Marks	L2	CO4
	i)	List the examples of upper limb plyometrics exercises.	2 Marks	L3	CO4
	j)	What are the neuromuscular blockers?	2 Marks	L2	CO2

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Draw a neat labeled diagram of the features and attachment of muscles on humerus.	8 Marks	L2	CO1
	b)	Write the origin, insertion, action and nerve supply of elbow flexors	8 Marks	L1	CO1

(OR)

3.	a)	Describe about joint receptors.	8 Marks	L1	CO1
	b)	Enumerate the ankle joint under the following headings. i) Type ii) Articulations iii) Ligaments iv) Nerve supply v) Movements.	8 Marks	L2	CO1

MODULE-II

4.	a)	Elucidate the length tension relationship of skeletal muscle.	8 Marks	L2	CO2
	b)	Explain about excitation and contraction coupling. Add a note on role of troponin and tropomyosin.	8 Marks	L1	CO2

(OR)

5.	a)	Describe about electromyogram.	8 Marks	L2	CO2
	b)	Explain about properties of skeletal muscle.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the mechanics and pathomechanics of ligaments of elbow complex with neat labelled diagram	8 Marks	L2	CO3
	b)	Elucidate the pathomechanics of lateral epicondylitis.	8 Marks	L3	CO3

(OR)

7.	a)	Discuss about the hip joint forces on unilateral stance.	8 Marks	L3	CO3
	b)	Explain the mechanics and pathomechanics of coxa valga and cox vara.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe about various methods of dope testing.	8 Marks	L2	CO4
	b)	Discuss about the sport specific injuries in swimming.	8 Marks	L3	CO4

(OR)

9.	a)	Elaborate about use and application of biomechanics in running sport event.	8 Marks	L3	CO4
	b)	Elucidate the physiological effects of stretchings.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain about physical properties of water,physiological effects and therapeutic value of aquatic therapy.	8 Marks	L2	CO4
	b)	Discuss in detail about effects of immobilization.	8 Marks	L2	CO4

(OR)

11.	a)	Explain about space physiology.	8 Marks	L1	CO2
	b)	Define sleep. Enumerate about the types,stages,mechanism of sleep.	8 Marks	L1	CO2

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations May – 2024

OPTOMETRIC OPTICS

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define nominal power.	2 Marks	L2	CO1
	b)	List the geometrical lens shapes.	2 Marks	L1	CO1
	c)	What do you mean by Toric base curve?	2 Marks	L2	CO2
	d)	If a +14.00 ds/-3.00 dc× 090 lens is prescribed at 12-mm vertex distance and the frame selected is positioned at 15 mm, find the new prescription.	2 Marks	L3	CO2
	e)	Define abbe value.	2 Marks	L1	CO3
	f)	Write two points about curve variation factor.	2 Marks	L1	CO3
	g)	Define prism.	2 Marks	L2	CO4
	h)	What do you mean by decentration?	2 Marks	L1	CO4
	i)	Write the basic principle in aspheric lenses.	2 Marks	L2	CO5
	j)	What do you mean by photochromatic lens, write in your own words.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the differences between spherical, cylindrical, and Toric lenses, including their respective optical characteristics and common applications in correcting refractive errors.	8 Marks	L2	CO1
	b)	Elaborate on flat lens forms with diagrams.	8 Marks	L3	CO1
		(OR)			
3.	a)	If a lens had dimensions of F1 =-6.00D, F2 at 90 =-8.00D, and F2 at 180=-6.00D. Find the lens form and its power with optic cross diagram.	8 Marks	L3	CO1
	b)	Describe the geometric shapes of the lens.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain when to specify base curve and when not to specify base curve.	8 Marks	L1	CO2
	b)	Derive sagittal depth formula with diagram.	8 Marks	L3	CO2
		(OR)			
5.	a)	Elaborate on hand neutralization.	8 Marks	L3	CO2
	b)	Describe the different manufacturing defects of Ophthalmic lenses.	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe the key characteristics of optical lenses.	8 Marks	L2	CO3
	b)	Explain the optical properties of glass lenses with its advantage and disadvantages.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the importance of lens coatings in enhancing durability, clarity, and light transmission.	8 Marks	L2	CO3
	b)	Describe the properties of CR-39 lens material with advantages and disadvantages.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Elaborate on units of prisms.	8 Marks	L1	CO4
	b)	A +6.00 D lens before the right eye is decentered 3 mm nasal ward. What amount of prism is induced, and find the base orientation.	8 Marks	L3	CO4
		(OR)			
9.	a)	Write about prism axis notation and how you will prescribe relation to vertical and horizontal prisms with diagram.	8 Marks	L3	CO4
	b)	Explain the concept of decentration in spherocylindrical lenses and its impact on visual performance.	8 Marks	L1	CO4

MODULE-V

10.	a)	Write about minus lenticular lenses with its types and diagrams.	8 Marks	L1	CO5
	b)	Elaborate on polaroid lenses.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss the different types of tinted lenses available and their specific optical properties and applications.	8 Marks	L2	CO5
	b)	Write about plus lenticular lenses with types and diagrams.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

OCULAR DISEASE - I

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is meant by trichotillomania?	2 Marks	L1	CO1
	b)	Name the causative agents for bacterial and viral conjunctivitis.	2 Marks	L1	CO1
	c)	Write any two points about filaments in the cornea.	2 Marks	L2	CO2
	d)	How do you differentiate arcus senilus from arcus juvenile?	2 Marks	L1	CO2
	e)	Write few words about any two ophthalmic findings in anterior uveitis.	2 Marks	L2	CO3
	f)	Define “Argyll Robertson pupil”.	2 Marks	L1	CO3
	g)	Mention any 4-lifestyle modification in dry eye syndrome.	2 Marks	L3	CO4
	h)	List the major causes of dry eye.	2 Marks	L2	CO4
	i)	What do you mean by lens coloboma?	2 Marks	L2	CO5
	j)	Write any two points about sub-choroidal hemorrhage.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	A 64-year-old gentleman who was referred to the Oculoplastic Service at the University of Iowa for longstanding irritation of both eyes. He was recently treated for "blepharitis" and allergic conjunctivitis. Despite using olopatadine (Patanol) drops and lid hygiene, his symptoms persistent. Prior ophthalmic examination revealed two rows of eyelashes on his lower eyelids bilaterally and bilateral punctate epithelial erosions (PEE). The patient reports that he was aware of his extra eyelashes, and that they had been there as long as he could remember. What will be diagnosis based on his history and write about the disorder, signs, symptoms, treatment, differential diagnosis.	8 Marks	L3	CO1
	b)	Add a detail note on the following. i) Madarosis ii) Trichiasis	8 Marks	L2	CO1

(OR)

3.	a)	Elaborate on Atopic keratoconjunctivitis.	8 Marks	L1	CO1
	b)	Explain the following conditions. i) Basel cell carcinoma ii) Squamous cell carcinoma	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the management approach for chemical burns leading to corneal injuries, focusing on the importance of immediate irrigation and subsequent treatment.	8 Marks	L3	CO2
	b)	Write about infectious scleritis.	8 Marks	L2	CO2

(OR)

5.	a)	Elaborate on corneal pigmentation.	8 Marks	L2	CO2
	b)	Explain the therapeutic uses of contact lens.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss about peters anomaly.	8 Marks	L1	CO3
	b)	Elaborate on "Marcus Gunn pupil".	8 Marks	L2	CO3

(OR)

7.	a)	Discuss in detail about choroidal melanoma.	8 Marks	L2	CO3
	b)	What general diagnostic procedures are commonly employed in investigating uveitis?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Add a note on following conditions. i) Acute dacroenditis ii) Orbital myosis	8 Marks	L2	CO4
	b)	Explain any two orbital tumors	8 Marks	L2	CO4

(OR)

9.	a)	Evaluate the various treatment options available for managing dry eye syndrome, including pharmacological agents, tear conservation strategies, and lifestyle modifications.	8 Marks	L3	CO4
	b)	Discuss about orbital cellulitis.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain how cataract formed in systemic diseases with examples.	8 Marks	L1	CO5
	b)	Write about congenital cataract in Association with metabolism.	8 Marks	L2	CO5

(OR)

11.	a)	List and explain the treatment strategies for congenital cataract.	8 Marks	L2	CO5
	b)	Elaborate on Acute postoperative endophthalmitis.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

OPTOMETRIC INSTRUMENTS - I

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Mention the major function of stenopic slit.	2 Marks	L2	CO1
	b)	Why we use red and green filter in optometric practice?	2 Marks	L1	CO1
	c)	Write about with and against movement in relation to retinoscope and hand neutralization respectively.	2 Marks	L3	CO2
	d)	What is the basic function of power rotator and axis wheel and list the changes occurs in the mires if you use them?	2 Marks	L1	CO2
	e)	Mention any two uses of aberrometer.	2 Marks	L3	CO3
	f)	Name the three principles present in corneal topography.	2 Marks	L1	CO3
	g)	What are the secondary diseases identified by specular microscopy?	2 Marks	L2	CO4
	h)	What is the principle of specular microscopy, explain it on your own words with diagram?	2 Marks	L3	CO4
	i)	What are the instrument readings required to calculate IOL power?	2 Marks	L2	CO5
	j)	Write in your own words about the principle used in “PAM”.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the importance of proper illumination in a consulting room for vision testing and patient comfort. What are the optimal lighting conditions?	8 Marks	L2	CO1
	b)	What are some common near vision difficulties that can arise when using a phoropter and trial frame and how can they be effectively managed?	8 Marks	L3	CO1

(OR)

3.	a)	Explain about the auxiliary lenses present in phoropter.	8 Marks	L1	CO1
	b)	When selecting test charts for vision assessment, what factors should be considered to ensure suitability for diverse patient needs and conditions?	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the optics involved in retinoscopy and how they contribute to the measurement of refractive error. Discuss the significance of the retinoscopy reflex in determining refractive status.	8 Marks	L1	CO2
	b)	Explain the role of trial lenses in hand neutralization. How are they selected and manipulated to achieve the most accurate refractive correction.	8 Marks	L3	CO2

(OR)

5.	a)	What is a retinoscope and what is its primary use in an eye examination?	8 Marks	L3	CO2
	b)	Elaborate on the types of lensometers, their construction, the step-by-step procedure for measuring for spherical and prism lens, and how the results are interpreted.	8 Marks	L1	CO2

MODULE-III

6.	a)	How does an aberrometer function in evaluating aberrations within the eye, and what specific types of aberrations can it detect?	8 Marks	L2	CO3
	b)	Elaborate on reading corneal topography indices.	8 Marks	L3	CO3

(OR)

7.	a)	Write the parts and procedure of keratometry.	8 Marks	L3	CO3
	b)	Explain the parts and procedure of Placido disc with diagram,	8 Marks	L1	CO3

MODULE-IV

8.	a)	Elaborate on tonopen and I-care tonometer.	8 Marks	L3	CO4
	b)	What are the primary parameters assessed by specular microscopy, and how do they contribute to evaluating corneal health and potential endothelial dysfunction?	8 Marks	L3	CO4

(OR)

9.	a)	Elaborate on AS OCT, with principle, procedure, uses, interpretation with diagram.	8 Marks	L3	CO4
	b)	Outline the step-by-step procedure for using a Perkins tonometer to measure intraocular pressure in a patient, including its principle, patient preparation, and data recording.	8 Marks	L1	CO4

MODULE-V

10.	a)	Write about pupilometer, by explaining their parts, functions, advantages, and disadvantages.	8 Marks	L1	CO5
	b)	Write on your words, what are the improvements can be done in color vision test and contrast sensitivity tests.	8 Marks	L3	CO5

(OR)

11.	a)	Explain different types of Manual measurement of IPD with the help of ruler.	8 Marks	L3	CO5
	b)	Write about the echo spikes produced in a scan probe technique with diagram.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

EQUIPMENT IN MEDICAL IMAGING

[Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Cephalometry.	2 Marks	L1	CO1
	b)	Add a brief note on principle of DBT.	2 Marks	L2	CO1
	c)	Write about Sir. Raymond V. Damadian in four lines.	2 Marks	L1	CO2
	d)	What is the CT number for CSF, Muscles, blood and air?	2 Marks	L1	CO2
	e)	State the application of C-ARM.	2 Marks	L1	CO3
	f)	Define angiogram and subtraction technique.	2 Marks	L1	CO3
	g)	Mention any four alternative methods of DEXA.	2 Marks	L1	CO4
	h)	State bone densitometry and equipment used to measure.	2 Marks	L1	CO4
	i)	Define hotspot and cold spot.	2 Marks	L2	CO5
	j)	Mention the components of gamma camera.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe cephalometry, its technique along with cephalostat unit.	8 Marks	L2	CO1
	b)	Discuss in detail about Orthopantography.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize dental radiographic unit with diagrammatic representation.	8 Marks	L2	CO1
	b)	Discuss in detail about mobile x-ray unit in detail.	8 Marks	L1	CO1

MODULE-II

4.	a)	Apply your knowledge on introducing Computed tomography in your own words.	8 Marks	L3	CO2
	b)	Explain about principle of MRI.	8 Marks	L2	CO2
		(OR)			
5.	a)	Elaborate on the history of CT scanner along with advantages and limitations of CT.	8 Marks	L2	CO2
	b)	Discuss in detail about resonance, its results along with pulse timing parameters.	8 Marks	L2	CO2

MODULE-III

6.	a)	Elaborate on C-Arm equipment detail along with different components of equipment.	8 Marks	L2	CO3
	b)	Describe about different subtraction techniques.	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe about DSA and its types.	8 Marks	L3	CO3
	b)	Summarize about equipment used for Cinefluoroscopy in detail along with films used.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Elaborate on DEXA in detail with suitable diagrams.	8 Marks	L3	CO4
	b)	Write a short note on:	8 Marks	L3	CO4
	i)	T-Score and Z-Score.			
	ii)	Vertebral fracture assessment.			
		(OR)			
9.	a)	Discuss in detail about alternative techniques to DEXA	8 Marks	L3	CO4
	b)	Describe about basic protocols of DEXA scan.	8 Marks	L1	CO4

MODULE-V

10.	a)	Discuss in detail about components of gamma camera	8 Marks	L1	CO5
	b)	Elaborate in detail about SPECT, its working, and types of cameras used in SPECT with suitable diagrams.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain about components of LINAC.	8 Marks	L3	CO5
	b)	Write a short note on:	8 Marks	L1	CO5
	i)	Technetium 99m			
	ii)	Thallium 201			

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations May – 2024

SPECIAL INVESTIGATIONS IN RADIOLOGY

[Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Add a note on epinephrine.	2 Marks	L1	CO1
	b)	Write a brief note on extravasations of contrast material.	2 Marks	L2	CO1
	c)	Prepare a note on Barium sulphate.	2 Marks	L1	CO2
	d)	Write a brief note on filming technique of barium swallow.	2 Marks	L2	CO2
	e)	Add a note on preparation for percutaneous nephrostomy.	2 Marks	L1	CO3
	f)	Write a brief note on filming technique of RGU.	2 Marks	L2	CO3
	g)	List out salivary glands.	2 Marks	L1	CO4
	h)	Write any four indications of myelography.	2 Marks	L1	CO4
	i)	Mention two IV contrast media used in cholangiography.	2 Marks	L1	CO5
	j)	Define cholecystectomy and cholelithiasis.	2 Marks	L4	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss Pre operative cholangiography under following headings: i) Preparation of the patient ii) Technique iii) After care iv) Complications.	8 Marks	L3	CO1
	b)	Discuss Pre operative cholangiography under following headings: i) Indications ii) Contraindications iii) Equipment iv) Patient preparation	8 Marks	L3	CO1
		(OR)			
3.	a)	Give an outline on Biliary system with a neat diagram.	8 Marks	L4	CO1
	b)	Add a long note on hysterosalpingography.	8 Marks	L2	CO1

MODULE-II

4.	a)	Differentiate high osmolar and low osmolar contrast media.	8 Marks	L3	CO2
	b)	Explain about high risk group persons, premedication for high risk group and severity reactions of contrast media.	8 Marks	L2	CO2
		(OR)			
5.	a)	Identify any 8 emergency drugs and its uses in radiology.	8 Marks	L3	CO2
	b)	Write in detail on conventional contrast media.	8 Marks	L2	CO2

MODULE-III

6.	a)	List out indications of all barium procedures.	8 Marks	L1	CO3
	b)	How will you perform barium swallow examination to demonstrate motility disorders of oesophagus? How will you differentiate Achalasia cardia from other motility disorders of oesophagus?	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe the contrast media used in barium meal study. Describe the technique, advantage and disadvantage of i) Single contrast barium meal study ii) Double contrast barium meal study	8 Marks	L2	CO3
	b)	Explain in detail on preparation for barium procedures.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the Indications, contraindications, risk factors and contrast media for IVU.	8 Marks	L2	CO4
	b)	Explain about the RGU.	8 Marks	L2	CO4
		(OR)			
9.	a)	Summarize the indications, preparation, and procedure for percutaneous nephrostomy.	8 Marks	L4	CO4
	b)	Explain the filming technique of RGU & MCU.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is sialography? Enumerate indications and contraindication, equipment of sialography.	8 Marks	L2	CO5
	b)	Discuss in detail on the definition, indications, contraindications, preparation and equipment for phlebography.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss anatomy of Nasolacrimal duct along with a diagram.	8 Marks	L3	CO5
	b)	Draw the diagram of lower limb venous system with labeling.	8 Marks	L4	CO5

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

PHYSIC AND TECNIQUES OF ULTRASOUND AND MAMMOGRAPHY

[Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define sternal angle.	2 Marks	L2	CO1
	b)	Add a brief note on blood supply of breast.	2 Marks	L1	CO1
	c)	List out four factors that affect the clinical image quality of a mammogram.	2 Marks	L3	CO2
	d)	Add a note on role of mammography technologist	2 Marks	L1	CO2
	e)	What is the range of sound for human hearing in Hz?	2 Marks	L3	CO3
	f)	Mention any four advantages of ultrasound.	2 Marks	L1	CO3
	g)	Define Doppler effect.	2 Marks	L2	CO4
	h)	Add short notes on artifact.	2 Marks	L3	CO4
	i)	Write any four points about preparation of US abdomen.	2 Marks	L2	CO5
	j)	Add a note on patient position during carotid Doppler.	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss in detail on structure of breast.	8 Marks	L2	CO1
	b)	Explain surface land marks on chest region.	8 Marks	L3	CO1
		(OR)			
3.	a)	Define BIRADS, and explain in detail on MRI lexicon.	8 Marks	L1	CO1
	b)	Discuss in detail on muscles of pectoral region.	8 Marks	L3	CO1

MODULE-II

4.	a)	Give an outline on compression peddle used in mammography.	8 Marks	L1	CO2
	b)	Summarize the flat panel detectors used in digital mammography.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain following techniques: i) Lateral projections ii) Cleopatra view	8 Marks	L3	CO2
	b)	Explain following techniques: i) Spot and magnification views ii) Tangential views	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss in detail on characteristics of sound waves and relation between velocity, frequency and wavelength.	8 Marks	L2	CO3
	b)	Explain interaction of high frequency sound waves with tissue with a neat diagram.	8 Marks	L3	CO3

(OR)

7.	a)	Discuss in detail on TM mode ultrasound display with a neat diagram.	8 Marks	L3	CO3
	b)	Add a long note on the following : i) Reverberation artifacts. ii) Acoustic shadowing. iii) Acoustic enhancement. iv) Edge shadowing.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define Doppler angle, and explain Doppler angle with neat diagrams.	8 Marks	L3	CO4
	b)	Add a long note on continuous Doppler with a neat diagram.	8 Marks	L3	CO4

(OR)

9.	a)	Summarize color flow Doppler imaging with diagram, and add a note on its advantages and disadvantages.	8 Marks	L3	CO4
	b)	Write in detail on power Doppler with a neat diagram, and add a note on its advantages and disadvantages.	8 Marks	L1	CO4

MODULE-V

10.	a)	Summarize the indications of Ultrasound liver and gall bladder studies.	8 Marks	L1	CO5
	b)	Explain the indications of Ultrasound pancreas and spleen studies.	8 Marks	L3	CO5

(OR)

11.	a)	Discuss about Doppler upper limb arterial study.	8 Marks	L3	CO5
	b)	Explain Doppler upper limb venous study.	8 Marks	L1	CO5

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

QUALITY CONTROL AND SAFETY IN DIAGNOSTIC RADIOLOGY

[Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State the room size of x ray equipment room.	2 Marks	L1	CO1
	b)	Write in brief about lead glass.	2 Marks	L2	CO1
	c)	What is the purpose of departmental QA committee?	2 Marks	L3	CO2
	d)	List any four QA tools.	2 Marks	L1	CO2
	e)	Give the features of fluoroscopic image quality tool.	2 Marks	L1	CO3
	f)	How to perform a fluoroscopic visual check QA test and name the parameters to check?	2 Marks	L3	CO3
	g)	Write in brief about training and testing phantoms.	2 Marks	L2	CO4
	h)	Give few lines on typical design of flow phantom.	2 Marks	L1	CO4
	i)	Prepare a brief note on slice thickness accuracy in MRI	2 Marks	L3	CO5
	j)	Write in brief about geometry accuracy in MRI.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe about dose limits, and their needs according to AERB.	8 Marks	L2	CO1
	b)	Add a short note on: i) Four benefits of record keeping. ii) QA, its aim & objective.	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss in detail about record keeping.	8 Marks	L2	CO1
	b)	Write a short note on: i) Approval of license of radiological equipment. ii) Rules & Protocols of AERB for Radiation Protection.	8 Marks	L1	CO1

MODULE-II

4.	a)	Discuss in detail about responsibilities of RSO.	8 Marks	L2	CO2
	b)	Add a short on: i) Quality committee makeup. ii) Purpose and responsibilities of quality committee.	8 Marks	L1	CO2
		(OR)			
5.	a)	Describe the role of members in quality assurance council.	8 Marks	L2	CO2
	b)	Write a short note on: i) QMC ii) Tissue equalent phantom.	8 Marks	L1	CO2

MODULE-III

6.	a)	Apply your knowledge on QA in Diagnostic Radiology, why QA tests are required, and importance of various QA tests.	8 Marks	L3	CO3
	b)	Write in detail about: i) Central beam alignment test ii) Need of QA checkup	8 Marks	L1	CO3
		(OR)			
7.	a)	Elaborate on daily and weekly QA,Explain QC of CT scanner in your own words.	8 Marks	L3	CO3
	b)	Elaborate on CT QA tests in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Apply your knowledge about ultrasound equipment calibration during QA checkup.	8 Marks	L3	CO4
	b)	Write a short note on: i) Mechanism of flow phantom. ii) Measurement accuracy QA test.	8 Marks	L1	CO4
		(OR)			
9.	a)	Describe accuracy for measurements in ultrasound equipment.	8 Marks	L2	CO4
	b)	Explain phantoms used in ultrasound, and their recent advancements.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss in detail about slice position accuracy and high contrast spatial resolution tests.	8 Marks	L2	CO5
	b)	Elaborate on various QC tests to be performed for MRI.	8 Marks	L2	CO5
		(OR)			
11.	a)	Apply your knowledge on QC tests for resolution in MRI.	8 Marks	L3	CO5
	b)	Write a short note on: i) Phantom setup. ii) Low-contrast object detectability	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

PHYSICS OF COMPUTERIZED TOMOGRAPHY

[Radiology & Imaging Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write in brief about windowing.	2 Marks	L1	CO1
	b)	Give any four clinical applications of CT scanner.	2 Marks	L2	CO1
	c)	State any two major differences between first and second generations of CT scanner.	2 Marks	L2	CO2
	d)	Who and when CT scanner was invented?	2 Marks	L1	CO2
	e)	List any two needs of post processing.	2 Marks	L2	CO3
	f)	Write in brief about minimum intensity projection.	2 Marks	L2	CO3
	g)	List the types of artifacts based on their shape.	2 Marks	L1	CO4
	h)	Define spatial resolution and temporal resolution.	2 Marks	L1	CO4
	i)	Write in brief about KERMA.	2 Marks	L2	CO5
	j)	Define effective dose.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe about windowing, CT number and list CT numbers of any ten human tissues.	8 Marks	L2	CO1
	b)	Add a short note on: i) CT gantry ii) Why CT scan is performed, its special features.	8 Marks	L1	CO1

(OR)

3.	a)	Explain about basic principle of CT.	8 Marks	L2	CO1
	b)	Interpret the tomographic principle and explain, why tomography is used in medical imaging?	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe about slip rings, and the generation of CT scanner in which they introduced.	8 Marks	L2	CO2
	b)	Summarize on sixth and seventh generations of CT scanner with diagrams.	8 Marks	L2	CO2

(OR)

5.	a)	Explain rotate-translate type of CT scanners.	8 Marks	L2	CO2
	b)	Discuss in detail about third and fourth generations of CT scanner with respective diagrams.	8 Marks	L3	CO2

MODULE-III

6.	a)	Elaborate on various post processing techniques in CT scanner.	8 Marks	L2	CO3
	b)	Write a short on: i) Simple back projection ii) Fourier transformission.	8 Marks	L1	CO3

(OR)

7.	a)	Summarize on image acquisition in EBCT with a suitable diagram.	8 Marks	L3	CO3
	b)	Elaborate on MPR, and significance of post processing techniques.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Elaborate on CT number, its importance and CT numbers of at least 10 components.	8 Marks	L2	CO4
	b)	Write a note on: i) Proton starvation and its remedies. ii) Aliasing artifact and its remedies.	8 Marks	L1	CO4

(OR)

9.	a)	Apply your knowledge in elaborating and relating the concepts of pixel, voxel and matrix with image resolution.	8 Marks	L3	CO4
	b)	Elaborate on remedies to avoid patient-based artifacts, and physics-based artifacts in CT.	8 Marks	L2	CO4

MODULE-V

10.	a)	Apply your knowledge in explaining radiation exposure causes in individuals.	8 Marks	L3	CO5
	b)	Describe about CT phantoms with suitable diagrams, and CT dosimetry.	8 Marks	L2	CO5

(OR)

11.	a)	Summarize on KERMA, effective dose, and dose of different organs.	8 Marks	L2	CO5
	b)	Write a short note on: i) Deterministic effect ii) Stochastic effect.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

CLINICAL EXAMINATION OF VISUAL SYSTEM

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Signify the term "LVA History starts from patients' entry pattern in clinic".	2 Marks	L2	CO1
	b)	Define abnormal eye position and posture in a BSV Patient.	2 Marks	L1	CO1
	c)	Define visual angle.	2 Marks	L3	CO2
	d)	What do you understand with and against the movement in Retinoscopy?	2 Marks	L1	CO2
	e)	What is the basic difference between all three schimmers test.	2 Marks	L3	CO3
	f)	How will you do blink test.	2 Marks	L1	CO3
	g)	List any eight types of scotomas.	2 Marks	L2	CO4
	h)	What do you mean by artifacts.	2 Marks	L3	CO4
	i)	Name any four-stereopsis test.	2 Marks	L2	CO5
	j)	How will you place prisms in von graefe technique?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Enumerate patient compliance and its effect on contact lens wearers history taking.	8 Marks	L2	CO1
	b)	Explain how as a practitioner you would find suitability and success of patient as contact lens wearer from his/her social and occupational needs.	8 Marks	L3	CO1

(OR)

3.	a)	Describe the key point that need to extract in binocular vision unattained patient's history.	8 Marks	L1	CO1
	b)	How determining the information quality of a BSV patient can be difficult from parent words?	8 Marks	L3	CO1

MODULE-II

4.	a)	Summarize the steps for Visual acuity recording and Refraction through Phoropter.	8 Marks	L1	CO2
	b)	Discuss the procedure of dry and wet retinoscopy by using a flow chart.	8 Marks	L2	CO2

(OR)

5.	a)	Overview Color vision assessment in any two techniques.	8 Marks	L2	CO2
	b)	Elaborate the process of the Contrast sensitivity test in the Peli Robson Chart. Explain the clinical importance of the test.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss how the blink test results can inform the diagnosis and management of dry eye syndrome.	8 Marks	L2	CO3
	b)	Write corneal color coding for red with diagrams.	8 Marks	L2	CO3
		(OR)			
7.	a)	Write about john's dry eye test.	8 Marks	L3	CO3
	b)	List corneal color coding for the brown and yellow with diagrams.	8 Marks	L1	CO3

MODULE-IV

8.	a)	How will you read an oct report. explain each parameter separately for macula scan.	8 Marks	L3	CO4
	b)	Explain confrontation procedure with its types and documentation.	8 Marks	L3	CO4
		(OR)			
9.	a)	Write about any four types of amsler's grid with example and diagram.	8 Marks	L3	CO4
	b)	Explain retinal color coding based on red with diagrams.	8 Marks	L1	CO4

MODULE-V

10.	a)	Define the term "phoria" in the context of binocular vision and explain how it differs from "tropia." Describe the clinical significance of measuring phoria and tropia in optometric assessments.	8 Marks	L1	CO5
	b)	Discuss about worth four dot test with examples.	8 Marks	L3	CO5
		(OR)			
11.	a)	Compare and contrast the Synaptophore and the Phoria measurement techniques in assessing binocular vision disorders. Discuss their respective advantages, limitations, and specific clinical applications.	8 Marks	L3	CO5
	b)	Elaborate on squint history taking.	8 Marks	L1	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, May – 2024

DISPENSING OPTICS

[Optometry]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Mention the standard minimum impact resistance of an ophthalmic lens as per "ANSI". What is tensile resistance.	2 Marks	L2	CO1
	b)	Find out the relation between specific gravity and lens weight.	2 Marks	L1	CO1
	c)	Find out the total power at near, when the distance power is +1.25 D is supplemented with a +2.50 D add for near viewing.	2 Marks	L3	CO2
	d)	Mention the different types of construction methods of bifocals.	2 Marks	L1	CO2
	e)	What do you mean by anti-smudge coating?	2 Marks	L2	CO3
	f)	What is the basic principle followed in tinting the lenses?	2 Marks	L1	CO3
	g)	Define pantoscopic tilt and its normal angle.	2 Marks	L2	CO4
	h)	Write briefly about Frontal angle and splay angle.	2 Marks	L2	CO4
	i)	How do you determine the appropriate temple length for a customer?	2 Marks	L2	CO5
	j)	What will be solution when patient tilt their head forward while seeing at 40cm with the help of progressive lenses?	2 Marks	L3	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the processes of lens Surfacing in detail with necessary figures.	8 Marks	L2	CO1
	b)	What do you understand by lens edging? Mention the different types of Lens edges and their importance for mounting in a frame?	8 Marks	L2	CO1
		(OR)			
3.	a)	Outline the Ideal Characteristics of a Spectacle lens.	8 Marks	L1	CO1
	b)	Assess the interplay between different ranges of the UV spectrum and the Human Eye. How Plastic lenses are superior in this manner compared to a mineral lens, defined with example?.	8 Marks	L6	CO1

MODULE-II

4.	a)	Explain about invisible bifocals and how it's different than progressive.	8 Marks	L1	CO2
	b)	Compare Bifocal, Trifocal and PAL lenses.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the concept of near addition with the necessary diagram.	8 Marks	L3	CO2
	b)	Interpret the terminologies related to segmented multi focal with the necessary diagram.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the concept of absorptive glasses and their characteristics. How do absorptive glasses filter specific wavelengths of light to enhance visual comfort?	8 Marks	L2	CO3
	b)	Mention the benefits of anti-reflection coatings on spectacle lenses. How do these coatings reduce reflections and enhance visual acuity?	8 Marks	L2	CO3
		(OR)			
7.	a)	Write about fixed tint lenses.	8 Marks	L2	CO3
	b)	Explain why we have to protect lens from abrasions and what type of coating is done, mention its uses, and tests to evaluate the coating.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Discuss the considerations for selecting spectacle frames based on age group. How do frames differ in design and functionality for children, adults, and seniors?	8 Marks	L3	CO4
	b)	Explain the unique features and design considerations of special spectacle frames.	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss the factors that influence frame selection based on spectacle prescription. How does frame size and shape affect lens thickness and distortion?	8 Marks	L2	CO4
	b)	Explain types of nose bridges.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the technique for testing lens impact resistance.	8 Marks	L1	CO5
	b)	Add a note on: i) Nylon pliers ii) Angling pliers iii) Pad adjusting pliers. iv) Round pliers	8 Marks	L2	CO5
		(OR)			
11.	a)	What are the common measures should be taken for prescribing PALS and general instructions given to the patient.	8 Marks	L2	CO5
	b)	Explain soldering method.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define tautology. Give a relevant example	2 Marks	L1	CO1
	b)	Compare Disjunctive normal form with Conjunctive normal form	2 Marks	L1	CO1
	c)	List out the rules for constructing a Hasse diagram	2 Marks	L1	CO2
	d)	Find (gof)(x) and (fog)(x) where f(x)=2x+6 and g(x)=6	2 Marks	L1	CO2
	e)	State the principle of mathematical induction	2 Marks	L1	CO3
	f)	Write about sum rule and product rule	2 Marks	L1	CO3
	g)	Define a group and give a relevant example	2 Marks	L1	CO4
	h)	List the steps to solve RR using generating functions method	2 Marks	L1	CO4
	i)	Discuss about matrix representation of graphs with a relevant example	2 Marks	L1	CO5
	j)	List out any 3 properties of a tree	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss any 4 connectives with suitable example for each.	8 Marks	L2	CO1
	b)	Show that $((p \vee q) \wedge \sim(\sim p \wedge (\sim q \vee \sim r))) \vee (\sim p \wedge \sim q) \vee (\sim p \wedge \sim r)$ is a tautology without using truth table.	8 Marks	L3	CO1
		(OR)			
3.	a)	Construct truth table for the following: $(i)\ (p \vee q) \wedge r \quad (ii)\ p \vee (q \wedge r) \quad (iii)\ (p \wedge q) \rightarrow \sim r$	8 Marks	L3	CO1
	b)	Compare CNF and DNF and mention suitable examples	8 Marks	L2	CO1

MODULE-II

4.	a)	Draw a POSET diagram for [{D24; /]. Also determine whether it is a lattice or not.	8 Marks	L2	CO2
	b)	Let f be function from {a,b,c,d} to {1,2,3,4} with f(a) = 4, f(b) = 2, f(c) = 1 and f(d) = 3. Investigate whether f is one-one, Into and Onto function. Give reasons.	8 Marks	L3	CO2
		(OR)			
5.	a)	Let A={-2,-1,0,1,2}, B={0,1,4}, and f : A-> B is defined as $f(x) = x^2$ is a function. Find whether it is one-to-one or bijection or both.	8 Marks	L1	CO2
	b)	Design the Hasse diagram for ({3, 4, 12, 24, 48, 72}, /). Check whether it is a lattice or not.	8 Marks	L3	CO2

MODULE-III

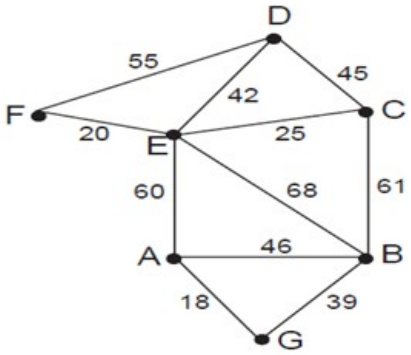
6.	a)	Using the principle of mathematical induction, prove that $1/(1)(2) + 1/(2)(3) + ...+1/n(n+1) = n/(n+1)$.	10 Marks	L3	CO3
	b)	Discuss about groups, semi groups and monoids and give suitable examples.	6 Marks	L2	CO3
		(OR)			
7.	a)	Define and give an example for each i) Group ii) Subgroup iii) Homomorphism iv) Isomorphism	8 Marks	L1	CO3
	b)	A personal identification number (PIN) consists of a sequence of four digits, each drawn from the set {0,1,2,3,4,5,6,7,8,9}, except that the first digit of a PIN cannot be 0. i) How many different PINs are there? ii) How many different PINs are there in which no digit is repeated?	8 Marks	L1	CO3

MODULE-IV

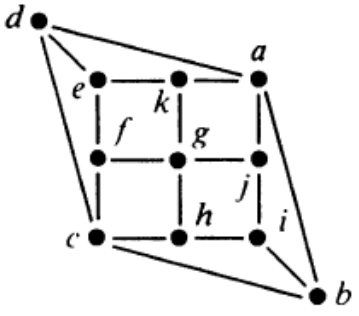
8.	a)	Find the coefficient of X^{23} in $(1 + X^5 + X^9)^{10}$	6 Marks	L2	CO4
	b)	Apply the characteristic roots technique to find the solution for the following recurrence relation. $a_n-9a_{n-1}+26a_{n-2}- 24a_{n-3}=0$ for n>=3 with initial values $a_0=0$, $a_1=1$, and $a_2=10$	10 Marks	L3	CO4
		(OR)			
9.	a)	Find the formal power series expression for $1 / (5 - x)^6$	8 Marks	L2	CO4
	b)	Solve the following recurrence relation using generating functions method. $a_n + a_{n-1} – 16a_{n-2} + 20a_{n-3} = 0$ for n >= 3 where $a_0 = 0$, $a_1 = 1$, $a_2 = –1$	8 Marks	L2	CO4

MODULE-V

10.	a)	Using Dijkstra's algorithm, find the shortest path from an initial vertex to all other vertices for the following weighted graph. And also give their paths.	8 Marks	L3	CO5

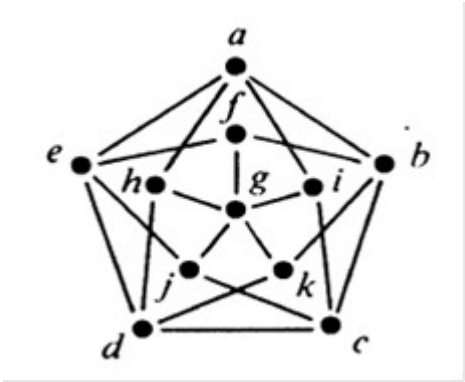


	b)	Define chromatic number and find the chromatic number for the following graph by discussing the steps.	8 Marks	L2	CO5

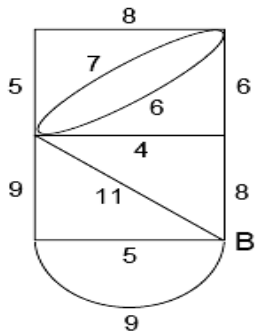


(OR)

11. a) Construct a Spanning Tree for the following graph using DFS algorithm. 8 Marks L3 CO5



b) Define a spanning tree. Implement Prim's algorithm for the following graph. 8 Marks L3 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

DATA STRUCTURES AND ALGORITHMS

[Electronics and Communication Engineering, Electrical and Electronics Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State and brief the operations that can be performed on various data structures.	2 Marks	L1	CO1
	b)	Brief out the Radix sorting	2 Marks	L1	CO1
	c)	When can singly linked list be represented as a circular linked list?	2 Marks	L2	CO2
	d)	Compare the performance of an array and a linked list for sparse matrix representation.	2 Marks	L2	CO2
	e)	What are some common applications of stacks?	2 Marks	L1	CO3
	f)	Differentiate between different types of queues, such as circular queues, dequeue, and priority queues.	2 Marks	L2	CO3
	g)	What is a balance factor in AVL trees?	2 Marks	L1	CO4
	h)	Give the pre & postfix form of the expression (x - ((y*(z+a))/b)	2 Marks	L2	CO4
	i)	Compare the various hashing techniques.	2 Marks	L2	CO5
	j)	State the components required for representing a graph.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are the Guidelines for Asymptotic Analysis? How are the algorithms analyzed?	8 Marks	L1	CO1
	b)	Explain binary search tree and its operations. Make a binary search tree for the following sequence of numbers, show all steps: 45,32,90,34,68,72,15,24,30,66,11,50,10.	8 Marks	L2	CO2

(OR)

3.	a)	What are the Performance Analysis metrics? Explain about them in detailed.	8 Marks	L2	CO2
	b)	What is Selection Sort? Draw the flow chart for the Selection Sort and explain it for [98, 12, 34, 45, 24, 3].	8 Marks	L3	CO2

MODULE-II

4.	a)	What is a circular linked list, and how does it differ from a single linked list? Provide some examples of when it would be appropriate to use a circular linked list over other data structures.	8 Marks	L3	CO3
	b)	Create a program to add two polynomials using linked lists and display the resulting polynomial.	8 Marks	L4	CO3

(OR)

5.	a)	What are some real-world applications of linked lists, and how are they used in practice? Discuss some of the challenges and limitations of using linked lists in software development.	8 Marks	L4	CO6
	b)	Write a program that compares the performance of linked lists with arrays for representing sparse matrices. Vary the size of the matrix and measure the performance of the two approaches.	8 Marks	L5	CO3

MODULE-III

6.	a)	Write a program to implement a stack that supports O(1) lookup of the minimum element.	8 Marks	L2	CO4
	b)	How can stacks and queues be used together to solve complex problems? Provide examples of such problems and explain how the combination of these two data structures helps in their solution.	8 Marks	L3	CO4

(OR)

7.	a)	What is a queue? State the types of queues. Write the applications of a queue.	8 Marks	L3	CO3
	b)	Write a program to initialize a circular queue of size n and insert n-1 elements into it. Implement a function to check if the queue is full or not. If the queue is not full, insert the remaining element into the queue. Then, dequeue all the elements one by one and display them. Implement a function to check if the queue is empty or not. If the queue is empty, display an appropriate message.	8 Marks	L4	CO6

MODULE-IV

8.	a)	Explain the differences between complete binary trees, full binary trees, and balanced binary trees.	8 Marks	L2	CO2
	b)	Explain the process of constructing a binary tree using its in order and post order traversal sequences. Provide a step-by-step illustration of the construction of the tree with the following sequences: In order: T E R A M L J O W X Y B C U S P Q Z N F H I K D G Post order: T R E A J L M Y X O W C B U Z Q P S N K I H G D F	8 Marks	L3	CO4

(OR)

9.	a)	What is a Heap Tree? Explain the implementation of Heap Tree with suitable examples. How is Heap Sort performed using Heap Trees? Provide a detailed performance analysis of Heap Sort. Also, describe some of the major applications of Heap Trees in the field of computer science.	8 Marks	L3	CO4
	b)	Draw an AVL tree on following inputs, assume that tree is initially empty: 45,55,65,75,80,90,100,110,120,130,140,40,35,25,20,15,10,5.	8 Marks	L3	CO3

MODULE-V

10.	a)	What are B+ trees? How do they differ from B-trees and what are their advantages in terms of performance?	8 Marks	L2	CO2
	b)	Explain Linear Open Addressing and its implementation in Hashing.	8 Marks	L2	CO5

(OR)

11.	a)	What are the different ways to represent a graph and what are their advantages and disadvantages?	8 Marks	L3	CO3
	b)	Implement a B-tree with a minimum degree of 3 and insert the following keys: 5, 1, 8, 3, 6, 9, 2, 7, 4. Print the resulting B-tree after each insertion.	8 Marks	L4	CO4

B

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is byte code? State disadvantages if any.	2 Marks	L1	CO1
	b)	What are the rules for variable naming?	2 Marks	L1	CO1
	c)	Write down the main features of Java.	2 Marks	L1	CO1
	d)	Explain the features of OOP concept.	2 Marks	L1	CO1
	e)	Define control statements with example.	2 Marks	L1	CO2
	f)	What do you mean by public variable? What is the scope of the variable?	2 Marks	L1	CO2
	g)	Define Constructor.	2 Marks	L1	CO3
	h)	Define use of "finally" in exception.	2 Marks	L1	CO3
	i)	Illustrate the concept of multi threading with an example.	2 Marks	L2	CO4
	j)	Compare between process and thread.	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are Methods in Java? Explain with an example.	8 Marks	L1	CO1
	b)	Write about primitive data types in Java.	8 Marks	L1	CO1
		(OR)			
3.	a)	Differentiate class & object. Give one example.	8 Marks	L2	CO1
	b)	What is method overloading? Explain the rules of overloading a method?	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain different forms of inheritance. Illustrate each type with an example.	8 Marks	L1	CO1
	b)	Discuss about packages in Java. Explain various types of packages available in java.	8 Marks	L2	CO1
		(OR)			
5.	a)	Illustrate the usage of an abstract class and an interface. When we can use both.	8 Marks	L3	CO1
	b)	Implement single level inheritance by writing a program.	8 Marks	L2	CO1

MODULE-III

6.	a)	Illustrate try block with multiple catch blocks with an example program.	8 Marks	L3	CO2
	b)	Demonstrate built in exceptions in java, by writing a program.	8 Marks	L2	CO2
		(OR)			
7.	a)	Discuss about synchronization among threads. Write suitable program.	8 Marks	L2	CO2
	b)	Describe the methods for creating a thread, give example code.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Illustrate hierarchy of Collection Framework with neat diagram	8 Marks	L3	CO3
	b)	Explain with code a) Hash Set b) Linked Hash Set	8 Marks	L1	CO3
		(OR)			
9.	a)	Explain Array List? Write suitable code to explain.	8 Marks	L1	CO3
	b)	Illustrate Java Tree Set class. Write suitable example code.	8 Marks	L1	CO3

MODULE-V

10.	a)	Differentiate between Applet and application. Draw the Applet life cycle.	8 Marks	L2	CO4
	b)	Elaborate all the features of Swing.	8 Marks	L2	CO4
		(OR)			
11.	a)	Describe applet? Write an applet program to enter the employee details.	8 Marks	L1	CO4
	b)	Differentiate between invoke And Wait and in vokeLater in Java?	8 Marks	L2	CO4

A

CODE No.: 22AI104002 MBU-22

Reg. No. | | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write the syntax of an object creation and elaborate.	2 Marks	L1	CO1
	b)	Differentiate between String and String Buffer	2 Marks	L2	CO1
	c)	What is polymorphism?	2 Marks	L2	CO1
	d)	Snippet code for importing the package with an example	2 Marks	L2	CO2
	e)	Name few exceptions and illustrate in brief.	2 Marks	L1	CO2
	f)	Write the complete life cycle of a thread.	2 Marks	L1	CO2
	g)	Explain what is Hash Value?	2 Marks	L2	CO3
	h)	Comparator Interface in Java with Syntax	2 Marks	L2	CO3
	i)	How do we create Image Icon?	2 Marks	L1	CO4
	j)	Why do applet classes need to be declared as public?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Create a class called as Student which consists of data members name, branch, roll no, age, sex, marks in five subjects. Display the name of the student and his percentage who has more than 70% as First Class, more than 60% as Second Class and 50% as Pass Class Use array of objects.	8 Marks	L3	CO1
	b)	Write the purpose, usage and snippet code for Garbage collection and String Tokenizer.	8 Marks	L2	CO1

(OR)

3.	a)	How Scope and life time of variables work in Java, Explain Neatly with a good example.	8 Marks	L1	CO1
	b)	Is it possible to overload a Constructor? If yes explain the process with a program, if no explain the reason.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is a Package? Explain the process of creating a package. What happens if we develop a Java class and compile the class with the same package name? Does it create a new package with the same name?	8 Marks	L4	CO1
	b)	Suggest a mechanism to implement multiple inheritance in java	8 Marks	L3	CO1

		(OR)			
5.	a)	Write a Java program to create the abstract class Shape, which should consists of two integers and the empty method print Area(). Consider three more classes with extends the class Shape as Rectangle, Triangle, and Circle. Each one of the classes contains only the method print Area () that prints the area of the given shape.	8 Marks	L3	CO1
	b)	State the differences between abstract classes and interfaces.	8 Marks	L2	CO1
		MODULE-III			
6.	a)	Why do we need Thread class even in case we execute thread using runnable interface? What are the different ways of implementing Threads in Java give the syntax neatly?	8 Marks	L3	CO2
	b)	Write a program to implement multiple catch statements.	8 Marks	L2	CO2
		(OR)			
7.	a)	Illustrate the purpose of Inter thread communication	8 Marks	L4	CO2
	b)	Write a program that creates two threads. Fist thread prints the numbers from 1 to 100 and the other thread prints the numbers from 100 to 1.	8 Marks	L2	CO2
		MODULE-IV			
8.	a)	How do we access a collection via an Iterator? What's the difference between the comparator, comparable?	8 Marks	L2	CO3
	b)	What is a Hash Set and Tree Set explain neatly.	8 Marks	L1	CO3
		(OR)			
9.	a)	How do you implement the Collection Interfaces? Write a snippet code while explaining.	8 Marks	L2	CO3
	b)	What is a Map in Java? What are the classes that implement Map interface? Does Map extend the Collections framework in Java?	8 Marks	L3	CO3
		MODULE-V			
10.	a)	What's the difference between the swings and applets? How can a GUI component handle its own events? Support your answer.	8 Marks	L2	CO4
	b)	Design an applet to display three buttons "Blue", "Black" and "White". The color of the background changes according to the button pressed by the user. Also, write the HTML code to display the applet.	8 Marks	L3	CO4
		(OR)			
11.	a)	What is a swing? Give the Syntax and usage of JRadio Button, JTabbed Pane, JCombo Box.	8 Marks	L2	CO4
	b)	What is the difference between init( ) and start ( ) methods in an Applet? When will each be executed?	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

ENGINEERING CHEMISTRY

[Electronics and Communication Engineering, Electrical and Electronics Engineering, Electronics Instrumentation and Engineering, Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What salts are responsible for permanent hardness in water?	2 Marks	L1	1
	b)	200 ppm = ------- mg/Litre	2 Marks	L3	1
	c)	Differentiate between monomer and polymer.	2 Marks	L2	2
	d)	What is a nano?	2 Marks	L1	2
	e)	Differentiate between primary cell and secondary cell.	2 Marks	L2	3
	f)	Define electrode potential.	2 Marks	L1	3
	g)	What is the fingerprint region in IR? Why is it called so?	2 Marks	L2	4
	h)	What is the order of electronic transitions in UV spectroscopy?	2 Marks	L2	4
	i)	Define the calorific value of a fuel.	2 Marks	L1	5
	j)	What is the composition of synthetic petrol?	2 Marks	L1	5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Draw a neat sketch and explain the zeolite process for softening of water.	8 Marks	L2	CO1
	b)	What are the effects of fluoride contamination in water?	8 Marks	L2	CO1
		(OR)			
3.	a)	What is boiler corrosion? Discuss the causes and prevention methods.	8 Marks	L2	CO1
	b)	Discuss the disadvantages of hard water.	8 Marks	L2	CO1

MODULE-II

4.	a)	Illustrate the chemical vapour deposition technique for nanoparticle synthesis.	8 Marks	L2	CO2
	b)	Explain the classification of biodegradable polymers.	8 Marks	L2	CO2
		(OR)			
5.	a)	How is PTFE synthesized? Explain its properties and uses.	8 Marks	L3	CO2
	b)	What are conducting polymers? Discuss.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write about the construction, working, and uses of a Leclanché cell.	8 Marks	L2	CO3
	b)	What are the applications of sensors?	8 Marks	L1	CO3

(OR)

7.	a)	Discuss the construction and recharge reactions of the lead-acid storage battery.	8 Marks	L3	CO3
	b)	Explain the applications of fuel cells over secondary cells.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Compare SEM and TEM and mention their uses.	8 Marks	L3	CO4
	b)	Write the principle of UV spectroscopy.	8 Marks	L2	CO4

(OR)

9.	a)	What are the various vibrational modes in infrared spectroscopy.	8 Marks	L2	CO4
	b)	Compare Emission and absorption spectra.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the thin-film lubrication mechanism.	8 Marks	L2	CO5
	b)	Write a note on the cracking of oils.	8 Marks	L2	CO5

(OR)

11.	a)	What is the viscosity and viscosity index? Briefly write about determination.	8 Marks	L2	CO5
	b)	What are eco-friendly fuels? Explain their types and uses.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester (MBU-22) Regular Examinations January – 2023

ENGINEERING MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A					
Answer All Questions. **All Questions Carry Equal Marks**					
			10 X 2 = 20 Marks		
			Marks	BL	COs
1.	a)	Defining limiting friction Defining impending motion.	1M 1M	L1	CO1
	b)	Finding Centroid of a Quarter circle of radius	2M	L1	CO1
	c)	Stating perpendicular axis theorem	2M	L1	CO2
	d)	Writing any two differences between rectilinear motion and curvilinear motion.	2M	L1	CO2
	e)	Defining coefficient of friction Defining Cone of friction.	1M 1M	L1	CO3
	f)	Writing any two differences between Centroid and Center of gravity.	2M	L1	CO3
	g)	Explaining Lami's theorem.	2M	L1	CO4
	h)	Writing Pappus theorem to find out the surface area Writing Pappus theorem to find out the volume of a body.	1M 1M	L1	CO4
	i)	Writing any two differences between polar moment of inertia and product of inertia.	2M	L1	CO5
	j)	Writing Coulomb's law of dry friction.	2M	L1	CO5
PART - B					
Answer One Question from each Module. **All Questions Carry Equal Marks**					
			5 X 16 = 80 Marks		
MODULE-I					
2.	a)	Finding the forces in members AB Finding the forces in members BD Finding the forces in members BC.	2M 3M 3M		
	b)	Finding the forces in members BD Finding the forces in members CD Finding the forces in members CE.	2M 3M 3M		
(OR)					
3.	a)	Finding the resultant of the force acting on a particle P	8M		
	b)	Finding the magnitude of each force.	8M		
MODULE-II					
4.	a)	Calculating force P	8M	L2	CO2
	b)	Explaining the graphical method for finding the resultant of	8M	L2	CO2

		coplanar concurrent force system.			
		(OR)			
5.	a)	Calculating the value of the horizontal force 'P' to Just start the block up the incline. Calculating the value of the horizontal force 'P' to Just prevent motion down the incline. Calculating the amount and direction of the friction force If P=400N?	3M 3M 2M	L2	CO2
	b)	Determining the area generated by rotating a line of length `l` about x-axis from a distance `r` using Pappus theorem.	8M	L2	CO2
		MODULE-III			
6.	a)	Calculating the polar moment of inertia of the area shown in figure about point O.	8M	L2	CO3
	b)	Finding the mass moment of inertia of a hollow cylinder about its axis	8M	L2	CO3
		(OR)			
7.	a)	Determining the distance of the centroid from the base of a triangle of altitude h	8M	L2	CO3
	b)	Determining the position of the centroid of the wire.	8M	L2	CO3
		MODULE-IV			
8.	a)	Finding the stress in cylinder, Finding the deformation of the cylinder	4M 4M	L2	CO4
	b)	Finding the diameter of wire	8M	L2	CO4
		(OR)			
9.	a)	Calculating Young's modulus for the steel within elastic range	8M	L3	CO4
	b)	Calculating the elongation of the rod. Calculating the strain induced in the bar.	4M 4M	L3	CO4
		MODULE-V			
10.	a)	Finding the maximum shear stress Finding the changes in dimensions of the shell	4M 4M	L3	CO5
	b)	Finding the stresses developed Finding the change in dimensions.	4M 4M	L3	CO5
		(OR)			
11.	a)	Finding the thickness of plates in longitudinal joints Finding the thickness of plates in circumferential joints.	4M 4M	L3	CO5
	b)	Calculating the Hoop stress Calculating the radial stress Drawing the variation of hoop stress and radial stress across the thickness of the cylinder.	3M 3M 2M	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester (MBU-22) Regular Examinations May – 2024

ENGINEERING MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define limiting friction and impending motion.	2 Marks	L1	CO1
	b)	What is the Centroid of a Quarter circle of radius 2 m?	2 Marks	L1	CO1
	c)	State perpendicular axis theorem.	2 Marks	L1	CO2
	d)	Distinguish between rectilinear motion and curvilinear motion.	2 Marks	L1	CO2
	e)	Define coefficient of friction and Cone of friction.	2 Marks	L1	CO3
	f)	Differentiate between Centroid and Center of gravity.	2 Marks	L1	CO3
	g)	State Lami's theorem.	2 Marks	L1	CO4
	h)	State Pappus theorem to find out the surface area and volume of a body.	2 Marks	L1	CO4
	i)	Differentiate between polar moment of inertia and product of inertia.	2 Marks	L1	CO5
	j)	State Coulomb's law of dry friction.	2 Marks	L1	CO5

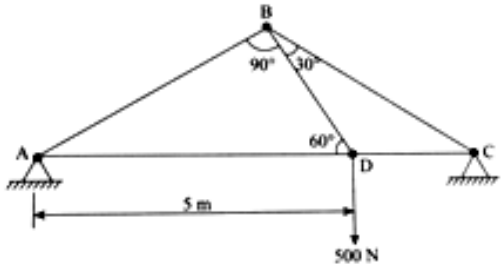
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

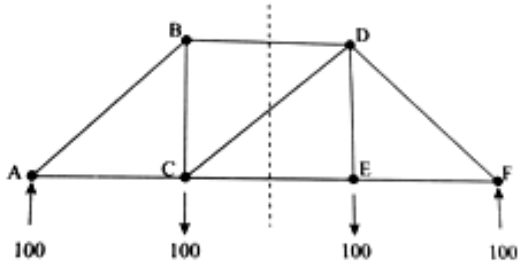
5 X 16 = 80 Marks

MODULE-I

2.	a)	A truss is loaded as shown in figure. Find the forces in members AB, BD and BC.	8 Marks	L2	CO1

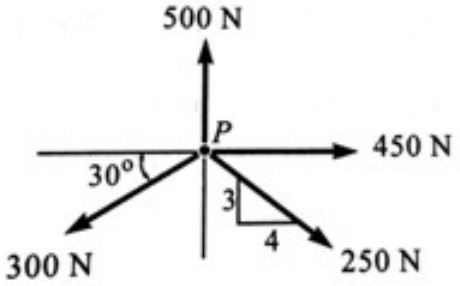


	b)	Find the forces in members BD, CD and CE of the truss as shown in figure (the loads are indicated in newtons)	8 Marks	L2	CO1



(OR)

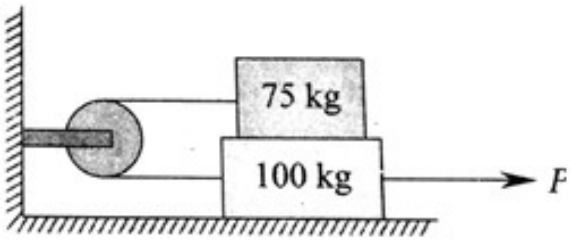
3.	a)	Find the resultant of the force acting on a particle P shown in figure.	8 Marks	L2	CO1



	b)	The resultant of two concurrent forces is 2500N and the angle between the forces is 90^{o}. The resultant makes an angle of 46^{o} with one of the forces. Find the magnitude of each force.	8 Marks	L2	CO1

MODULE-II

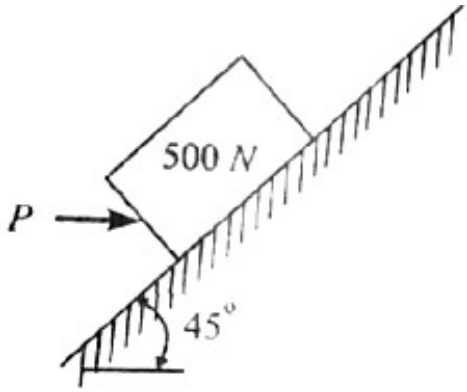
4.	a)	In figure, determine force P applied to the lower block to just pull it to the right. The coefficient of friction between the blocks is 0.2 and that between the lower block and the plane is 0.25. Assume the pulley to be frictionless.	8 Marks	L2	CO2



	b)	Explain the graphical method for finding the resultant of coplanar concurrent force system.	8 Marks	L2	CO2

(OR)

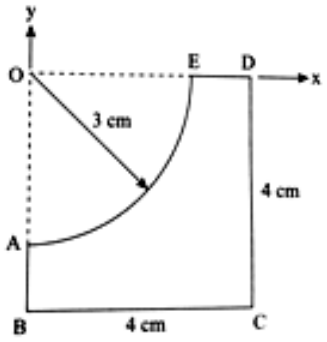
5.	a)	Figure shows the coefficient of static friction is 0.25. Compute the value of the horizontal force 'P' necessary to i) Just start the block up the incline. ii) Just prevent motion down the incline. iii) If P=400N, what is the amount and direction of the friction force?	8 Marks	L2	CO2



	b)	Determine the area generated by rotating a line of length `l` about x-axis from a distance `r` using Pappus theorem.	8 Marks	L2	CO2

MODULE-III

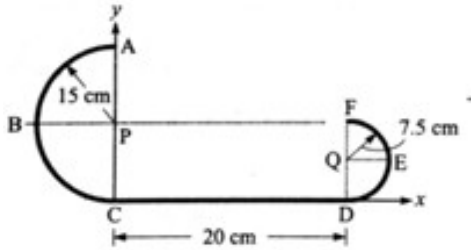
6.	a)	Calculate the polar moment of inertia of the area shown in figure about point O.	8 Marks	L2	CO3



	b)	Find the mass moment of inertia of a hollow cylinder about its axis. The mass of the cylinder is 5kg, inner radius 10cm, outer radius 15cm and height 20cm	8 Marks	L2	CO3

(OR)

7.	a)	Determine the distance of the centroid from the base of a triangle of altitude h	8 Marks	L2	CO3
	b)	A wire has been bent into the shape as shown in figure. Determine the position of the centroid of the wire.	8 Marks	L2	CO3



MODULE-IV

8.	a)	A hollow cylinder 2 m long has an outside diameter of 50mm and inside diameter of 30mm. If the cylinder is carrying a load of 25 KN. Find the stress in cylinder, also find deformation of the cylinder E=100 Gpa.	8 Marks	L2	CO4
	b)	A load of 5KN is to be raised with the help of a steel wire. Find the minimum diameter of wire if stress is not to exceed 100 MPa	8 Marks	L2	CO4

(OR)

9.	a)	In an experiment a steel specimen of 13mm diameter was found to elongate 0.2mm in a 200 mm gauge length when it was subjected to a force of 26.8 KN. If specimen was tested within elastic range, Calculate Young's modulus for the steel.	8 Marks	L3	CO4
	b)	A steel rod 500mm long and 20mm10mm in cross-section is subjected to axial pull of 300 KN. If modulus of elasticity is 2105 N/mm2 .Calculate the elongation of the rod. Also calculate strain induced in the bar.	8 Marks	L3	CO4

MODULE-V

10.	a)	A shell 3.25 m long and 1 m diameter is subjected to an internal pressure of 1.2 N/mm^2. If the thickness of the shell is 10 mm find the circumferential and longitudinal stresses. Find also the maximum shear stress and changes in dimensions of the shell. Take E = 200 kN/mm^2 and Poissons ratio = 0.3	8 Marks	L3	CO5

	b)	A cylindrical shell 2.4 m long 600 mm in diameter with metal thickness 12 mm is completely filled with water at atmospherical pressure. If an additional 300,000 mm3 water is then pumped in, find the stresses developed and change in dimensions. Take E = 2 × 105 N/mm^2 , μ = 0.3.	8 Marks	L3	CO5
		(OR)			
11.	a)	The diameter of a riveted boiler is 1.5 m and has to withstand a pressure of 2 N/mm^2 . Find the thickness of plates to be used if efficiency is 85% in longitudinal joints and 40% in circumferential joints. The permissible stress is 150 N/mm^2 .	8 Marks	L3	CO5
	b)	The diameter of a riveted boiler is 1.5 m and has to withstand a pressure of 2 N/mm^2 . Find the thickness of plates to be used if efficiency is 85% in longitudinal joints and 40% in circumferential joints. The permissible stress is 150 N/mm^2 .	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

CIVIL ENGINEERING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Name any two types of stones used in building construction.	2 Marks	L1	CO1
	b)	What is the size of a brick with a neat picture?	2 Marks	L1	CO1
	c)	List two types of trees.	2 Marks	L1	CO2
	d)	Write the applications of wood in construction.	2 Marks	L2	CO2
	e)	Name different tests on aggregate.	2 Marks	L1	CO3
	f)	Define soundness test of cement.	2 Marks	L1	CO3
	g)	What is workability?	2 Marks	L1	CO4
	h)	What is segregation?	2 Marks	L1	CO4
	i)	What is the relation between creep and time?	2 Marks	L2	CO5
	j)	What are different parameters required for mix design?	2 Marks	L1	CO6

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the properties of building stones.	8 Marks	L2	CO1
	b)	Compare different methods used for quarrying stones for building construction.	8 Marks	L4	CO1

(OR)

3.	a)	Illustrate the various methods used in manufacturing of bricks.	8 Marks	L4	CO1
	b)	Discuss the characteristics of good tile in detail.	8 Marks	L4	CO1

MODULE-II

4.	a)	List and explain the various methods of seasoning of timber.	8 Marks	L2	CO2
	b)	Discuss the various materials used in low cost housing.	8 Marks	L4	CO2

(OR)

5.	a)	Enumerate the precautionary measures to reduce various defects in timber.	8 Marks	L4	CO2
	b)	Write advantages and disadvantages, if waste is used as alternative building material.	8 Marks	L2	CO2

MODULE-III

6.	a)	Mention different types of tests on cement. Explain how to conduct normal consistency test on cement.	8 Marks	L2	CO3
	b)	What are admixtures? Describe the effects of following admixtures on cement concrete with three examples of each i) Retarders ii) Accelerators iii) Water proofers	8 Marks	L4	CO3

(OR)

7.	a)	Explain the classification of aggregates and discuss the characteristics of aggregate.	8 Marks	L4	CO3
	b)	Describe the test and tools involved in testing of aggregates to ensure satisfactory performance.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain how the measurement of workability of fresh concrete is carried out in laboratory. Discuss about the necessary equipment used.	8 Marks	L4	CO4
	b)	Briefly explain about ready mix concrete.	8 Marks	L2	CO4

(OR)

9.	a)	Write a note on importance of Water/Cement ratio in concrete.	8 Marks	L4	CO4
	b)	Explain how you estimate the compressive strength of concrete using Rebound hammer.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the significance of modulus of elasticity with reference to the properties of concrete.	10 Marks	L4	CO5
	b)	Explain the various factors affecting creep of concrete.	6 Marks	L2	CO5

(OR)

11.		Design a M_{30} concrete mix using IS method of mix design for the following data: i) Maximum size of aggregate: 20 mm (Angular) ii) Workability: 125 mm slump. iii) Quality control: good iv) Type of exposure - Mild (R.C.C) v) Specific Gravity: a) Cement:3.15 b) Sand:2.63 c) CA: 2.66 vi) Water absorption: a) CA - 0.5% b) FA - 1.0% vii) Free surface moisture: a) CA - Nil b) FA - 2.2% viii) Sand confirms to Zone III grading Assume any other data required suitably.	16 Marks	L5	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2024

SURVEYING

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the steps involved in chain survey?	2 Marks	L4	CO1
	b)	What are the instruments required for measurements of angles?	2 Marks	L1	CO1
	c)	What is mean sea level?	2 Marks	L4	CO1
	d)	Define benchmark.	2 Marks	L1	CO2
	e)	Calculate the height of instrument if the back sight reading of BM is 3m and benchmark RL is 315 m.	2 Marks	L4	CO2
	f)	What are the methods of computation of areas?	2 Marks	L1	CO3
	g)	What are the accessories required for a plane table surveying?	2 Marks	L2	CO3
	h)	What are the advanced measurement functions?	2 Marks	L1	CO4
	i)	Differentiate the face left and face right condition in Theodolite surveying.	2 Marks	L1	CO5
	j)	List out the different methods employed in tacheometric survey.	2 Marks	L1	CO6

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain in detail instruments used in Chain Survey.	8 Marks	L4	CO1
	b)	The following lengths and bearings were recorded in running a compass traverse ABCD. There are obstacles which prevent direct measurement of bearing and length of line AD. Calculate the length and bearing of AD.	8 Marks	L4	CO1

Line	Length in m	Bearing
AB	385	342°
BC	1520	16°
CD	1250	140°

(OR)

3.	a)	Explain in detail plotting a Chain survey (office work).	8 Marks	L2	CO1
	b)	Explain closing error and its adjustment in compass surveying.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain in detail the working operations in plain table surveying.	8 Marks	L2	CO1
	b)	Explain in detail the different types of leveling.	8 Marks	L4	CO2

(OR)

5.	a)	Explain in detail the methods of plane tabling.	8 Marks	L4	CO2
	b)	Explain in detail different methods of contouring.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the measurement of horizontal angle in Theodolite surveying.	8 Marks	L1	CO3
	b)	Explain application of tangential method in practice.	8 Marks	L4	CO3
		(OR)			
7.	a)	Explain the Errors in Theodolite surveying.	8 Marks	L2	CO3
	b)	Explain in detail Errors in tacheometric surveying.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain in detail the methods of computation of areas.	8 Marks	L4	CO4
	b)	A road embankment is 12 m wide at the formation level. The centre line of the embankment is 2.0 m above the ground surface. The side slopes are to be kept at 1 vertical to 2 horizontals. If the ground slope is 1 in 20 at the right angles to centre line, calculate the side widths and the area of cross section.	8 Marks	L4	CO5
		(OR)			
9.	a)	The perpendicular offsets taken at 15 m intervals from a survey line to an irregular boundary are 2.25 m, 3.85 m, 4.50 m, 6.80 m, 5.2 m, 7.35 m, 8.9 m, 8.3 m, and 5.45 m. Determine the area enclosed between survey line, the irregular boundary, the first and last offset by i) Average ordinate rule ii) Trapezoidal rule, iii) Simpson's rule.	8 Marks	L4	CO4
	b)	A railway embankment of formation width 12 m is to be built side slope of 1 vertical to 2 horizontals. The ground is horizontal in the direction transverse to the centre line. The length of embankment is 180 m. The centre height of embankment at 25 m intervals are as given below: 1.3, 3.3, 3.6, 4.2, 2.9, 2.6, 2.2 m. Calculate the volume of earth filling.	8 Marks	L2	CO5

MODULE-V

10.	a)	Explain in detail different types of EDM instruments.	8 Marks	L2	CO6
	b)	Explain the errors in total station survey.	8 Marks	L4	CO6
		(OR)			
11.	a)	What are the benefits of drones in surveying?	8 Marks	L1	CO6
	b)	What are different drones used for in surveying?	8 Marks	L4	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

RURAL TECHNOLOGY

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out any two organizations related to innovations in rural development.	2 Marks	L1	CO1
	b)	What is MNREGA?	2 Marks	L1	CO1
	c)	Draw a solar heater and name its components.	2 Marks	L2	CO2
	d)	What is biogas?	2 Marks	L1	CO2
	e)	List out any three cottage industries related to rural communities.	2 Marks	L1	CO3
	f)	List out any two commonly used building materials in rural communities.	2 Marks	L1	CO3
	g)	List out three medicinal plants that are widely in use.	2 Marks	L1	CO4
	h)	What is apiculture?	2 Marks	L1	CO4
	i)	What do you mean by Corporate social responsibility?	2 Marks	L1	CO5
	j)	What is CSR?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the role of CAPART in the ministry of rural development.	8 Marks	L4	CO1
	b)	Explain the role of science and technology in rural development.	8 Marks	L2	CO1
		(OR)			
3.	a)	What is rural infrastructure and how does technology helps in improving the rural infrastructure?	8 Marks	L2	CO1
	b)	Write about the role of rural business hubs in the rural development?	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain the functioning of a solar cooker with a neat sketch.	8 Marks	L4	CO2
	b)	Differentiate between traditional and alternative sources of energy.	8 Marks	L3	CO2
		(OR)			
5.	a)	How can the biomass products be efficiently utilized?	8 Marks	L3	CO2
	b)	Write about the assessment methods related to biomass production.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain about the various construction techniques that are used in rural areas.	8 Marks	L3	CO3
	b)	Write about the advances of technologies in agro-based industry in rural areas.	8 Marks	L3	CO3

(OR)

7.	a)	What are the suitable technologies involved in the cultivation and processing of economic plants in rural areas?- Explain.	8 Marks	L2	CO3
	b)	Discuss in detail about cultivation and the processing of economic plants and recommend a suitable cultivation process for marshy land.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Differentiate between pisciculture and aquaculture.	8 Marks	L2	CO4
	b)	Explain the process of rainwater harvesting with a neat diagram.	8 Marks	L4	CO4

(OR)

9.	a)	Write about the environmental issues related to rural communities.	8 Marks	L3	CO4
	b)	Write about simple treatment methods used for drinking water.	8 Marks	L2	CO4

MODULE-V

10.	a)	Enlist the program focusing on social and cultural development in rural areas and explain in detail.	8 Marks	L3	CO5
	b)	Explain the role of information technology (IT) in the development of rural communities.	8 Marks	L3	CO5

(OR)

11.	a)	Write about the village adoption schemes.	8 Marks	L2	CO5
	b)	Write about Saansad Adarsh Gram Yojana.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

DIGITAL LOGIC DESIGN

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Information Technology, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Convert $(4BAC)_{16}$ to binary and Hexadecimal.	2 Marks	L2	CO1
	b)	Convert $(367.52)_8$ to binary.	2 Marks	L2	CO1
	c)	Simplify F(x, y, z) = x'yz' + xy'z + x'z'.	2 Marks	L2	CO1
	d)	Simplify F(x, y, z) = Σ(3, 4, 6, 7) using K-map.	2 Marks	L2	CO1
	e)	Write the sum and carry expression for half adder.	2 Marks	L2	CO2
	f)	Draw the block diagram of 2x4 decoder with enable input.	2 Marks	L1	CO2
	g)	Draw the logic diagram of SR NAND Latch.	2 Marks	L2	CO3
	h)	State Mealy and Moore state machines with its block diagrams.	2 Marks	L1	CO3
	i)	How many fuses were required for n inputs, k Product terms and m outputs of a typical PLA circuit?	2 Marks	L2	CO4
	j)	Define EPROM.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Perform BCD Addition of the two decimal numbers 679.6 and 536.8.	8 Marks	L2	CO1
	b)	Find compliment of the function, F = xy'z' + xyz, using De-Morgan's theorem.	8 Marks	L2	CO1
		(OR)			
3.	a)	Let X = 74581 and Y = 43662. Perform X - Y using 9'S complement and 10'S complement.	10Marks	L2	CO1
	b)	Minimize the following functions using Boolean algebra i) y'z' + w'x'z' + w'xyz' + wyz' . ii) ABC + A'B'C + A'BC +ABC' + A'B'C'.	6 Marks	L3	CO1

MODULE-II

4.		Simplify the Boolean function using K-map. i) F (A.B, C, D) = A'B'C'+ B'CD'+ A'BCD'+AB'C'. ii) F (W,X,Y,Z) = Σm (0,6,8,13,14) + Σd (2,4,10).	16 Marks	L2	CO2

(OR)

5.	a)	Simplify the following Boolean function using K-map method. $F(w,x,y,z) = \sum_m(0,2,4,5,6,7,8,10,13,15)$.	8 Marks	L2	CO2
	b)	Minimize the function F(A, B, C, D)=∑m(0,4,6,8,9,10,12) + ∑d (2,13). Implement the minimized function using only NOR gates.	8 Marks	L3	CO2

MODULE-III

6.	a)	Construct a 16X1 multiplexer with two 8×1 and one 2X1 multiplexers using block diagram representation.	10 Marks	L2	CO3
	b)	Design a circuit for 3X3 bit binary multiplier.	6 Marks	L3	CO3

(OR)

7.	a)	Construct a 4-to-16 line decoder with five 2-to-4 line decoders with enable.	8 Marks	L2	CO3
	b)	Demonstrate half adder and full adder using decoder and OR gates	8 Marks	L2	CO3

MODULE-IV

8.	a)	What is race-around problem in JK Flip-Flop? Explain how it is eliminated in Master Slave Flip-Flop with its neat logic diagram.	06 Marks	L2	CO3
	b)	Design Mod-10 Counter using T Flip-Flops.	10 Marks	L3	CO3

(OR)

9.	a)	Design of a synchronous BCD up counter using T Flip-Flop.	08 Marks	L3	CO3
	b)	Draw a 3 bit Johnson counter and explain.	08 Marks	L2	CO3

MODULE-V

10.	a)	Explain in detail about ROM.	6 Marks	L1	CO4
	b)	Implement the following Boolean functions using PAL with AND-OR structure. F1 (A,B,C,D)=∑m(2,12,13). F2 (A,B,C,D)=∑m(7,8,9,10,11,12,13,14,15). F3 (A,B,C,D)=∑m(0,2,3,4,5,6,7,8,10,11,15). F4 (A,B,C,D)=∑m(1,2,8,12,13).	10 Marks	L3	CO4

(OR)

11.	a)	Explain in detail about FPGA.	8 Marks	L1	CO4
	b)	Explain in detail about CPLD.	8 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List three sources of possible errors in instrument.	2 Marks	L2	CO1
	b)	List the elements in the any pressure measuring systems.	2 Marks	L1	CO1
	c)	Compare bonded and un-bonded strain gauges.	2 Marks	L2	CO2
	d)	What is Doppler Effect?	2 Marks	L1	CO2
	e)	Is thermocouple being an active transducer? Justify.	2 Marks	L2	CO3
	f)	What are the types of linearization methods?	2 Marks	L2	CO3
	g)	Differentiate the null balance and potentiometric type of device for measurement of acceleration.	2 Marks	L1	CO4
	h)	How a Velocity and Acceleration sensor works?	2 Marks	L2	CO4
	i)	State the principle of magneto transistor.	2 Marks	L1	CO4
	j)	Write about SMART sensors.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are the basic blocks of a generalized instrumentation system? With the help of a diagram explain their functions.	8 Marks	L1	CO1
	b)	Discuss various types of errors clearly with the help of examples.	8 Marks	L1	CO1

(OR)

3.	a)	Define Accuracy, Threshold, Linearity, Dead space, Measuring Lag.	8 Marks	L2	CO1
	b)	Explain in detail about the output characteristics which should be considered while selecting a transducer.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain the construction and working of a Potentiometer.	8 Marks	L1	CO2
	b)	Explain the working principle and applications of the Hall effect transducers.	8 Marks	L1	CO2

(OR)

5.	a)	Explain the features of Resistive Hygrometer.	8 Marks	L2	CO2
	b)	List different types of standard inputs required in the validation process of a dynamic measurement system. Explain.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the construction and working principle of RTD.	8 Marks	L2	CO3
	b)	Discuss the different types of IC temperature sensors with neat sketches.	8 Marks	L1	CO3

(OR)

7.	a)	A strain gauge has a resistance of 120Ω unstrained and the gauge factor is 12. What is the resistance value if the strain is 1%?	8 Marks	L2	CO3
	b)	Select and brief about an appropriate transducer for the measurement of temperature that uses the principle of increase in resistance with increase in temperature.	8 Marks	L1	CO3

MODULE-IV

8.	a)	With a neat sketch explain the working of reluctance type accelerometers.	8 Marks	L1	CO4
	b)	Discuss the working of principle of piezoelectric accelerometer.	8 Marks	L1	CO4

(OR)

9.	a)	Discuss the digital transducer in torque measurement.	8 Marks	L2	CO4
	b)	Identify suitable load cell for measurement of force that is noncontact type. Justify sensor selection.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the working principle of SAW sensor.	8 Marks	L2	CO4
	b)	Select suitable sensor for vibration measurement in industrial applications.	8 Marks	L2	CO4

(OR)

11.	a)	Distinguish the characteristics of Free gyroscope and Single-axis restrained gyro with suitable diagram.	8 Marks	L1	CO4
	b)	Explain the working of an encoder that gives 4-bit digital output proportional to linear displacement.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

SENSORS AND MEASURING INSTRUMENTS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention the compulsory elements in the basic measurement system.	2 Marks	L1	CO1
	b)	Calculate the standard deviation when the readings of thermocouple are 10,20,30,40 degrees.	2 Marks	L2	CO1
	c)	List any two types of strain gauges.	2 Marks	L1	CO2
	d)	State the principle of thermistor.	2 Marks	L2	CO2
	e)	Interpret why Kelvin Bridge is known as a double bridge.	2 Marks	L2	CO3
	f)	Identify the bridge that can be used to measure capacitance, dielectric loss and power factor.	2 Marks	L2	CO3
	g)	Mention any two applications of wave analyzers.	2 Marks	L1	CO4
	h)	State the purpose of aquadag.	2 Marks	L2	CO4
	i)	Mention the significance of Plasma display panels.	2 Marks	L2	CO5
	j)	Specify any two objectives of recording data.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Illustrate about the functional elements of an Instrument with a neat diagram.	8 Marks	L2	CO1
	b)	Explain the terms sensitivity, hysteresis, resolution, and threshold with necessary examples.	8 Marks	L2	CO1
		(OR)			
3.	a)	Demonstrate about dynamic characteristics of an instrument.	8 Marks	L3	CO1
	b)	Explain the operation of AC voltmeters using rectifiers with necessary diagrams.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the principle of operation of variable dielectric constant capacitive sensor.	8 Marks	L2	CO2
	b)	Explain about the principle of operation of piezoelectric sensor with necessary diagrams.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the construction and working of Resistance temperature detector.	8 Marks	L2	CO2
	b)	Discuss about Doppler Effect and applications of ultrasonic sensor.	8 Marks	L3	CO2

MODULE-III

6.	a)	Derive the bridge balance condition for Wheatstone bridge with necessary circuit diagrams.	8 Marks	L4	CO3
	b)	Draw the circuit diagram of Hays bridge and derive the balance conditions.	8 Marks	L4	CO3

(OR)

7.	a)	Summarize about advantages, limitations and applications of dc bridges and ac bridges.	8 Marks	L2	CO3
	b)	Derive the bridge balance condition for Anderson bridge with necessary circuit diagrams.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain the principle and operation of Frequency Selective Wave Analyzer.	8 Marks	L2	CO4
	b)	Explain the principle and operation of Harmonic distortion Analyzer.	8 Marks	L2	CO4

(OR)

9.	a)	Illustrate about the working of cathode ray tube with a neat diagram.	8 Marks	L2	CO4
	b)	Describe the working of digital storage oscilloscope with a neat block diagram.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss about the types of Segment Displays.	8 Marks	L2	CO5
	b)	Describe the operation of BCD to 7 Segment Converter with a neat diagram.	8 Marks	L2	CO5

(OR)

11.	a)	Demonstrate the principle of operation of X-Y recorder with a neat sketch.	8 Marks	L2	CO5
	b)	Discuss about the specifications of recorder.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2024

SEMICONDUCTOR DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Differentiate between an intrinsic and an extrinsic semiconductor.	2 Marks	L2	CO1
	b)	Define reverse recovery time.	2 Marks	L1	CO1
	c)	Mention any two applications of Diode.	2 Marks	L2	CO2
	d)	What is Ripple factor?	2 Marks	L1	CO2
	e)	What is Thermal Runway?	2 Marks	L2	CO3
	f)	State the relationship between alpha and beta of the transistor.	2 Marks	L2	CO3
	g)	Mention any two applications of JFET.	2 Marks	L2	CO4
	h)	What is pinch off voltage?	2 Marks	L1	CO4
	i)	What is Barkhausen criterion for Oscillation?	2 Marks	L1	CO5
	j)	Mention any two advantages of Crystal Oscillator.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Plot the volt-ampere curve for a P.N junction diode and explain the nature of the curve.	8 Marks	L2	CO1
	b)	Discuss about transition capacitance.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain about Zener breakdown and avalanche multiplication.	8 Marks	L2	CO1
	b)	Draw the V-I characteristics of tunnel diode and explain the characteristics based on tunneling theory.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain series-parallel diode configurations.	8 Marks	L2	CO2
	b)	Explain the operation of Full Wave Rectifier with necessary diagrams.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the operation of negative clipper with necessary diagrams.	10 Marks	L2	CO2
	b)	Explain the operation of Zener diode as a voltage regulator.	6 Marks	L2	CO2

MODULE-III

6.	a)	Compare the performance of a transistor in different configurations.	8 Marks	L3	CO3
	b)	Draw and explain the input and output characteristics of CC configuration.	8 Marks	L2	CO3
		(OR)			

7.	a)	Draw and explain the input and output characteristics of CE configuration.	8 Marks	L2	CO3
	b)	Discuss about compensation techniques.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain the construction and operation of JFET.	8 Marks	L2	CO4
	b)	Explain the structure and physical operation of MOSFET.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain how a MOSFET can be used as an amplifier	8 Marks	L3	CO4
	b)	Discuss about biasing in MOS Amplifier Circuits.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Discuss about the important factors in choosing a certain type of oscillator.	8 Marks	L2	CO5
	b)	How are oscillators produced in RC phase shift oscillator without any input signal? Explain the same with the help of circuit.	8 Marks	L2	CO5
		(OR)			
11.	a)	A Hartley oscillator is designed with L_1 = 20 μH, L_2=2 mH, and a variable capacitance. Determine the range of capacitance values if the frequency is varied between 950 KHz and 2050 KHz.	8 Marks	L3	CO5
	b)	Discuss about feedback oscillators.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List any two site selection factors for Hydro power Plant.	2 Marks	L3	CO1
	b)	What is the purpose of surge tank?	2 Marks	L2	CO1
	c)	Define nuclear fusion and nuclear fission.	2 Marks	L2	CO2
	d)	What are the fuels used in nuclear power plants?	2 Marks	L2	CO2
	e)	What are the different types of internal combustion engines?	2 Marks	L2	CO3
	f)	What is meant by peak load power plants?	2 Marks	L2	CO3
	g)	What are the main advantages of cogeneration power generation?	2 Marks	L2	CO4
	h)	List any two causes for low power factor.	2 Marks	L3	CO4
	i)	Write three-part form representation of tariff.	2 Marks	L2	CO5
	j)	Define plant use factor.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Draw the layout of thermal power plant and briefly explain the function of major components.	8 Marks	L3	CO1
	b)	Describe the function of i) penstock and ii) Dam iii) superheater.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain working of i) Air preheater ii) Economizer iii) draft tube.	8 Marks	L2	CO1
	b)	List the advantages and disadvantages of thermal power plants.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the working of nuclear power plant with layout diagram.	8 Marks	L2	CO2
	b)	Compare pressurized water reactor and boiling water reactors.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the working of pressurized water reactor with neat diagram.	8 Marks	L2	CO2
	b)	Explain the functioning and materials for i) control rods ii) moderator iii) fuel rods.	8 Marks	L2	CO2

MODULE-III

6.	a)	Illustrate the need and functioning of pumped storage hydropower plants.	8 Marks	L2	CO3
	b)	Explain the site selection factors for gas turbine plant and diesel power plants.	8 Marks	L3	CO3

(OR)

7.	a)	Explain the operation of diesel power plants and mention its applications.	8 Marks	L2	CO3
	b)	What are some of the recent advancements and trends in gas turbine technology? What are the factors that affect the efficiency of a gas turbine power plant?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the Practical aspects of installing a cogeneration plant.	8 Marks	L3	CO4
	b)	Explain different methods of improving power factor.	8 Marks	L2	CO4

(OR)

9.	a)	What is cogeneration, and how does a cogeneration power plant differ from traditional power plants?	8 Marks	L2	CO4
	b)	Explain the use of capacitors and their series and parallel connections for improving power factor.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the terms: i) Maximum Demand ii) Load factor iii) Connected load iv) Diversity factor.	8 Marks	L2	CO5
	b)	An electric supply company having a maximum load of 50 MW generates 18×10^7 units per annum and the supply consumers have an aggregate demand of 75 MW. The annual expenses including capital charges are: For fuel = Rs 90 lakhs Fixed charges concerning generation = Rs 28 lakhs Fixed charges concerning transmission= Rs 32 lakhs and distribution Assuming 90% of the fuel cost is essential to running charges and the loss in transmission and distribution as 15% of kWh generated, deduce a two-part tariff to find the actual cost of supply to the consumers.	8 Marks	L3	CO5

(OR)

11.		For the given load data, Draw the Load curve, load duration curve and determine Maximum Demand, Average Load, Load Factor and No. of units generated.	16 Marks	L3	CO5

0 – 6 AM	6 – 8 AM	8 – 12 Noon	12 – 14 PM	14 – 18 PM	18 -20 PM	20 – 24 PM
4000 kW	3000 kW	8000 kW	2000 kW	7500 kW	3000 kW	4500 kW

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

ELECTRICAL CIRCUITS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Active and Passive elements.	2 Marks	L1	CO1
	b)	Two bulbs marked 200 watt-250 volts and 100 watt-250 volts are joined in series to 250 volts supply. Power consumed in circuit is.	2 Marks	L3	CO1
	c)	A Series circuit has R=100Ω and C=20μF at what frequency will the current lead the voltage by 30^0?	2 Marks	L3	CO2
	d)	Explain the phenomenon of resonance in series RLC circuit. Derive the expression for fr.	2 Marks	L2	CO2
	e)	Define Maximum power transfer theorem and, what is the condition for maximum power to be transferred from source to load?	2 Marks	L2	CO3
	f)	Write down the statement of Compensation theorems.	2 Marks	L1	CO3
	g)	In two-watt meter methods of power measurements when the pf is 1 what are the readings of the watt meters?	2 Marks	L3	CO4
	h)	What are the advantages of poly phase systems?	2 Marks	L2	CO4
	i)	Define co-efficient of Coupling.	2 Marks	L1	CO5
	j)	Explain the Faraday's laws of electromagnetic induction.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Compute V and Power dissipated by each resistor in the circuit shown in Fig-1 by using Nodal Analysis .	8 Marks	L3	CO1

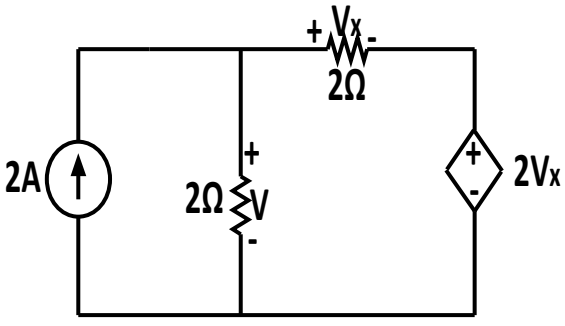
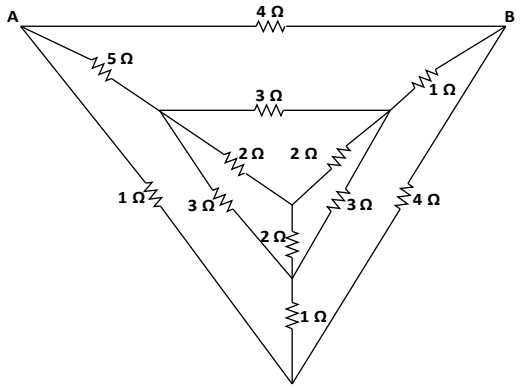


Fig-1

b) Compute the equivalent resistance across AB for the network shown in Fig. — 8 Marks — L3 — CO1



(OR)

3. a) Compute the equivalent resistance across voltage source using star/delta transformation. Also compute current delivered by voltage source shown in Fig-2. — 10 Marks — L3 — CO1

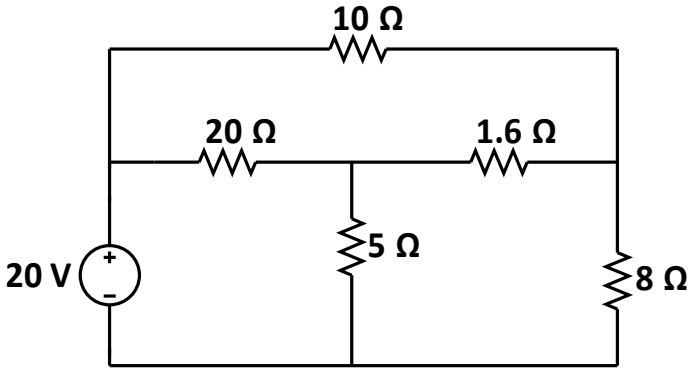
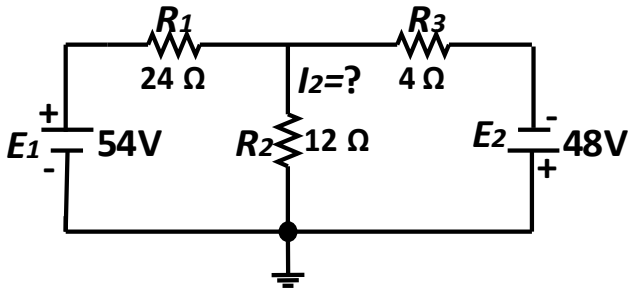


Fig-2.

b) Compute the value of I2 by using Mesh analysis for the circuit shown in Fig. — 6 Marks — L3 — CO1



MODULE-II

4. a) A series circuit having pure resistance of 10Ω, pure inductance of 100mH and a capacitor is connected across a 230V, 50Hz A.C supply. This RLC combination draws a current of 10A. Calculate. i) Power Factor of the circuit & ii) Capacitor value. — 10 Marks — L3 — CO2

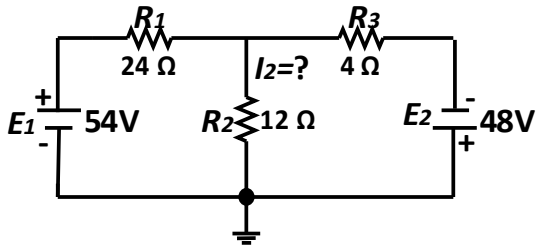
b) Derive the expression for average and RMS value of sine wave. — 6 Marks — L2 — CO2

(OR)

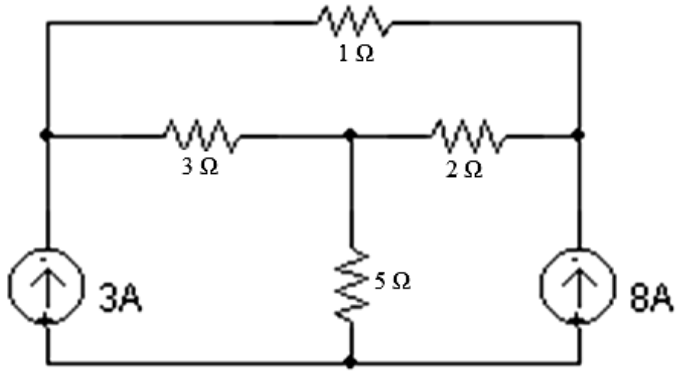
5. An impedance Z_1= (10+j10) Ω is connected in parallel with another impedance of resistance 8.5Ω and variable capacitance connected in series. Find capacitance 'C' such that the circuit is resonant at 5 KHz. — 16 Marks — L3 — CO2

MODULE-III

6. a) Compute the value of I2 by using Norton's theorem for the circuit shown in Fig. — 8 Marks — L3 — CO3

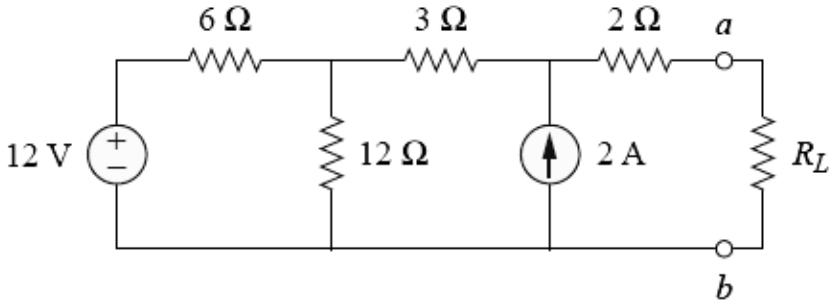


b) Solve for the current through the 5 Ω resistor and the voltage over the 3 A source for the circuit shown in Fig using Super position theorem. — 8 Marks — L3 — CO3

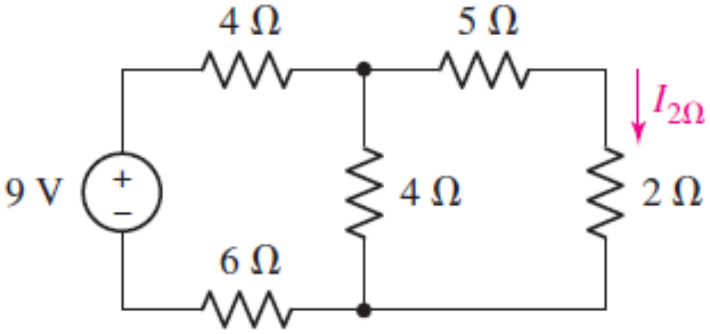


(OR)

7. a) Compute the value of RL and maximum power for the circuit shown in Fig. — 10 Marks — L3 — CO3



b) Verify whether the given circuit is Reciprocal or not for the circuit shown in Fig. — 6 Marks — L3 — CO3



MODULE-IV

8.	a)	Two watt meters are used to measure the power delivered to a balance 3 phase load of power factor 0.281. One watt meter reads 5.2kW. Determine the reading of the second watt meter. What is the line current if the line voltage is 415 wolt?	8 Marks	L3	CO4
	b)	Determine the line currents in an unbalanced Y connected load supplied from a symmetrical 3- ϕ , 440-V, 3-wire system. The branch impedances of the load are : Z1 = 5 $\angle$ 30º ohm, Z2 = 10 $\angle$ 45º ohm and Z3 = 10 $\angle$ 45º ohm and Z4 = 10 $\angle$ 60º ohm. The sequence is RYB.	8 Marks	L3	CO4

(OR)

9.	a)	Explain Two Wattmeter Method-Balanced or Unbalanced Load	8 Marks	L1	CO4
	b)	A star-connected balanced load is supplied from a 3 $-\phi$ balanced supply with a line voltage of 416 volts at a frequency of 50 Hz. Each phase of the load consists of a resistance and a capacitor joined in series and the reading on two wattmeters connected to measure the total power supplied are 782 W and 1980 W, both positive. Calculate i) power factor of circuit, ii) the line current, iii) the capacitance of each capacitor	8 Marks	L4	CO4

MODULE-V

10.	Two magnetically coupled coils have self-inductances of 60 mH and 9.6 mH, respectively. The mutual inductance between the coils is 22.8 mH. i) Calculate the coefficient of coupling. ii) Calculate the Inductance when two coils are connected in series and parallel.	16 Marks	L3	CO4

(OR)

11.	Derive the expression for equivalent inductance of two coupled coils connected in parallel aiding.	16 Marks	L2	CO4

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Correlate the causes of the low power factor?	2 Marks	L4	CO1
	b)	A resistor of 5 W is connected in series with a parallel combination of a number of resistors each of 5W. If the total resistance of the combination is 6W, how many resistors are in parallel?	2 Marks	L3	CO1
	c)	Classify the Benefits and Drawbacks of Fuse	2 Marks	L1	CO3
	d)	Memorize the applications of Stepper motor	2 Marks	L1	CO2
	e)	How is UPS rating calculated?	2 Marks	L1	CO3
	f)	Write about FLOODLIGHTING.	2 Marks	L1	CO3
	g)	Define motion sensor. List the motion sensors application.	2 Marks	L2	CO4
	h)	Illustrate zero error of the transducer?	2 Marks	L1	CO4
	i)	Cite the ideal characteristics of OPAMP.	2 Marks	L1	CO5
	j)	Compare the difference between weighted resistor DAC and R 2R weighted resistor?	2 Marks	L1	CO5

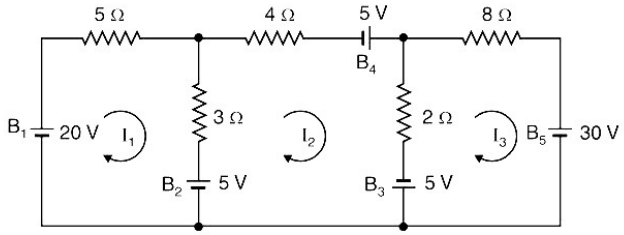
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

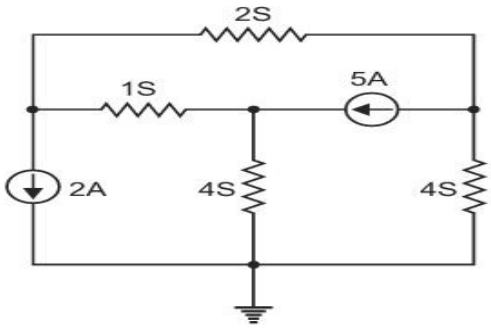
5 X 16 = 80 Marks

MODULE-I

2.	a)	Extract the current supplied by each battery in the circuit shown, using mesh Analysis.	8 Marks	L3	CO1



	b)	Using nodal analysis, find the different branch currents in the circuit shown.	8 Marks	L3	CO1



(OR)

3.	a)	A voltage v (t) = 141.4sin(314 t + 10°) is applied to a circuit and a steady current given by i (t) = 14.4sin(314 t − 20°) is found to flow through it. Determine: i) The p.f. of the circuit and ii) The power delivered to the circuit.	8 Marks	L2	CO1
	b)	Two impedances consist of (resistance of 15Ω and series-connected inductance of 0.04H) and (resistance of 10 Ω, inductance of 0.1 H and a capacitance of 100 μF, all in series) are connected in series and are connected to a 230 V, 50 Hz a.c. source. Find : i) Current drawn, ii) Voltage across each impedance, iii) Individual and total power factor iv) Draw the phasor diagram.	8 Marks	L3	CO1

MODULE-II

4.	a)	Depict and explain the Construction of Single Phase Transformer.	8 Marks	L2	CO2
	b)	Explain the working principle of Three Phase Induction motor and write its applications.	8 Marks	L2	CO2

(OR)

5.	a)	Explicate the procedure steps for Earthing.	8 Marks	L1	CO2
	b)	Elucidate the operation Relays in electrical wiring with neat sketches.	8 Marks	L2	CO2

MODULE-III

6.	a)	Cite the basic principles employed for the street lighting? Explain Specular reflection for street lighting.	8 Marks	L2	CO3
	b)	A lamp giving 300 C.P in all directions below horizontal is suspended 2m above the centre of a square table of 1m side. Calculate the maximum and minimum illumination on the surface of the table.	8 Marks	L3	CO3

(OR)

7.	a)	With neat sketch, Explain the operation of Ni-Cd battery.	8 Marks	L2	CO3
	b)	What are the Methods to Calculate the Illumination of Light? Explain.	8 Marks	L2	CO3

MODULE-IV

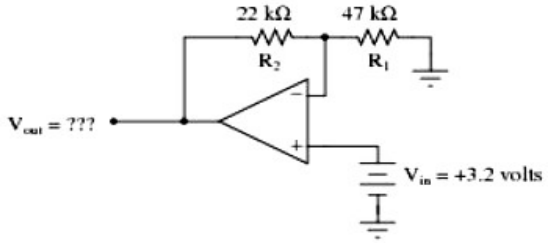
8.	a)	Describe the construction and working of strain gauge.	8 Marks	L1	CO4
	b)	Expound the various types of temperature transducer.	8 Marks	L2	CO4

(OR)

9.	a)	Explicate the operation and application of Wireless bluetooth sensors.	8 Marks	L2	CO4
	b)	Describe the piezo electric transducer and give the formula for coupling coefficient.	8 Marks	L2	CO4

MODULE-V

10.	a)	Depict the figure of an operational amplifier differentiator and prove that the output is proportional to derivative of the input.	8 Marks	L3	CO5
	b)	Calculate all voltage drops and currents in this circuit, complete with arrows for current direction and polarity markings for voltage polarity. Then, calculate the overall voltage gain of the amplifier circuit (A_V)	8 Marks	L5	CO5



(OR)

11.	a)	With neat sketches, explain the operation of a half wave rectifier circuit and also derive the expression for Transformer Utilization factor, Peak Inverse voltage and efficiency.	8 Marks	L3	CO5
	b)	How a Zener diode is used as a voltage regulator with VI characteristics?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics Instrumentation Engineering]

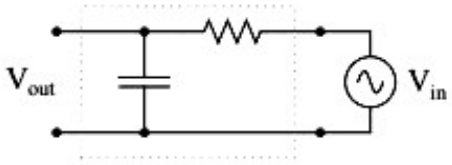
Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State Super position theorem and draw the equivalent circuit.	2 Marks	L1	CO1
	b)	What are the limitations of Reciprocity theorem?	2 Marks	L1	CO1
	c)	What are the advantages of a three phase system over a single phase system?	2 Marks	L1	CO2
	d)	Derive the relationship between phase and line values of voltages in a connected load.	2 Marks	L1	CO2
	e)	Determine the y parameters for a two-port network if the z parameters are $z = \begin{bmatrix} 10 & 5 \\ 5 & 9 \end{bmatrix}$.	2 Marks	L2	CO3
	f)	Write the condition for network to be reciprocal in terms of Y and Z parameters.	2 Marks	L2	CO3
	g)	Why transient occurs in electric circuits?	2 Marks	L1	CO4
	h)	Define time constant of RL circuit.	2 Marks	L1	CO4
	i)	Identify what type of filter this circuit is, and calculate its cutoff frequency given a resistor value of 1 kΩ and a capacitor value of 0.22 μF.	2 Marks	L3	CO5



	j)	What is the difference between active filter and passive filter.	2 Marks	L1	CO5

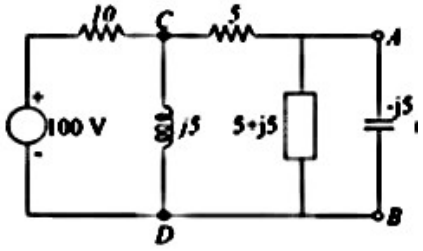
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

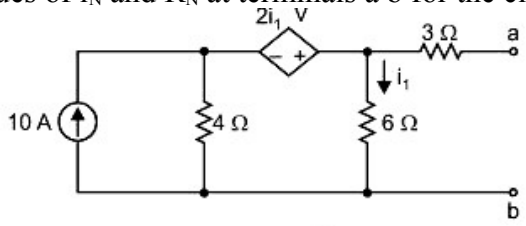
5 X 16 = 80 Marks

MODULE-I

2.	a)	For the network shown, determine using Thevenin's theorem, voltage across capacitor in. Fig. Z_{CD} = j5| | (10 + j5) = 1.25 + j3.75. This impedance is in series with the 10Ω resistance. Using voltage divider rule, the drop over Z_{CD} is.	8 Marks	L1	CO1

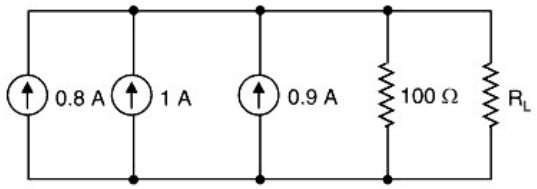


	b)	Find the values of i_N and R_N at terminals a b for the circuit shown.	8 Marks	L3	CO1

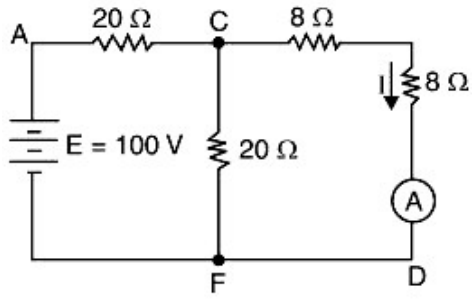


(OR)

3.	a)	Determine the value of R_L for maximum power transfer and evaluate power.	8 Marks	L2	CO1



	b)	Verify the reciprocity theorem for the network shown (i). Also find the transfer resistance.	8 Marks	L1	CO1



MODULE-II

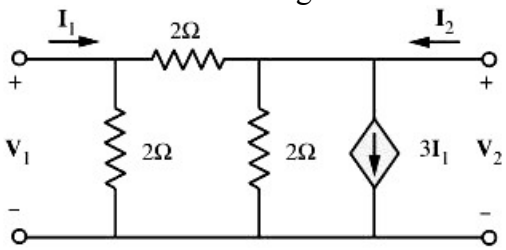
4.	a)	Given a balanced 3− φ, 3-wire system with Y-connected load for which line voltage is 230 V and impedance of each phase is (6 + *j*8) ohm. Find the line current and power absorbed by each phase.	8 Marks	L2	CO2
	b)	Write the equations for wattmeter reading W_1 and W_2 in 3 phase power measurement and there from for power factor.	8 Marks	L1	CO2

(OR)

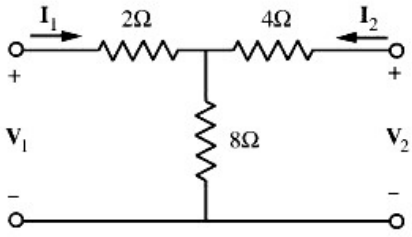
5.	a)	Two wattmeter's connected to measure the input to a balanced three-phase circuit indicate 2500 W and 500 W respectively. Find the power factor of the circuit i) when both readings are positive and ii) when the latter reading is obtained after reversing the connections to the current coil of one instrument.	8 Marks	L2	CO2
	b)	A balanced star connected load of (8 + j6)Ω is connected to a 3 phase, 230 V supply. Find the line current, power factor, power, reactive volt-amperes and total volt-amperes.	8 Marks	L2	CO2

MODULE-III

6.	a)	Find the y parameters for the following circuit.	10 Marks	L2	CO3

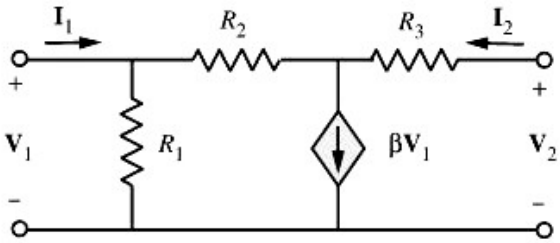


	b)	Find the hybrid parameters for the two-port network shown	6 Marks	L1	CO3

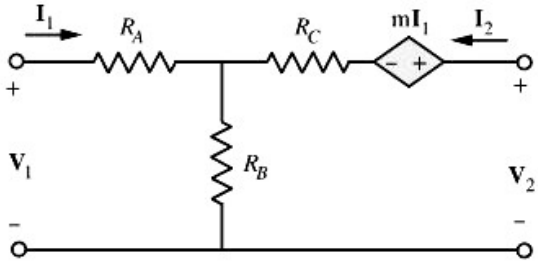


(OR)

7.	a)	Determine the z parameters for the two port network shown	8 Marks	L3	CO3

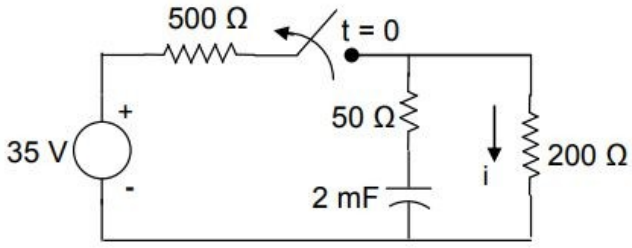


	b)	Determine the ABCD parameters for the two port network shown	8 Marks	L2	CO3



MODULE-IV

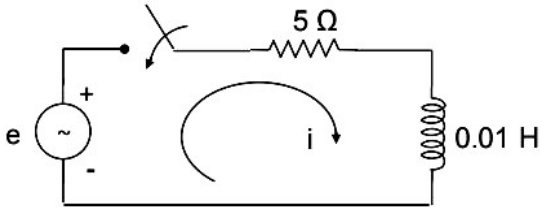
8.	a)	A coil of 10 H inductance and 5 Ω resistance is connected in parallel with a 20 Ω resistor across a 100-V d.c. supply which is suddenly disconnected. Find i) the initial rate of change of current after switching. ii) the voltage across the 20 Ω resistor initially and after 0.3 s. iii) the voltage across the switch contacts at the instant of separation and iv) the rate at which the coil is losing stored energy 0.3 second after switching.	8 Marks	L2	CO4
	b)	The switch was in closed position for a long time. It is opened at time t = 0. Find the current i(t) for t > 0.	8 Marks	L2	CO4



(OR)

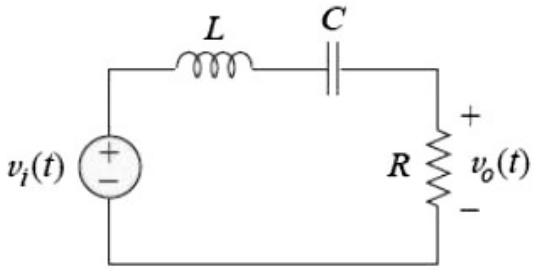
9.	a)	A 5- μF capacitor is discharged suddenly through a coil having an inductance of 2H and a resistance of 200 Ω . The capacitor is initially charged to a voltage of 10 V. Find i) an expression for the current ii) the additional resistance required to give critical damping.	8 Marks	L2	CO4

	b)	In the initially relaxed RL circuit shown, the sinusoidal source of e = 100 sin (500 t) V is applied at time t = 0. Determine the resulting transient current for time t > 0.	8 Marks	L2	CO4



MODULE-V

10.	a)	Design a band pass filter of the form shown in the figure with a lower cutoff frequency of 20.1 kHz and an upper cutoff frequency, f=20.3kHZ, Take R_1=20kΩ. Calculate L, C and Q.	8 Marks	L3	CO5



	b)	Design a constant-k high-pass p section filters having a cut-off frequency of 2000 Hz and infinite frequency characteristic impedance of 300 W.	8 Marks	L3	CO5

(OR)

11.	a)	Design Procedure for a High-Pass Filter.	8 Marks	L2	CO5
	b)	Explain the design procedure for a constant K low pass filter and its characteristics.	8 Marks	L2	CO5

Reg. No. | | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

PROFESSIONAL ETHICS AND HUMAN VALUES

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Information Technology, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define ethical values.	2 Marks	L2	CO1
	b)	What is Moral Autonomy?	2 Marks	L1	CO1
	c)	Enumerate few steps in confronting moral dilemma.	2 Marks	L2	CO2
	d)	Write about Self-Interest.	2 Marks	L1	CO2
	e)	In what ways engineering experiment differs from standard?	2 Marks	L3	CO3
	f)	Define Moral Accountability.	2 Marks	L1	CO3
	g)	What are the main features of Whistle Blowing?	2 Marks	L2	CO4
	h)	Brief about Occupational Crime.	2 Marks	L3	CO4
	i)	Write the needs of enriching institutions and organizations.	2 Marks	L2	CO5
	j)	Mention the criteria of holistic technology.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Analyze the aim of ethics and justify why ethics are essential to engineers.	8 Marks	L2	CO1
	b)	Analyze the impact of Gilligan's theory on moral development.	8 Marks	L3	CO1
		(OR)			
3.	a)	Illustrate the applications of ethical theories in current scenario.	8 Marks	L1	CO1
	b)	Explain various types of inquiries with suitable examples.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain moral dilemma with a suitable case study.	8 Marks	L2	CO2
	b)	Detail about the uses of ethical theories with a suitable example.	8 Marks	L2	CO2
		(OR)			
5.	a)	How do the current world views lead to contradictions and dilemmas in professional life? – Explain.	8 Marks	L2	CO2
	b)	Brief the concept of Moral Leadership and its uses with a suitable example.	8 Marks	L1	CO2

MODULE-III

6.	a)	Engineering as experimentation plays a vital role in the design process. Discuss with suitable example.	8 Marks	L2	CO3
	b)	Develop the purpose of industrial standards.	8 Marks	L3	CO3

(OR)

7.	a)	Explain Conscientiousness and its traits. Explain its importance with a suitable example.	8 Marks	L3	CO3
	b)	Brief about the challenger case.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the term Discrimination and give suitable examples for discrimination.	8 Marks	L2	CO4
	b)	Illustrate by example how whistle blowing affects an organization.	8 Marks	L3	CO4

(OR)

9.	a)	Write short notes on Occupational crime.	8 Marks	L3	CO4
	b)	Explain various types of collective bargaining with advantages and disadvantages.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the concept of an undivided society and the universal order and explain how both these can help to create a world family.	8 Marks	L3	CO5
	b)	Explain a case study on Management Models and Production Systems.	8 Marks	L3	CO5

(OR)

11.	a)	What do you mean by 'universal human order'? What is your vision of a universal human order? Write in your own words.	8 Marks	L3	CO5
	b)	Write brief notes on the following : i) Competence in professional ethics ii) Humanistic Constitution	8 Marks	L2	CO5

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

BASIC ENGINEERING MECHANICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define equilibrium of motion. Write the equations for equilibrium.	2 Marks	L1	CO1
	b)	Describe the free body diagram and its importance in the analysis of problems.	2 Marks	L1	CO1
	c)	Define Varignon's theorem.	2 Marks	L1	CO2
	d)	List various types of loads with examples.	2 Marks	L1	CO2
	e)	Define coefficient of friction. How is it related to angle of friction?	2 Marks	L1	CO3
	f)	Briefly explain 'Angle of friction' and 'Angle of repose'.	2 Marks	L1	CO3
	g)	Explain the significance of polar moment of inertia?	2 Marks	L1	CO4
	h)	What are the conditions under which the centre of gravity of a body becomes the same as its centroid?	2 Marks	L1	CO4
	i)	What is cycle time and frequency in Simple Hamonic Motion?	2 Marks	L1	CO5
	j)	State the principle of impulse-momentum.	2 Marks	L1	CO5

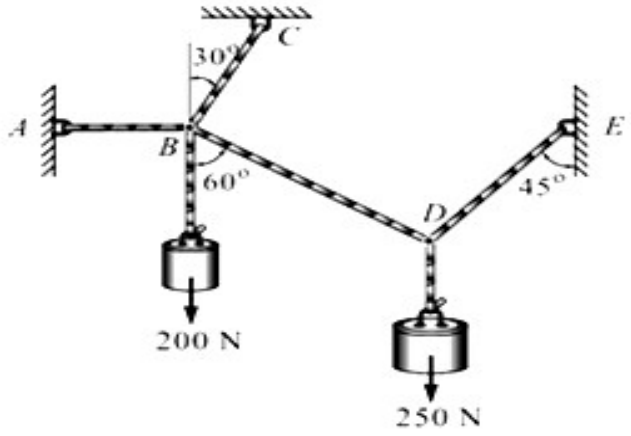
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

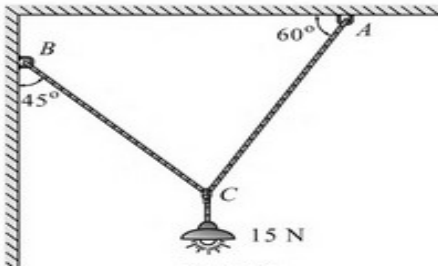
2.	a)	State and prove Lami's theorem.	6 Marks	L1	CO1
	b)	A system of connected flexible cables shown in fig. is supporting two vertical forces 200N and 250N at points B and D. Determine the forces in various segments of the cable.	10 Marks	L3	CO1



(OR)

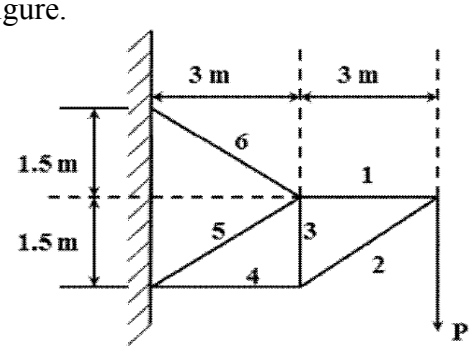
3.	a)	When two forces A and B are mutually at right angles, their resultant is 12 KN. When they are inclined at 60^0, the resultant is 56 KN. Find the individual magnitude of forces.	6 Marks	L2	CO1

	b)	An electric light weighing 15N hangs from a point C by two strings AC and BC as shown in the fig. AC is inclined at 60^0 to the horizontal and BC at 45^0 to the vertical as shown. Find the forces in the strings AC and BC.	10 Marks	L3	CO1



MODULE-II

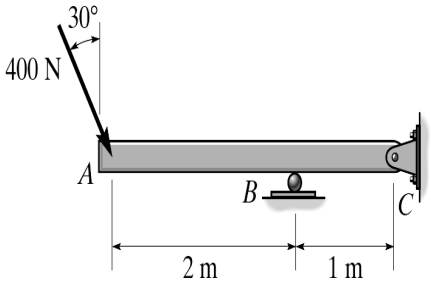
4.	a)	Determine the axial force in each bar of the plane truss loaded as shown in the figure.	10 Marks	L3	CO2



	b)	Bring out the differences among perfect, deficient and redundant trusses.	6 Marks	L1	CO2

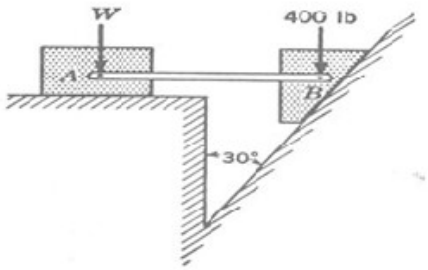
(OR)

5.	a)	Explain the concept of moment of a force about a point. For what condition the moment of a force will be zero?	6 Marks	L2	CO2
	b)	Determine the reactions at the supports of the given beam shown in the figure.	10 Marks	L3	CO2



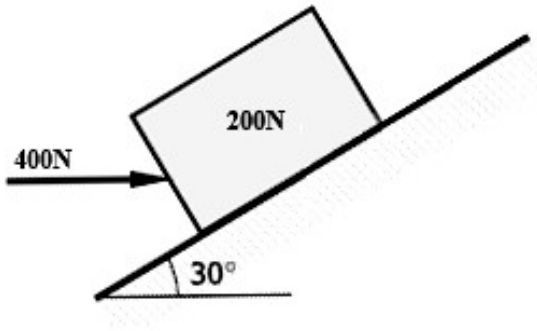
MODULE-III

6.		Two blocks, connected by a horizontal link AB are supported on two rough planes as shown in figure. The coefficient for friction of block A on the horizontal plane is $\mu = 0.4$. The angle of friction for block B on the inclined plane is $\mu = 0.15$. What is the smallest weight W of block A for which equilibrium of the system can exist?	16 Marks	L3	CO3



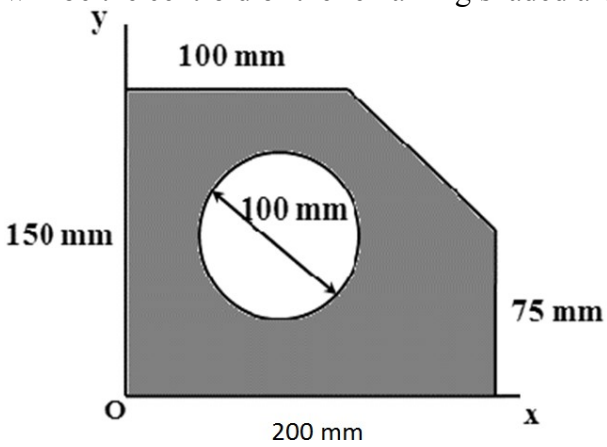
(OR)

7.	a)	Differentiate between static friction and kinetic friction.	4 Marks	L2	CO3
	b)	The 200N block shown in Fig. has impending motion up the plane caused by the horizontal force of 400N. Determine the coefficient of static friction between the contact surfaces.	12 Marks	L3	CO3



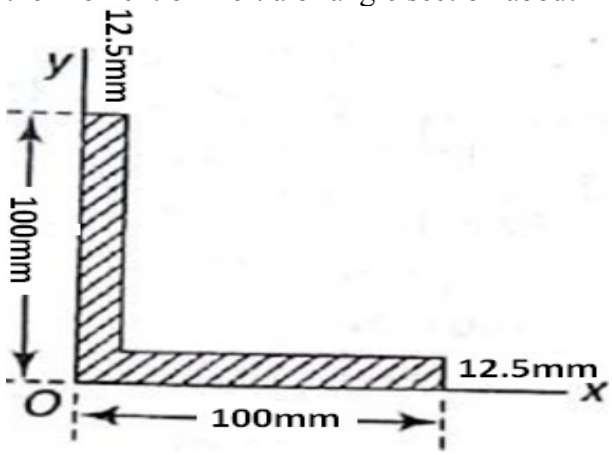
MODULE-IV

8.	a)	Determine the mass moment of inertia of cone of base radius R, height h, and mass density ρ about its geometric axis.	8 Marks	L2	CO4
	b)	Referring to the Figure, determine the coordinates x_c and y_c of the center of a 100mm diameter, circular hole cut in a thin plate so that this point will be the centroid of the remaining shaded area.	8 Marks	L3	CO4



(OR)

9.	a)	Determine the polar mass moment of inertia of a circular ring of mean radius R and mass M.	10 Marks	L2	CO4
	b)	Calculate the Moment of Inertia of angle section about X – axis.	6 Marks	L3	CO4



MODULE-V

10.	a)	A mass of 2 kg is supported on as isolator having a spring scale of 2940 N/m and viscous damping. If the amplitude of free vibration of the mass falls to one half it original value in 1.5 seconds, determine the damping coefficient of the isolator.	8 Marks	L2	CO5
	b)	The masses of two balls are in the ratio of 2: 1 and their velocities	8 Marks	L3	CO5

		are in the ratio of 1:2, but in the opposite direction before impact. If the coefficient of restitution be 5/6, prove that after the impact, each ball will move back with 5/6th of its original velocity.			
		(OR)			
11.	a)	State and explain D'Alembert's principle.	8 Marks	L2	CO5
	b)	A body moving with simple harmonic motion has amplitude of 1m and a period of oscillation of 2 seconds. What will be its velocity and acceleration 0.5 seconds after passing an extreme position?	8 Marks	L3	CO5

Reg. No. | | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech I Semester (MBU-22) Regular Examinations May – 2024

MATERIAL SCIENCE AND ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Sketch screw dislocation.	2 Marks	L2	CO1
	b)	What is an alloy?	2 Marks	L1	CO1
	c)	What are the objectives of Heat treatment?	2 Marks	L2	CO2
	d)	Sketch tempering process.	2 Marks	L1	CO2
	e)	What are Hadfield manganese steels?	2 Marks	L1	CO3
	f)	What are low alloy steels?	2 Marks	L1	CO3
	g)	What are Refractory metals?	2 Marks	L2	CO4
	h)	What are the applications of titanium alloys?	2 Marks	L1	CO4
	i)	What are the applications of Glass-ceramics?	2 Marks	L2	CO5
	j)	Classify composite materials.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe Burger's vector for the Edge and Screw Dislocation.	8 Marks	L2	CO1
	b)	List out different type's imperfections in crystals and briefly explain Schottkey, Frenkel defects, Edge and Screw dislocations.	8 Marks	L2	CO1

(OR)

3.	a)	Draw Iron-Iron-Carbide diagram neatly and explain cooling of steel from Liquid phase to room temperature for 0.4% C and 0.8% C.	8 Marks	L1	CO1
	b)	Explain the expression for the Gibb's Phase rule with suitable example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write short notes on surface hardening techniques. Explain any two methods with neat sketches.	8 Marks	L2	CO2
	b)	Define annealing and recall the types of annealing.	8 Marks	L2	CO2

(OR)

5.	a)	Differentiate the CCT and TTT diagram. Explain the construction method of TTT and CCT diagrams.	8 Marks	L3	CO2
	b)	Define carburizing and describe the types of carburizing in detail.	8 Marks	L1	CO2

MODULE-III

6.	a)	Classify the types of carbon steels with their specific features and applications.	8 Marks	L4	CO3
	b)	Explain the structure, properties and applications of White and Malleable cast iron.	8 Marks	L3	CO3

(OR)

7.	a)	Recall the designations of steels and mention the types, composition, properties and applications of tool steels.	8 Marks	L2	CO3
	b)	What is stainless steel? How they are classified and give their applications.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Compare brass and bronze materials.	8 Marks	L2	CO4
	b)	List the properties and applications of copper.	8 Marks	L2	CO4

(OR)

9.	a)	What is aluminium? Explain the types, properties and uses of aluminium alloys in detail.	8 Marks	L3	CO4
	b)	List the properties and applications of Nickel.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define composite materials. What unique properties have they, over the conventional materials?	8 Marks	L2	CO5
	b)	Discuss the properties and applications of particle reinforced composites, and fiber reinforced composites.	8 Marks	L3	CO5

(OR)

11.	a)	Write short notes on Metal Matrix composites and Ceramic-matrix composites.	8 Marks	L3	CO5
	b)	Describe properties and applications of polymers.	8 Marks	L1	CO5

Reg. No. | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2024

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	"Natural sand is often not suitable for moulding purposes" Comment on this statement giving reasons.	2 Marks	L1	CO1
	b)	A pattern is slightly made bigger than the actual size of the casting- Why?	2 Marks	L1	CO1
	c)	What can happen if moulding metal is directly poured into the sprue without using a pouring basin?	2 Marks	L1	CO1
	d)	Which types of metals are suitable for Hot-chamber and cold-camber die-casting process?	2 Marks	L2	CO1
	e)	Identify and List some defects in forging and rolling.	2 Marks	L3	CO2
	f)	Discuss the importance of polarity in arc welding.	2 Marks	L2	CO3
	g)	Heat-affected zones(HAZ) in welding – Discuss.	2 Marks	L2	CO3
	h)	Compare the major differences between the properties of ceramics and those of metals.	2 Marks	L2	CO4
	i)	Name the three basic categories of composite materials	2 Marks	L1	CO4
	j)	What is the characteristic of thermoplastics?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Elaborate on the pattern allowance. List various pattern allowances and explain the purpose of each allowance.	8 Marks	L6	CO1
	b)	Discuss the importance and selection of manufacturing processes.	8 Marks	L6	CO1
		(OR)			
3.	a)	Explain precision investment casting with a neat diagram.	8 Marks	L2	CO1
	b)	Classify the manufacturing processes and explain the investment casting process with neat sketches.	8 Marks	L2	CO1

MODULE-II

4.	a)	List out various forging methods and explain upset die forging with a neat sketch.	8 Marks	L2	CO2
	b)	Write short notes on the following: i) Embossing ii) Coining iii) Drawing & bending	8 Marks	L2	CO2
		(OR)			
5.	a)	Sketch and explain about hydrostatic extrusion process; discuss the advantages and disadvantages.	8 Marks	L2	CO2
	b)	Describe the roll-pass sequence. Calculate the roll-pass sequence for the 20 mm rod.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the principle of gas welding. Explain various types of flames regulated using a welding torch with the help of neat figures and state their applications.	8 Marks	L2	CO3
	b)	Elaborate on the submerged arc welding process and discuss the advantages.	8 Marks	L6	CO3
		(OR)			
7.	a)	Distinguish between 'Brazing' and 'Soldering' with regard to processes and applications.	8 Marks	L4	CO3
	b)	Explain the Gas Arc Metal Welding (GATW) welding process and discuss its advantages.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the difference between traditional ceramics and new ceramics as far as raw materials are concerned.	8 Marks	L2	CO4
	b)	Compare and discuss the drying, sintering, hot compaction.	8 Marks	L5	CO4
		(OR)			
9.	a)	Describe, step by step, the manufacture of a component by powder metallurgy process.	8 Marks	L2	CO4
	b)	Describe briefly the methods by which powders suitable for powder metallurgy can be produced. Also, enumerate the main characteristics of metal powder.	8 Marks	L2	CO4

MODULE-V

10.	a)	Can thermosetting plastics be used in injection molding? Explain.	8 Marks	L2	CO5
	b)	Explain the extrusion of the plastics process and discuss its advantages.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the Blow Molding and Rotational Molding Processes.	8 Marks	L2	CO5
	b)	Explain briefly about the Transfer Molding and Compression Molding.	8 Marks	L2	CO5

MOHAN BABU UNIVERSITY

B.Tech II Semester

CALCULUS AND TRANSFORMATION TECHNIQUES [SET-I]

CODE NO: 22MM1101403

SCHEME OF EVALUATION

[PART-A]

1. a) statement of Rolle's theorem

b) Check the applicability of Cauchy's mean value theorem — [2m]

c) Finding first order partial derivatives — [2m]

d) Definition of stationary point — [2m]

e) Finding $L\{\sin t \cos t\}$ — [2m]

f) Finding $L\{t^2 e^{-t}\}$ — [2m]

g) Finding $L^{-1}\left\{\frac{s+2}{s^2+4s+13}\right\}$ — [2m]

h) Finding $L^{-1}\left\{\frac{1}{s(s-1)}\right\}$ — [2m]

i) Finding a_0 — [2m]

j) Definition of Fourier sine transform — [2m]

[PART-B]

MODULE-I

2.a) Check the applicability — [4m]

verification — [4m]

b) Establish the inequality — [8m]

(OR)

3.a) check the applicability — [4m]

Verification — [4m]

b) Writing maclaurin's theorem with R_3 remainder — [2m]

Establishing the result — [6m]

MODULE – II

4a) Finding partial derivatives — [3m]

Finding Jacobian of x, y w.r.t u, v. — [5m]

b) Finding stationary points — [3m]

Discuss the maxima and minima — [5m]

(OR)

5. a) Showing u and v are functionally dependent — [6m]
Relationship — [2m]

b) Writing Lagrangian function — [3m]
Finding the required points — [5m]

MODULE - III

6. a) Finding Laplace transform by definition — [8m]

b) Finding $L\{t\cos at\}$ — [4m]
Finding $L\{t^2\cos at\}$ — [4m]

(OR)

7 a) Finding $L\{1-\cos t\}$ — [2m]
Finding $L\{\frac{1-\cos t}{t}\}$ — [6m]

b) Finding L.T. of a periodic function — [8m]

MODULE - IV

8. a) Spliting of partial fractions — [5m]
Finding inverse transform — [3m]

b) Finding inverse by convolution theorem — [8m]

(OR)

9. a) Finding of inverse transform by properties — [8m]

b) Convert into algebraic functions — [4m]
Apply inverse transformation and finding solution — [4m]

MODULE - V

10. a) Expansion of F.S — [8m]
by finding a_0, a_n, b_n

b) Finding F.C.T of $f(x)$ — [8m]

(OR)

11. a) Finding half range Fourier cosine series — [8m]
by finding a_0 and a_n.

b) Fourier sine transform of $f(x)$ — [4m]
Establishing the result — [4m]
by inverse transformation

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MOHAN BABU UNIVERSITY

B.Tech II Semester

SET-II

CALCULUS AND TRANSFORMATION TECHNIQUES

CODE NO.: 22MM1014Q3

SCHEME OF EVALUATION

PART-A

1.a) Discuss the applicability of Rolle's theorem

b) Statement of Cauchy's mean value theorem

c) Finding first order partial derivatives

d) Definition of maxima of a function of two variables

e) Finding $L\{(1+e^{-t})^2\}$

f) Finding $L\{\int_0^t \cos t\,dt\}$

g) Finding $L^{-1}\left\{\frac{s^2+s}{s^3}\right\}$.

h) Finding $L^{-1}\left\{\frac{s-2}{s^2-4s+13}\right\}$

i) Finding the value of a_0. — 2m

j) Definition of Fourier cosine transform. — 2m

PART-B

MODULE-I

2.a) Check the applicability — 4m

finding c — 4m

b) Establishing the inequality — 8m

(OR)

3.a) Check the applicability — 4m

verification — 4m

b) Formula — 2m

Establishing the result — 6m

MODULE-II

4.a) Finding partial derivatives — 3m

Finding Jacobian — 5m

b) Finding stationary points — 3m

Finding the maxima and minima — 5m

(OR)

5 a) showing u and v are functionally dependent. — 6m
Relationship — 2m

b) writing Lagrangian function — 2m
Finding the values of x, y, z — 6m

MODULE - III

6.a) Finding Laplace transform by the definition — 8m

b) Finding $L\{\frac{e^t \sin t}{t}\}$ — 8m

(OR)

7.a) Finding $L\{t \sin at\}$ — 4m
Finding $L\{t^2 \sin at\}$ — 4m

b) writing interms of unit function — 4m
Finding L.S — 4m

MODULE - IV

8. a) Splitting into partial fractions — 5m
Finding inverse Laplace transforms — 3m

b) Conversion of algebraic functions — 4m
Finding solution — 4m

(OR)

9. a) Finding of inverse transforms by properties — 8m

b) Finding inverse by Convolution theorem — 8m

MODULE - V

10. a) Finding F.S by calculating a_0, a_n, b_n — 8m

b) Finding F.S.S of $f(x)$ — 8m

(OR)

11. a) Finding half range Fourier sine series — 8m
by finding b_n

b) Finding Fourier cosine transform — 4m
Establish the result by inverse transformation — 4m

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MOHAN BABU UNIVERSITY

B Tech II semster

TRANSFORMATION TECHNIQUES AND LINEAR ALGEBRA (SET-I)

CODE No.: 22MM101404

SCHEME OF EVALUATION

(PART-A)

1. a) Writing formula for half range Fourier sine series — (2m)

b) Statement of Fourier integral theorem — (2m)

c) Definition of Laplace transform — (2m)

d) Finding $L\{e^{-t}\sin t\}$ — (2m)

e) Finding $L^{-1}\left\{\frac{1+s}{s^2}\right\}$ — (2m)

f) Finding $L^{-1}\left\{\frac{s}{(s+1)^2+1}\right\}$ — (2m)

g) Statement of C-H theorem — (2m)

h) Writing conditions for no solution and unique solution — (2m)

i) Definition of a vector space — (2m)

j) obtain condition for a linearly dependent

(PART-B)

MODULE-I

2.a) Writing existence conditions for Fourier series — (8m)

b) Finding Fourier transform of $f(x)$ — (8m)

(OR)

3.a) Fourier series expansion by finding a_0, a_n, b_n — (8m)

b) Finding Fourier sine transform — (8m)

MODULE-II

4.a) Finding L.T by definition — (8m)

b) Finding $L\left\{\frac{\cos 2t - \cos 3t}{t}\right\}$ — (8m)

(OR)

5.a) Finding $L\{t^2 e^{2t}\sin 3t\}$ — (8m)

b) Finding L.T of periodic function — (8m)

MODULE - III

6. a) Splitting into partial fractions — 8m
Finding inverse transform — 8m

b) Finding inverse by convolution theorem — 8m

(OR)

7. a) Finding inverse transform by properties — 8m

b) convert into algebraic function — 4m
Finding solution by inversion — 4m

MODULE - IV

8. a) Reducing into echelon form — 7m
Rank — 1m

b) check the consistency — 4m
Finding solution — 4m

(OR)

9. a) Finding eigen values — 4m
Finding eigen vectors — 4m

b) Finding characteristic eq — 4m
Finding inverse — 4m

MODULE - V

10. a) Determining L.I of L.D — 8m

b) showing L.S — 8m

(OR)

11. a) Finding basis — 7m
Finding dimension — 1m

b) Finding L.S — 8m

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Reg. No. | | | | | | | | | | | | |

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2024

PHYSICS FOR COMPUTING

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Information Technology, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention the applications of interference of light due to division of wave front.	2 Marks	L1	CO1
	b)	On what factors the diffraction of light depends?	2 Marks	L2	CO1
	c)	What is the wavelength of an electron moving at 5.31 x 10^6 m/sec? Given: mass of electron = 9.11 x 10^{-31} kg.	2 Marks	L2	CO2
	d)	What is the importance of Davisson Germer experiment?	2 Marks	L1	CO2
	e)	How to identify metals and insulators from energy band diagram?	2 Marks	L2	CO3
	f)	What are energy bands?	2 Marks	L1	CO3
	g)	Give examples of Extrinsic semiconductors.	2 Marks	L1	CO4
	h)	What is the use of Photodiode?	2 Marks	L2	CO4
	i)	Define Critical angle.	2 Marks	L1	CO5
	j)	Define acceptance angle.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Derive the expressions for bright and dark fringes when light is reflected by a thin film.	12 Marks	L2	CO1
	b)	What are the three smallest thicknesses of a soap bubble that produce constructive interference for red light with a wavelength of 650 nm? The index of refraction of soap is taken to be the same as that of water (1.33).	4 Marks	L3	CO1

(OR)

3.	a)	Explain Fraunhofer diffraction due to single slit with necessary mathematical expressions.	12 Marks	L2	CO1
	b)	A Fraunhofer diffraction pattern due to a single-slit of width 0.2mm is being obtained on a screen placed at a distance of 2metre from the slit. The first minima lie at 5mm on either side of the central maximum on the screen. Find the wavelength of light.	4 Marks	L3	CO1

MODULE-II

4.	a)	Derive expression for de Broglie wavelength using Planck and Einstein energy mass equations.	10 Marks	L2	CO2

	b)	Calculate the de Broglie wavelengths of a tennis balls of mass 60 g and water drop of mass 1μg both moving with a velocity of 10 m/s. h = 6.63x 10^{-34} J.S and m_e = 9.1 * 10^{-31} kg.	6 Marks	L3	CO2
		(OR)			
5.	a)	Derive Schrodinger's time-independent wave equation with the necessary explanation.	10 Marks	L2	CO2
	b)	Explain the effect of temperature on the probability of finding a particle at a given energy using Fermi-Dirac distribution function.	6 Marks	L2	CO2
		MODULE-III			
6.	a)	Using the Kronig-Penney model explain the formation of energy bands in solids.	12 Marks	L3	CO3
	b)	An electron is confined to a 1 micron thin layer of silicon. Assuming that the semiconductor can be adequately described by a one-dimensional quantum well with infinite walls, calculate the lowest possible energy within the material in units of electron volt. If the energy is interpreted as the kinetic energy of the electron, what is the corresponding electron velocity? (The effective mass of electrons in silicon is $m^* = 0.26\ m_0$, where m_0 = 9.11 x 10^{-31} kg is the free electron rest mass).	4 Marks	L3	CO3
		(OR)			
7.	a)	How a particle can tunnel through a rectangular potential, provide your answer with necessary equations.	12 Marks	L2	CO3
	b)	Why energy bands form in solids and are not observed in case of gases?	4 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain drift and diffusion current in a semiconductor.	10 Marks	L1	CO4
	b)	How the fermi level changes in a N-type semiconductor with increase in doping concentration?	6 Marks	L2	CO4
		(OR)			
9.	a)	Provide details with neat diagram about the working of a semiconducting laser.	12 Marks	L2	CO4
	b)	A semiconductor diode laser has a peak emission wavelength of 1.55 μm. Find its band gap in eV.	4 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain the working of a fiber optic as a temperature sensor.	12 Marks	L2	CO5
	b)	A step-index fiber has a core index of refraction of n_1 = 1.425. The cut-off angle for light entering the fiber from air is 8.50°. (a) What is the numerical aperture of the fiber? (b) What is the index of refraction of the cladding of this fiber?	4 Marks	L3	CO5
		(OR)			
11.	a)	Classify the optical fibers based on the materials used for making optical fibers.	8 Marks	L2	CO5
	b)	Explain the structure of optical fiber and how light propagates along it.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

THEORY OF COMPUTATION

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Language.	2 Marks	L1	CO1
	b)	Define ε-closure(q) with an example.	2 Marks	L1	CO1
	c)	Differentiate regular expression and regular language.	2 Marks	L1	CO2
	d)	Define Regular Expression.	2 Marks	L1	CO2
	e)	Define Regular Grammar.	2 Marks	L1	CO3
	f)	Define parse tree with an example.	2 Marks	L1	CO3
	g)	State the pumping lemma for CFLs.	2 Marks	L1	CO4
	h)	What is un-decidability?	2 Marks	L1	CO4
	i)	Define multiple turing machine.	2 Marks	L1	CO5
	j)	Define tuning machine model?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	If L is accepted by an NFA with ε-transition then show that L is accepted by an NFA without ε-transition with an example.	8 Marks	L3	CO1
	b)	Find the set of strings accepted by the finite automata (0+1)* or L={ε, 0, 1, 00, 01, 10, 11,.....}	8 Marks	L4	CO1

(OR)

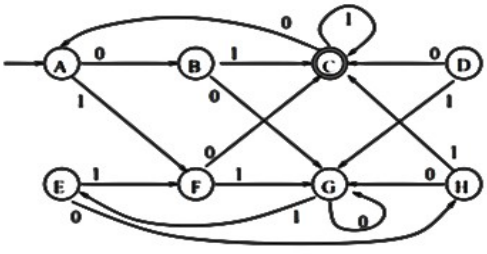
3.	a)	Prove that a language L is accepted by some ε–NFA if and only if L is accepted by some DFA.	8 Marks	L4	CO1
	b)	Define ε-closure(q) with an example	8 Marks	L3	CO1

MODULE-II

4.	a)	The set L= $\{a^n b^n \mid n \geq 1\}$ is not a regular. Justify.	8 Marks	L4	CO2
	b)	List and explain the applications of regular expressions.	8 Marks	L2	CO2

(OR)

5.	a)	Minimize the following automata.	8 Marks	L4	CO2



	b)	Which of the following language is regular? Justify. L1={ $a^n b^m$ |n,m>0} L2={ $a^n b^n$ |n,>0}	8 Marks	L3	CO2
		MODULE-III			
6.	a)	Construct a grammar in GNF which is equivalent to the following grammar S→ AA | a A→ SS | b	8 Marks	L4	CO3
	b)	Differentiate regular expression and regular language.	8 Marks	L4	CO3
		(OR)			
7.	a)	Let G be the grammar S->aB|Ba A->a|aS|bAA B->b|bS|aBB Construct the parse tree and left most and right most derivations for the string aaabbabbba.	8 Marks	L4	CO3
	b)	Prove by pumping lemma, that the language 0n1 n is not regular	8 Marks	L4	CO3
		MODULE-IV			
8.	a)	What are the different types of language accepted by a PDA and define them?	8 Marks	L4	CO4
	b)	Analyze the following PDA acceptance methods: i) From empty Stack to final state. ii) From Final state to Empty Stack.	8 Marks	L4	CO4
		(OR)			
9.	a)	Construct the grammar for the following PDA: M=({q0, q1},{0,1},{X,z0},δ,q0,Z0,Φ) where δ is given by δ(q0,0,z0)={(q0,XZ0)}, δ(q0,0,X)={(q0,XX)}, δ(q0,1,X)={(q1, ε)}, δ(q1,1,X)={(q1, ε)}, δ(q1, ε, X)={(q1, ε)}, δ(q1, ε, Z0)={(q1, ε)}	8 Marks	L4	CO4
	b)	When is Push Down Automata (PDA) said to be deterministic?	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Design a TM to accept the language L={$a^n b^n c^n$ | n > 1 }	8 Marks	L3	CO5
	b)	Briefly explain variants of Turing machine.	8 Marks	L2	CO5
		(OR)			
11.	a)	Design a Turing Machine M to implement the function ‘multiplication’ using the subroutine ‘copy’.	8 Marks	L4	CO5
	b)	List the primary objectives of Turing Machine.	8 Marks	L2	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

DATA MINING

[Information Technology, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the other terminologies referring to data mining?	2Marks	L1	CO1
	b)	List out the applications of data mining.	2Marks	L2	CO1
	c)	What is Association rule?	2Marks	L1	CO2
	d)	What is Confidence?	2Marks	L2	CO2
	e)	What is decision tree?	2Marks	L2	CO3
	f)	What are the requirements of clustering?	2Marks	L2	CO3
	g)	Define web usage mining.	2Marks	L2	CO4
	h)	What is spatial mining?	2Marks	L2	CO4
	i)	What is the primary purpose of multidimensional data visualization?	2Marks	L2	CO5
	j)	How can animation be beneficial in visual data mining?	2Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the following: Describe about Data discretization?	8 Marks	L1	CO1
	b)	Write about Dimensionality reduction methods?	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the following: Data Integration.	8 Marks	L1	CO1
	b)	Data Transformation methods.	8 Marks	L1	CO1

MODULE-II

4.	a)	Discuss about basic concepts of frequent item set mining?	8 Marks	L1	CO2
	b)	Define Association and write the applications of association analysis.	8 Marks	L1	CO2
		(OR)			
5.	a)	Illustrate Apriori Algorithm for mining frequent item set with example?	8 Marks	L2	CO2
	b)	What are the methods to improve effieciency of Apriori Algorithm? Explain.	8 Marks	L1	CO2

MODULE-III

6	a)	Explain the following: Density based clustering methods.	8 Marks	L1	CO3
	b)	Grid based clustering methods.	8 Marks	L1	CO3

(OR)

7.	a)	Discuss about model based clustering methods.	8 Marks	L1	CO3
	b)	How to access the cluster quality?	8 Marks	L1	CO3

MODULE-IV

8.	a)	What is Text Mining and Explain the Text Mining Approaches.	8 Marks	L1	CO4
	b)	Explain text retrieval methods in detail.	8 Marks	L1	CO4

(OR)

9.	a)	Write about Multimedia Data Mining in detail.	8 Marks	L1	CO4
	b)	Explain what is Web Mining.	8 Marks	L1	CO4

MODULE-V

10.	a)	Compare and contrast 3D scatter grams and 3D line graphs in terms of their applications and visual representation of data.	8 Marks	L2	CO5
	b)	Discuss a specific dataset or domain where each of these visualization techniques would be most suitable, providing reasons for your choice.	8 Marks	L2	CO5

(OR)

11.	a)	Describe the concept of Chernoff Faces and how they are used in visualizing multidimensional data.	8 Marks	L1	CO5
	b)	Discuss the advantages and limitations of Chernoff Faces compared to other visualization techniques, such as scatter plots or bar charts.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

ARTIFICIAL INTELLIGENCE

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Artificial intelligence.	2 Marks	L1	CO1
	b)	What are the four main categories of AI applications?	2 Marks	L1	CO1
	c)	List uniformed -search and informed search strategies.	2 Marks	L1	CO2
	d)	Define Bidirectional search.	2 Marks	L1	CO2
	e)	What is the difference between a population and a generation in evolutionary algorithms?	2 Marks	L1	CO3
	f)	Write the advantages of Hill climbing Algorithm.	2 Marks	L1	CO3
	g)	What are the two main components of a Bayesian network?	2 Marks	L1	CO4
	h)	Write the functions of Hidden Markov Model.	2 Marks	L1	CO4
	i)	What are the main types and characteristics of alternative robotic framework?	2 Marks	L1	CO5
	j)	What are the main types and examples of application domains for robots?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define a rational agent? Describe the properties of task environment.	8 Marks	L2	CO1
	b)	Discuss the risks and benefits of artificial intelligence.	8 Marks	L2	CO1
		(OR)			
3.	a)	Distinguish between rationality and omniscience.	8 Marks	L2	CO1
	b)	Construct schematic diagrams for simple-reflex agent and model-based reflex agents.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define problem solving agent? What are the advantages of using problem solving agent.	8 Marks	L1	CO2
	b)	Describe uninformed search strategies with examples.	8 Marks	L2	CO2
		(OR)			
5.	a)	Illustrate with an example explain Greedy best-first search mechanism.	8 Marks	L2	CO2
	b)	Analyze and apply heuristic functions with real world problems.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain local beam search with example.	8 Marks	L2	CO2
	b)	Examine the importance of using Monte Carlo tree search in games to provide optimal decisions.	8 Marks	L2	CO2
		(OR)			
7.	a)	Explain Hill-climbing search algorithm.	8 Marks	L1	CO2
	b)	Discuss the importance and benefits of using evolutionary algorithms for optimization problems.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Elaborate the process of representing knowledge in an uncertain domain.	8 Marks	L2	CO3
	b)	Outline the design issues of Bayesian networks.	8 Marks	L1	CO3
		(OR)			
9.	a)	Discuss the benefits of using kalman-filter in real-time applications to solve linear problems.	8 Marks	L2	CO3
	b)	Examine the importance of using transition and sensor models to handle dynamic situations.	8 Marks	L4	CO3

MODULE-V

10.	a)	Elaborate on the types of robots from the hardware perspective.	8 Marks	L2	CO4
	b)	Write a short note on safety in artificial intelligence.	8 Marks	L3	CO5
		(OR)			
11.	a)	Analyze Monte Carlo localization algorithm using a range-scan sensor model for robots.	8 Marks	L2	CO4
	b)	Discuss the ethics of artificial intelligence and its impact on society.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

ARTIFICIAL INTELLIGENCE

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List any two properties of environment.	2 Marks	L1	CO1
	b)	What is Rational Agent?	2 Marks	L1	CO1
	c)	Explain Blind search technique.	2 Marks	L2	CO2
	d)	Define Heuristic function.	2 Marks	L1	CO2
	e)	What is Global Maxima?	2 Marks	L1	CO2
	f)	What are the drawbacks of the Hill Climbing Algorithm?	2 Marks	L1	CO2
	g)	Define Hidden Markov Model.	2 Marks	L1	CO3
	h)	Explain Kalman Filter.	2 Marks	L2	CO3
	i)	What measures can be taken to address bias in AI algorithms?	2 Marks	L1	CO4
	j)	Define Location Sensors.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is PEAS? Explain different agent environment with their PEAS description.	8 Marks	L1	CO1
	b)	Write an agent program for Vacuum Cleaner World.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the properties of Task Environment?	8 Marks	L2	CO1
	b)	Write short notes on Goal based agent?	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain why problem formulation must follow goal formation.	8 Marks	L2	CO2
	b)	Discuss in detail about Iterative Deepening Search with an example?	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain A* algorithm with an example? What are the limitations of A* algorithm?	8 Marks	L2	CO2
	b)	Differentiate informed and uninformed search strategies.	8 Marks	L2	CO2

MODULE-III

6.	a)	How does the minimax algorithm work in the context of game trees?	8 Marks	L1	CO2
	b)	Explain the four main steps of the Monte Carlo tree search algorithm	8 Marks	L2	CO2

(OR)

7.	a)	Explain the alpha–beta pruning with example?	8 Marks	L2	CO2
	b)	Discuss the impact of the initial state on the performance of Hill-climbing.	8 Marks	L1	CO2

MODULE-IV

8.	a)	Explain how uncertainty is addressed in probabilistic AI models?	8 Marks	L2	CO3
	b)	What is temporal inference in the context of AI, and why is it important in modeling real-world scenarios	8 Marks	L1	CO3

(OR)

9.	a)	Explain the concept of "hidden" states in HMMs and their significance?	8 Marks	L2	CO3
	b)	Discuss the semantics of nodes and edges in a Bayesian network and how they represent variables and dependencies.	8 Marks	L1	CO3

MODULE-V

10.	a)	Name two essential components of robot hardware and their functions.	8 Marks	L1	CO4
	b)	What is robotic perception? Explain briefly?	8 Marks	L2	CO4

(OR)

11.	a)	How can transparency in AI decision-making be achieved?	8 Marks	L1	CO5
	b)	Discuss in detail about prime application domains for robotic technology.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

MACHINE LEARNING USING PYTHON

[Computer Science and Engineering, Computer Science and Engineering(Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Differentiate between classification and regression in the context of machine learning.	2 Marks	L1	CO1
	b)	Write two examples each of supervised and unsupervised learning algorithms.	2 Marks	L1	CO1
	c)	Define linear regression.	2 Marks	L1	CO2
	d)	Outline the concept of least squares estimation in the context of regression analysis.	2 Marks	L2	CO2
	e)	Identify a characteristic feature of Support Vector Machines (SVMs) in classification.	2 Marks	L2	CO2
	f)	How does the Information Gain measure contribute to attribute selection in decision trees?	2 Marks	L2	CO2
	g)	Write the perceptron rule for updating weights in the neural network.	2 Marks	L2	CO3
	h)	What is a learning rate?	2 Marks	L2	CO3
	i)	List two general applications of clustering algorithms.	2 Marks	L1	CO5
	j)	Define the concept of "dissimilarity" between objects in the context of clustering.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Demonstrate the step-by-step process of applying machine learning to a dataset, emphasizing key considerations.	8 Marks	L3	CO1
	b)	Discuss the uses and abuses of machine learning.	8 Marks	L2	CO1
		(OR)			
3.	a)	Demonstrate the importance of supervised learning with suitable examples.	8 Marks	L3	CO1
	b)	Explain the basic mechanism through which the machines learn.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss why least squares estimation is a commonly used method in linear regression, considering its advantages and limitations.	8 Marks	L3	CO2
	b)	Compare the principles of maximum likelihood estimation and least squares estimation, discussing their similarities and differences.	8 Marks	L2	CO2

(OR)

5.	a)	Explain the concept of multiple linear regression, emphasizing how it extends simple linear regression.	8 Marks	L3	CO2
	b)	Elaborate on the significance of partial regression coefficients in multiple linear regression, discussing their individual roles.	8 Marks	L2	CO2

MODULE-III

6.		Describe the working principles of the Support Vector Machine (SVM) algorithm. Explain how SVM constructs a hyper-plane to separate classes in both linear and non-linear scenarios, including its use of kernel functions for handling non-linear data.	16 Marks	L3	CO2

(OR)

7.	a)	Compare and contrast the model evaluation techniques ROC curves and precision-recall curves.	8 Marks	L2	CO2
	b)	Explain the concept of Cost-Benefit Analysis (CBA) in the context of classification models.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Explain the back propagation algorithm in detail.	8 Marks	L2	CO3
	b)	Discuss how it is used to train a multi-layer perceptron (MLP) by adjusting weights to minimize the error. Include a step-by-step breakdown of the back propagation process.	8 Marks	L3	CO3

(OR)

9.	a)	Evaluate the effectiveness of Bagging in improving model performance. Discuss the underlying principles and scenarios where Bagging is particularly beneficial.	8 Marks	L4	CO3
	b)	Compare and contrast Bagging with Boosting in terms of their underlying principles. Discuss scenarios where Boosting might be preferred over Bagging and vice versa.	8 Marks	L2	CO3

MODULE-V

10.	a)	Discuss the basic clustering algorithm of DBSCAN and its advantages.	8 Marks	L3	CO5
	b)	Evaluate the impact of different distance metrics on the clustering results in DBSCAN.	8 Marks	L4	CO5

(OR)

11.	a)	Explain the linkage methods used in hierarchical agglomerative clustering.	8 Marks	L3	CO5
	b)	Analyze the strengths and weaknesses of the K-means clustering algorithm.	8 Marks	L4	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Differentiate static and non-static variable.	2 Marks	L2	CO1
	b)	Describe the significance of new keyword.	2 Marks	L2	CO1
	c)	What is byte code?	2 Marks	L1	CO1
	d)	Define a thread and process.	2 Marks	L1	CO2
	e)	Differentiate throw and throws.	2 Marks	L2	CO2
	f)	What is the necessity of data types and discuss about various data types in JAVA.	2 Marks	L1	CO1
	g)	Define collections framework and state its goals.	2 Marks	L1	CO3
	h)	Compare hashmap and hashset.	2 Marks	L2	CO3
	i)	What is the purpose of Java applet?	2 Marks	L1	CO4
	j)	List out the swing components.	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 X 16 = 80 Marks

MODULE-I

2.	a)	Illustrate though a Java program how encapsulation can be achieved.	8 Marks	L2	CO1
	b)	Develop a java program to read a sentence from the user and display the string after altering each character's case. Example: I/P—HeLlo Java O/P—hElLOjAVA	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss clearly about the Java operators, their precedence and association rules.	8 Marks	L2	CO1
	b)	Write a Java program to read a sentence from the user and perform the following operations based on user choice. a) Find the indexes of given characters in the string. b) Change all the alphabet cases into upper case c) Count the and display the words in the string HINT: Use string class and tokenizer.	8 Marks	L3	CO1

		MODULE-II			
4.	a)	Develop a java program to implement multilevel inheritance with 4 levels of hierarchy.	8 Marks	L3	CO1
	b)	How to add new class to a package? Explain with an example.	8 Marks	L2	CO1
		(OR)			
5.	a)	What is an interface? State its need and write syntax and features of interface.	8 Marks	L2	CO1
	b)	Explain method overriding with suitable example.	8 Marks	L2	CO1
		MODULE-III			
6.	a)	What is exception? Explain the syntax of try block and catch block with an example.	8 Marks	L2	CO2
	b)	Define multithreading in Java and develop a Java program that demonstrates creation of threads using Runnable interface.	8 Marks	L3	CO2
		(OR)			
7.	a)	Describe complete life cycle of thread.	8 Marks	L2	CO2
	b)	Develop a Java program that demonstrates nested try statements.	8 Marks	L3	CO2
		MODULE-IV			
8.	a)	Define collection interface and discuss any two collection interfaces clearly.	8 Marks	L2	CO3
	b)	Explain the usage of comparator with an example Java program.	8 Marks	L3	CO3
		(OR)			
9.	a)	Develop a Java program that reads and displays list of elements using Array List.	8 Marks	L3	CO3
	b)	Explain the methods defined by Vector with examples.	8 Marks	L2	CO3
		MODULE-V			
10.	a)	Explain Applet life cycle in detail.	8 Marks	L2	CO4
	b)	What is Swing? Explain various components in swing?	8 Marks	L2	CO4
		(OR)			
11.	a)	Explain about Delegation Event Model in Event Handling.	8 Marks	L2	CO4
	b)	Develop a Java programs to find check whether the given number is even or odd. User is allowed to enter a number into the text field. On pressing the button, the value of the text field is firstly converted into integer and then processed to check for even or odd. The result will get displayed in another text field. (Hint: use swings).	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

COMPUTER NETWORKS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Classify the networks based on size.	2 Marks	L1	CO1
	b)	What is the difference between broadcasting and multicasting?	2 Marks	L1	CO1
	c)	Why the slotted aloha is better than pure aloha?	2 Marks	L1	CO3
	d)	List the different types of framing techniques.	2 Marks	L1	CO3
	e)	Differentiate static routing with dynamic routing.	2 Marks	L1	CO2
	f)	Explain the concept of Flooding algorithm.	2 Marks	L1	CO2
	g)	What are the different services provided by transport layer?	2 Marks	L1	CO3
	h)	Draw the UDP Header format.	2 Marks	L1	CO3
	i)	Explain the significance of DNS.	2 Marks	L1	CO4
	j)	Mention the responsibility of Message Transfer Agent in Email system.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Examine the differences between connection-oriented and connectionless service.	8 Marks	L2	CO1
	b)	Explain TCP/IP reference model with a neat diagram.	8 Marks	L1	CO1
		(OR)			
3.	a)	What is Internet? Explain the Architecture of Internet with a neat Sketch.	8 Marks	L1	CO1
	b)	Mention the key components in an optical transmission system. State the advantages of fiber optic cable over twisted pair.	8 Marks	L1	CO1

MODULE-II

4.	a)	Write the steps to compute the check sum in CRC based error detection mechanism. Determine CRC for the frame 1 1 0 1 1 1 0 1 1 and the generator polynomial = $x^4 + x + 1$. Write down the transmitted frame.	8 Marks	L3	CO3
	b)	Explain in detail about the Elementary data link protocols.	8 Marks	L1	CO3
		(OR)			
5.	a)	With the help of neat diagrams show that Slotted Aloha improves the performance over Pure Aloha.	8 Marks	L2	CO3
	b)	Summarize the collision free protocols that resolve the contention for the channel during the contention period.	8 Marks	L2	CO3

MODULE-III

6.	a)	With the help of an example, demonstrate the process of updating the routing table in distance vector routing and list down the limitations.	8 Marks	L2	CO2
	b)	Draw and explain all the fields of IPv4 (Internet Protocol) header.	8 Marks	L2	CO2
		(OR)			
7.	a)	Demonstrate the working of Dijkstra's shortest path algorithm with the help of an example.	8 Marks	L2	CO2
	b)	What is the purpose of internet addressing? Explain in detail classful addressing scheme with illustrations.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Write an overview of the TCP protocol and explain all the fields of the protocol header.	8 Marks	L1	CO3
	b)	Explain various flow control mechanisms adopted in TCP.	8 Marks	L1	CO3
		(OR)			
9.	a)	Discuss in detail about Real time transport protocol (RTP) and Real-time Transport Control Protocol (RTCP).	8 Marks	L2	CO3
	b)	Illustrate the Scenarios for establishing a TCP connection using a Three-Way Handshake.	8 Marks	L2	CO3

MODULE-V

10.	a)	Explain the five basic functions supported in e-mail systems.	8 Marks	L1	CO4
	b)	What is name-address resolution? Describe its components along with the types of resolution approaches.	8 Marks	L2	CO4
		(OR)			
11.	a)	Discuss the features of HTTP and explain how HTTP works	8 Marks	L1	CO4
	b)	When user clicks a hyperlink, what are the steps that occur between the user's click and the page being displayed?	8 Marks	L1	CO4

B

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

COMPUTER NETWORKS

[Information Technology, Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List some of the social issues related to computer networks.	2 Marks	L1	CO1
	b)	Write the differences between LED and Semiconductor Laser.	2 Marks	L1	CO1
	c)	Explain about flow control mechanism.	2 Marks	L1	CO3
	d)	Describe the drawbacks of the stop and wait protocol.	2 Marks	L1	CO3
	e)	Briefly state count to infinity problem.	2 Marks	L1	CO2
	f)	Why was IPv6 developed, and what are its main advantages over IPv4?	2 Marks	L1	CO2
	g)	Mention the responsibilities of Transport layer.	2 Marks	L1	CO3
	h)	Draw the UDP Header format	2 Marks	L1	CO3
	i)	Explain the role of Hypertext Transfer Protocol (HTTP) in web communication.	2 Marks	L1	CO4
	j)	Mention the record types of DNS resource record.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the principles of wireless transmission in networking. Discuss the challenges and advantages of wireless communication in comparison to wired communication.	8 Marks	L2	CO1
	b)	Classify computer networks based on scale and explain them in brief.	8 Marks	L2	CO1
		(OR)			
3.	a)	Compare and contrast the OSI and TCP/IP reference models, highlighting their similarities and differences. Explain their importance in networking.	8 Marks	L2	CO1
	b)	Analyze the concept of packet switching in detail, including how it works and why it has become the dominant switching technology in modern networks.	8 Marks	L2	CO1

MODULE-II

4.	a)	For a 12-bit data string of 101100010010, determine the number of Hamming bits required, arbitrarily place the Hamming bits into the data string, determine the logic condition of each Hamming bit, assume an arbitrary single-bit transmission error, and prove that the Hamming code will successfully detect the error.	8 Marks	L3	CO3

	b)	Explain and demonstrate Selective repeat sliding window Protocol with an example.	8 Marks	L2	CO3
		(OR)			
5.	a)	Discuss the conceptual model of CSMA with Collision Detection with relevant diagrams	8 Marks	L2	CO3
	b)	Explain Bit-map Protocol and Binary Countdown protocol With the help of neat diagrams. Explain the advantage of Binary Countdown over Bit-map protocol.	8 Marks	L2	CO3
		MODULE-III			
6.	a)	Define congestion control in the context of computer networking. What are the primary goals and challenges associated with congestion control?	8 Marks	L2	CO2
	b)	Explore various approaches and algorithms used for network congestion control.	8 Marks	L2	CO2
		(OR)			
7.	a)	Explain the concept of hierarchical routing in computer networking. How does it address the scalability challenges faced by other routing schemes?	8 Marks	L2	CO2
	b)	What is the format of IPv4 header? Describe the significance of each field	8 Marks	L2	CO2
		MODULE-IV			
8.	a)	Provide a comprehensive overview of the TCP three-way handshake in the context of connection establishment.	8 Marks	L1	CO3
	b)	Explain the purpose and importance of the following header fields of TCP (i) Version (ii) Type of service (iii) Header checksum (iv) Sequence number	8 Marks	L1	CO3
		(OR)			
9.	a)	Analyze the characteristics of Real-time Transport Protocols (RTP) and their significance in real-time multimedia applications.	8 Marks	L2	CO3
	b)	Explain the exponential increase, additive increase and multiplicative decrease congestion policies of TCP.	8 Marks	L2	CO3
		MODULE-V			
10.	a)	Explore the concept of Uniform Resource Locators (URLs) and their role in identifying web resources. How are URLs structured?	8 Marks	L1	CO4
	b)	Discuss the hierarchical structure of the DNS name space. How do top-level domains, second-level domains, and subdomains relate to each other?	8 Marks	L2	CO4
		(OR)			
11.	a)	Trace the path of an email message from its creation to final delivery, highlighting the steps involved in message transfer.	8 Marks	L2	CO4
	b)	Explain the Hypertext Transfer Protocol (HTTP) and its role in facilitating communication between web clients and servers.	8 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

INTERNET OF THINGS

[Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the equation for the IoT conceptual framework for enterprise processes.	2 Marks	L1	CO1
	b)	Draw the IoT architectural view.	2 Marks	L1	CO1
	c)	Why ADC is required.	2 Marks	L1	CO2
	d)	What is smart sensor.	2 Marks	L1	CO2
	e)	State simulator.	2 Marks	L1	CO3
	f)	What is Amazon EC2.	2 Marks	L1	CO3
	g)	Illustrate about home intrusion detection.	2 Marks	L1	CO3
	h)	Write the steps involved in purpose & requirements specification.	2 Marks	L1	CO3
	i)	Define threat analysis.	2 Marks	L1	CO5
	j)	How do you define message privacy.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Mention the communication protocols used for M2M local area networks.	8 Marks	L4	CO1
	b)	Briefly Explain about data enrichment.	8 Marks	L2	CO1
		(OR)			
3.	a)	Interpret Network Function Virtualization	8 Marks	L2	CO1
	b)	Compare any two communication technologies.	8 Marks	L4	CO1

MODULE-II

4.	a)	Describe on Internet connectivity.	8 Marks	L4	CO2
	b)	Illustrate the sensor technology in IoT.	8 Marks	L2	CO2
		(OR)			
5.	a)	State the difference between static and dynamic IP address.	8 Marks	L3	CO2
	b)	Memorize on Internet Protocols.	8 Marks	L1	CO2

MODULE-III

6.	a)	Demonstrate the features of mBed that distinguish it from Arduino.	8 Marks	L3	CO3
	b)	Outline the software components required for connecting sensors and actuators to the internet.	8 Marks	L2	CO3
		(OR)			
7.	a)	What is Amazon DynamoDB? Describe an application that can benefit from Amazon DynamoDB.	8 Marks	L4	CO3
	b)	Summarize the internet connectivity.	8 Marks	L2	CO3

MODULE-IV

8.	a)	State the purpose of information model?	8 Marks	L4	CO3
	b)	What are the objects and their uses at city parking spaces and gateways domain?	8 Marks	L2	CO3
		(OR)			
9.	a)	List the steps involved in IoT system design methodology and discuss.	8 Marks	L2	CO3
	b)	Describe an application that can benefit from Amazon DynamoDB.	8 Marks	L2	CO3

MODULE-V

10.	a)	What do you mean by trust?	8 Marks	L2	CO5
	b)	List the physical cum data link layer attacks in layered attack model.	8 Marks	L2	CO5
		(OR)			
11.	a)	Identity the need of non-Repudiation.	8 Marks	L2	CO5
	b)	Illustrate steps to authenticate two end points communicating the message.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

STRUCTURAL ANALYSIS

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Discuss the Macaulay's method.	2 Marks	L1	CO1
	b)	Discuss the double integration method.	2 Marks	L1	CO1
	c)	Write the expression for the strain energy stored in an element due to the bending moment.	2 Marks	L2	CO2
	d)	What is the basic difference between truss and beam?	2 Marks	L2	CO2
	e)	What are the limitations or drawbacks of the slope deflection method in structural analysis?	2 Marks	L2	CO3
	f)	What are the essential equations used in the slope deflection method?	2 Marks	L2	CO3
	g)	What is the stiffness factor in moment distribution method?	2 Marks	L1	CO4
	h)	Define the rotation factor in Kani's Method.	2 Marks	L1	CO4
	i)	Define the plastic axis in plastic analysis.	2 Marks	L1	CO5
	j)	What is the significance of moving loads in structural analysis?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

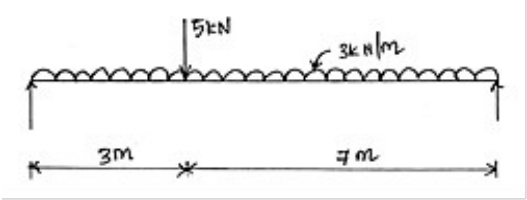
5 x 16 = 80 Marks

MODULE-I

2.	a)	A beam having cross section 300 mm x 400 mm and length 4 m is subjected to an udl of 5 kN/m throughout. Determine the maximum deflection and slope at the ends.	8 Marks	L4	CO1
	b)	Derive the expression for slope and deflection of a cantilever beam of length 'l' subjected to a uniformly distributed load 'w/m' through the entire span.	8 Marks	L4	CO1

(OR)

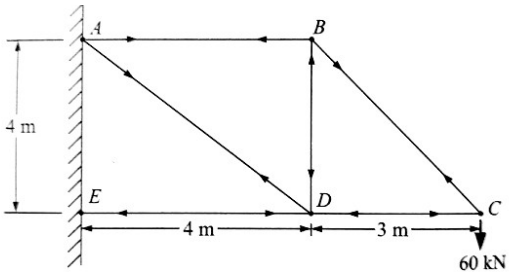
3.	a)	A simply supported beam 10 m long is loaded as shown in Fig.1. Determine the deflection under the concentrated load and the maximum deflection using Macaulay's method.	8 Marks	L4	CO1



	b)	Find the maximum deflection of a cantilever beam, 3 meters long, subjected to a uniformly distributed load of 12 kN/m. The beam has a T-section with dimensions as follows: flange width = 150 mm, flange thickness = 10 mm, web depth = 300 mm, and web thickness = 15 mm. The modulus of elasticity is 200 GPa.	8 Marks	L4	CO1

MODULE-II

4. a) Determine the vertical deflection of point D in the truss shown in Fig. The cross-sectional areas of members AD and DE are 1500 mm2 while those of other members are 1000 mm2. Take E = 200 kN/mm2. — 8 Marks — L4 — CO2



b) A fixed beam with a span of 6 meters is subjected to a triangular load varying from 0 kN/m at one support to 40 kN/m at the other. Determine the maximum deflection at the mid-span using the energy method. The flexural rigidity is 1200 kN·m². — 8 Marks — L4 — CO2

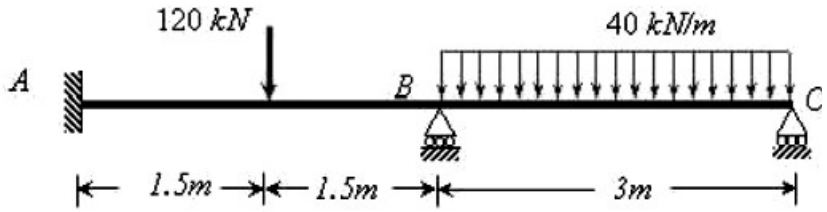
(OR)

5. a) A fixed beam of 8 m span carries a uniformly distributed load of 40 kN/m run over 4 m length starting from left end and a concentrated load of 80 kN at 6 m from the left-hand end. Find: — 10 Marks — L4 — CO2
   (i) Moments at the supports
   (ii) Deflection at the center of the beam.
   Take EI = 15000 kN-m^2.

b) A simply supported beam of length 9 meters carries a uniformly distributed load of 15 kN/m. Using the energy method, determine the maximum deflection at the midpoint of the beam if its flexural rigidity is 1300 kN·m². — 6 Marks — L4 — CO2

MODULE-III

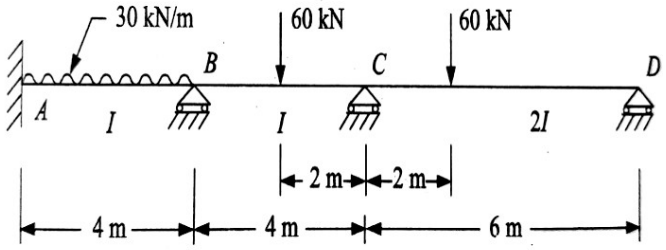
6. a) Analyze the continuous beam shown in Figure by the three-moment equation. Draw the shear force and bending moment diagram. — 10 Marks — L4 — CO3



b) A continuous beam ABCD has three equal spans of length 'l' each. It carries a uniformly distributed load w/unit length over its entire length. It is freely supported on all supports, which are at the same level. Draw the B.M. and S.F. diagrams for this beam. — 6 Marks — L4 — CO3

(OR)

7. a) Analyse the continuous beam ABCD shown in Fig. by slope deflection method and draw the bending moment diagram. — 8 Marks — L4 — CO3



b)	Determine the bending moment at the support of the middle span for a continuous beam with two equal spans of 8 meters each, subjected to a concentrated load of 30 kN at the mid-span of each span.	8 Marks	L4	CO3

MODULE-IV

8.	Analyse the continuous beam shown in Fig. by Kani's method. Flexural rigidity is constant throughout.	16 Marks	L4	CO3

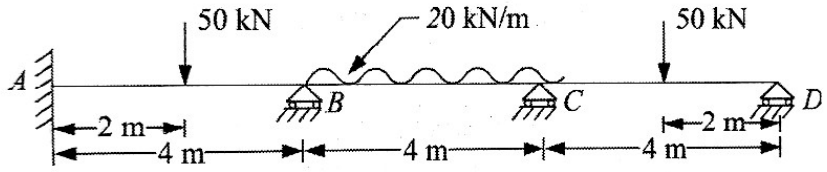


Fig.4

(OR)

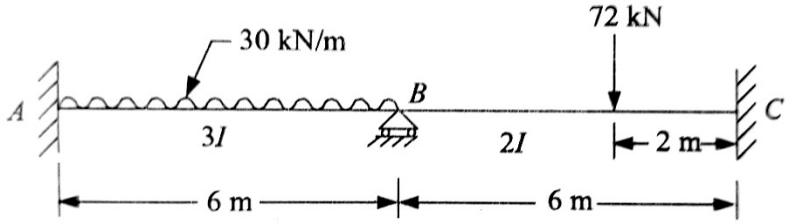
9.	Calculate the support reactions for a continuous beam with three spans of lengths 8 meters, 6 meters, and 8 meters, subjected to a uniform load of 20 kN/m over the entire length.	16 Marks	L4	CO3

MODULE-V

10.	A system of 5 loads of 80 kN, 160 kN, 160 kN, 60 kN and 40 kN crosses a beam of 20 m span with 80 kN load leading. The distance between the loads are 2.4 m, 3 m, 2.4 m and 1.8 m respectively. Using influence lines, find the maximum bending moment at the centre of the span.	16 Marks	L4	CO4

(OR)

11.	Calculate the plastic moment capacity required for the continuous beam with working loads shown in Fig.	16 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

FIRE ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the three elements of fire?	2 Marks	L1	CO1
	b)	How does explosion kill you?	2 Marks	L2	CO1
	c)	Does a fire alarm system have to be monitored?	2 Marks	L2	CO2
	d)	Why is the fire station important?	2 Marks	L2	CO2
	e)	How do fire protection systems work?	2 Marks	L2	CO3
	f)	List the special fire suppression systems.	2 Marks	L1	CO3
	g)	Define fire load.	2 Marks	L1	CO4
	h)	How do you assess the fire damage to concrete structural members.	2 Marks	L4	CO4
	i)	Mention the principles of explosion.	2 Marks	L2	CO5
	j)	List out various inert gases in fire protection.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe in detail the types of fires and how to prevent them.	8 Marks	L3	CO1
	b)	Compare between combustion and explosion.	8 Marks	L4	CO1
		(OR)			
3.		Write short notes on: i) Shock waves ii) Auto-ignition iii) vapour clouds	16 Marks	L3	CO1

MODULE-II

4.	a)	Mention the sources of ignition in fire.	8 Marks	L2	CO2
	b)	Explain the fire stoppers, alarm and detection systems in fire.	8 Marks	L4	CO2
		(OR)			
5.		Discuss about the fire station and the maintenance of fire trucks.	16 Marks	L3	CO2

MODULE-III

6.		Explain the special fire suppression systems	16 Marks	L4	CO3
		(OR)			
7.		As an engineer, how would you describe safety as an essential parameter in designing industrial production system?	16 Marks	L4	CO3

MODULE-IV

8.	a)	Discuss in detail structural fire protection.	8 Marks	L2	CO4
	b)	What do you understand by fire resistance building?	8 Marks	L2	CO4
		(OR)			
9.		Write importance on: i) Exit requirements ii) Width calculations	16 Marks	L2	CO4

MODULE-V

10.	a)	Give details on explosion parameters and explosion protection.	8 Marks	L2	CO5
	b)	Discuss the importance of flame arrestors.	8 Marks	L2	CO5
		(OR)			
11.		Analyze the functioning of Rupture disc in process vessels and lines explosion and mention its advantages.	16 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

SUSTAINABLE ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out any two principles of sustainability.	2 Marks	L1	CO1
	b)	What are the objectives of Basel convention?	2 Marks	L2	CO1
	c)	Define sustainability metrics and assessment tools.	2 Marks	L1	CO2
	d)	Define environmental health risk assessment.	2 Marks	L1	CO2
	e)	What is meant by sustainable building? Mention any two factors considered in design of it.	2 Marks	L2	CO3
	f)	What are the objectives of sustainable remediation of contaminated sites?	2 Marks	L1	CO3
	g)	Mention the goal and scope of sustainable engineering.	2 Marks	L1	CO4
	h)	List out the grading of certificates provided in LEED green rating system.	2 Marks	L1	CO4
	i)	Which factors should be considered in poverty eradication according to UNSDG?	2 Marks	L2	CO5
	j)	Define industrial ecology.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define and briefly discuss importance of sustainable development to the society.	8 Marks	L2	CO1
	b)	List out any two global emerging challenges and discuss your opinions on it to solve it in a sustainable way.	8 Marks	L4	CO1
		(OR)			
3.	a)	Briefly explain about availability and depletion of natural resources such as water and forest with respect to sustainability.	8 Marks	L2	CO1
	b)	What are the factors affecting Sustainable Development (SD)? Explain.	8 Marks	L4	CO1

MODULE-II

4.	a)	Analyze the different sustainability indicators.	8 Marks	L4	CO2
	b)	Describe about various sustainable development assessment tools.	8 Marks	L2	CO2
		(OR)			
5.	a)	What is meant by carbon footprint? Discuss about its impact on environment.	8 Marks	L2	CO2
	b)	List out the industrial occupational health hazards and briefly explain about any one of them.	8 Marks	L2	CO2

MODULE-III

6.	a)	Analyze the various components of hierarchy of waste management.	8 Marks	L4	CO3
	b)	What is meant by Green building? Explain.	8 Marks	L2	CO3
		(OR)			
7.	a)	What are the reasons for contamination of soil? Discuss.	8 Marks	L4	CO3
	b)	What did you understand by the term sustainable infrastructure? Illustrate.	8 Marks	L2	CO3

MODULE-IV

8.		Discuss the criteria followed in selection of materials for engineering projects to make it as sustainable project with examples and case studies.	16 Marks	L4	CO4
		(OR)			
9.	a)	Differentiate between ENVISION and GRIHA.	8 Marks	L4	CO4
	b)	Explain the objectives of sustainable engineering infrastructure projects.	8 Marks	L2	CO4

MODULE-V

10.	a)	List out the United Nations Sustainable Goals and discuss about any one of them.	8 Marks	L2	CO5
	b)	Analyze the pollution control techniques used in wastewater treatment with examples.	8 Marks	L4	CO5
		(OR)			
11.	a)	Relate unsustainable urbanization to the growing water scarcity in our country and suggest a way to overcome the same.	8 Marks	L4	CO5
	b)	Discuss importance of zero energy concept.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

HYDROLOGY AND WATER RESOURCES ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List any two practical applications of hydrology.	2 Marks	L2	CO1
	b)	Define orographic precipitation.	2 Marks	L1	CO1
	c)	State the purpose of infiltrometer.	2 Marks	L1	CO2
	d)	Classify runoff.	2 Marks	L2	CO2
	e)	Define unit hydrograph.	2 Marks	L1	CO3
	f)	Calculate the discharge for an area of 100 sq km with a constant of 12 using Rhyve's formulae.	2 Marks	L4	CO3
	g)	List any two principles of water resources planning.	2 Marks	L2	CO5
	h)	List any two objectives of water resources planning.	2 Marks	L2	CO5
	i)	Mention the purpose of reservoir.	2 Marks	L1	CO6
	j)	Define safe yield.	2 Marks	L1	CO6

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Classify weather seasons in India and explain different types of precipitation.	8 Marks	L2	CO1
	b)	There are four rain gauge stations existing in the catchment of a river. The annual rainfall values at these stations are 800, 620, 400 and 540 mm respectively. Determine the optimum number of raingauges if it is desired to limit the error in the mean value of rainfall in the catchment to 10%. How many more gauges will then be required to be installed.	8 Marks	L4	CO1

(OR)

3.	a)	List errors occurred during measurement of rainfall and explain analysis and interpretation of rainfall data with a neat sketch.	8 Marks	L2	CO1
	b)	Discuss advantages and disadvantages of various methods to estimate the average depth of rainfall over a basin.	8 Marks	L4	CO1

MODULE-II

4.	a)	List and explain various factors affecting runoff and state the relationship between rainfall and runoff.	8 Marks	L2	CO2
	b)	Check the consistency of rainfall data with a suitable sketch and explain.	8 Marks	L2	CO2

(OR)

5.	a)	Discuss the measurement of stream flow using area velocity and moving boat method.	8 Marks	L4	CO2

	b)	Classify zones of groundwater with a neat sketch. Explain different saturated formations occurred.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain the procedure to determine odd multiple ordinates using S curve hydrograph.	8 Marks	L2	CO3
	b)	Flood frequency computations for the river Chambal at Gandhisagar by using Gumbel's method yielded the following results: Estimate the flood magnitude in this river with a return period of 500 years.	8 Marks	L4	CO3

Return Period T (Years)	Peak Flood (cumec)
50	809
100	300

(OR)

7.	a)	The mean annual flood of a river is 6000 m^3/s and the standard deviation of the annual flood time series is 150 m^3/s. What is the probability of the flood of magnitude 1000 m^3/s occurring in the river within next 5 years? Use Gumbel's method and assume the sample size to be very large.	8 Marks	L2	CO4
	b)	Explain the procedure to determine magnitude of flood using Log Pearson method.	8 Marks	L2	CO4

MODULE-IV

8.	a)	Classify levels of planning and explain international level of planning.	8 Marks	L2	CO5
	b)	Explain functional requirements of water resources projects.	8 Marks	L2	CO5

(OR)

9.	a)	Explain various steps in water resources planning.	8 Marks	L2	CO5
	b)	Describe positive impacts in case of environmental aspects in water resources planning.	8 Marks	L2	CO5

MODULE-V

10.	a)	Determine the estimation of reservoir and explain useful life of a reservoir.	8 Marks	L2	CO6
	b)	Describe reservoir sedimentation and control.	8 Marks	L2	CO6

(OR)

11.	a)	Discuss various problems due to reservoir sedimentation in India.	8 Marks	L2	CO6
	b)	Classify dams and explain briefly.	8 Marks	L2	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Sketch the phase diagram of a soil and indicate the volumes and weights of the phases on it.	2 Marks	L2	CO1
	b)	In a saturated soil mass, if water content is 24% and specific gravity of soil is 2.64, estimate porosity.	2 Marks	L4	CO1
	c)	The void ratio of a soil is 0.8 and the superficial velocity through the soil is 2x10-5 cm/s. Find the seepage velocity.	2 Marks	L4	CO2
	d)	What is quick sand condition?	2 Marks	L2	CO2
	e)	Define stress isobar or pressure bulb with neat sketch	2 Marks	L1	CO3
	f)	Mention the use of Proctor's test	2 Marks	L2	CO3
	g)	What are the stages of consolidation?	2 Marks	L1	CO4
	h)	Differentiate between normally consolidated soil and over-consolidated soil.	2 Marks	L4	CO4
	i)	Calculate the angle of internal friction of a dry cohesion less soil specimen which was tested in a triaxial machine with the cell pressure of 25 kPa and a deviator stress of 75 kPa.	2 Marks	L4	CO5
	j)	Define Skempton's pore pressure coefficients	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are the clay minerals? How does clay adsorb water? Explain.	8 Marks	L2	CO1
	b)	The mass of a moist sample collected from the field is 645 g, and its oven dry mass is 405.76 g. If G = 2.68 and the void ratio of the soil in the field is 0.83, determine i) moist density in the field, ii) dry density in the field, iii) amount of water to be added per m^3 of soil in the field for saturation, and iv) saturated density.	8 Marks	L4	CO1
		(OR)			
3.	a)	Define and explain: Liquid limit; Plastic limit; Shrinkage limit; and Plasticity index. Briefly describe the procedure to determine the liquid limit of a soil by Casagrande's method	8 Marks	L3	CO1
	b)	Atterberg's limits of a clay sample are, liquid limit = 59%, plastic limit = 43% and natural moisture content = 51%. Determine: i) liquidity index ii) consistency index iii) plasticity index.	8 Marks	L4	CO1

MODULE-II

4.	a)	Discuss the factors affecting the permeability of soils. State the limitations of Darcy's law.	8 Marks	L1	CO2
	b)	In a constant head permeameter test, the following observations were taken. Distance between piezometer tappings = 15 cm, difference of water levels in piezometers = 40 cm, diameter of the test sample = 5 cm, quantity of water collected = 500 ml, duration of the test = 900 sec. Determine the coefficient of permeability of the soil. If the dry mass of the 15 cm long sample is 486 g and specific gravity of the solids is 2.65, calculate the seepage velocity of water during the test.	8 Marks	L4	CO2

(OR)

5.	a)	Explain the phenomena of quick sand condition. Discuss the ill effects of quick sand condition on built environment.	8 Marks	L1	CO2
	b)	The water table in a deposit of sand 8 m thick, is at a depth of 3 m below the ground surface. Above the water table, the sand is saturated with capillary water. The bulk density of sand is 19.62 kN/m^3. Calculate the effective pressure at 1 m, 3 m, and 8 m below the ground surface and effective pressure over the depth of 8 m.	8 Marks	L4	CO2

MODULE-III

6.	a)	Write approximate methods of calculating vertical stress distribution in soil, with neat sketches.	8 Marks	L2	CO3
	b)	A point load of 500 kN due to a monument acts on the ground surface. Calculate the vertical pressures at point 5 m directly below the load and at a distance of 4 m from the load. Assume $\mu = 0$. Use i) Boussinesq's analysis ii) Westergaard's analysis.	8 Marks	L4	CO3

(OR)

7.	a)	Explain about field compaction quality control, in detail. Discuss about the latest compaction equipment.	8 Marks	L3	CO3
	b)	There are two borrow areas A and B which have soils with void ratios of 0.80 and 0.70 respectively. The in-place water content is 20% and 15% respectively. The fill at the end of construction will have a total volume of 10000 m^3, bulk density of 2 Mg/m^3 and a placement water content of 22%. Determine the volume of the soil required to be excavated from both areas. Take G=2.65. If the cost of excavation of soil and transportation is Rs. 200/100 m^3 for area A and Rs. 220/100 m^3 for area B, which of the borrow area is more economical?	8 Marks	L4	CO3

MODULE-IV

8.	a)	What is the time factor? How it is related to the average degree of consolidation? Describe a suitable procedure for determining preconsolidation pressure.	8 Marks	L3	CO4
	b)	A 24 mm thick undisturbed sample of saturated clay is tested in the laboratory with drainage allowed on both faces. The sample reaches 50% degree of consolidation in 45 minutes. If the clay layer from which the sample was obtained is 4.8 m thick and is free to drain at both of its faces, calculate the time required for the clay layer to undergo the same degree of consolidation. What would have been the time of consolidation if the clay layer has only single drainage? Assume uniform distribution of	8 Marks	L4	CO4

consolidating pressure.

(OR)

9.	a)	State the assumptions made in Terzaghi's theory of one dimensional consolidation. List the curve fitting methods to determine the coefficient of consolidation and explain in brief.	8 Marks	L2	CO4
	b)	There is clay layer 8 m thick with a layer of sand on either side. An undisturbed sample 2.5 cm thick of the clay when tested in the laboratory required 25 minutes to reach 50% consolidation ($T_v = 0.20$). It is proposed to construct a building at the above site. Estimate the time required for 90% consolidation to take place ($T_v = 0.85$).	8 Marks	L4	CO4

MODULE-V

10.	a)	Discuss unconfined compression test with neat sketch as per IS Code. Is this test can be used of c-ϕ soils? Explain. In an unconfined compression test, a sample of 7.5 cm long and 3.5 cm in diameter fails under a load of 90 N at 10% strain. Compute the unconfined compressive strength and shear strength of the sample.	8 Marks	L4	CO5
	b)	A series of three consolidated undrained test were conducted on an identical clay specimen of 50 mm diameter and height of 120 mm. Deviator load at failure 'P_f', confining pressure 'σ_3' and pore water pressure 'U' recorded are presented below. Determine total and effective strength parameters either by analytical or Mohr Circle method.	8 Marks	L4	CO5

Trial No.	**P_f (N)**	**σ_3 (kN/m^2)**	**U (kN/m^2)**
1	100	510	-65
2	200	720	-10
3	300	1120	80

(OR)

11.	a)	Discuss the shear strength characteristics of cohesive soils. Is shear strength of soil affects the safety of substructure? Explain.	8 Marks	L4	CO5
	b)	In an in-siut vane shear test on a saturated clay, a torque of 35 Nm was required to shear the soil. The diamter of the vane was 50 mm and length 100 mm. Calculate the undrained shear strength of the clay. The vane was then rotated rapidly to cause remoulding of the soil. The torque required to shear the soil in the remoulded state was 5 Nm. Determine the sensitivity of the clay.	8 Marks	L4	CO5

A

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the term algorithm and state the criteria the algorithm should satisfy?	2 Marks	L1	CO1
	b)	Define asymptotic notations: big 'Oh', omega and theta?	2 Marks	L2	CO1
	c)	What is meant by divide and conquer? Give the recurrence relation for divide and conquer?	2 Marks	L1	CO2
	d)	Discuss about union operation on sets?	2 Marks	L1	CO2
	e)	Define general method of dynamic programming.	2 Marks	L2	CO3
	f)	State the time efficiency of floyd's algorithm.	2 Marks	L1	CO3
	g)	Write the control abstraction for greedy method.	2 Marks	L1	CO4
	h)	Define sum of subsets.	2 Marks	L2	CO4
	i)	What are NP- hard and Np-complete problems?	2 Marks	L1	CO5
	j)	Define the principle of FIFO branch and bound.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

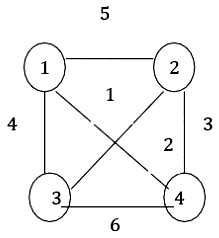
2.	a)	Describe the basic efficiency classes in detail.	8 Marks	L2	CO1
	b)	Explain in detail about asymptotic notations.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe the cost amortization. How it is used in performance analysis? Explain with an example.	8 Marks	L2	CO1
	b)	Explain: i) Time Complexity ii) Space Complexity with suitable examples	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain operations of disjoint sets with examples.	8 Marks	L2	CO2
	b)	Write an algorithm for Merge sort and solve for 310, 285, 179, 652, 351, 423, 861, 254, 450, 520.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain Strassen's Matrix Multiplication algorithm based on the Divide and Conquer approach.	8 Marks	L3	CO2
	b)	Write the binary search algorithm and illustrate the algorithm for the following input: 2, 32, 45, 56, 67, 73, 88, 89, 101, 125.	8 Marks	L4	CO2

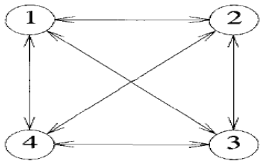
MODULE-III

6.	a)	Define the Matrix-Chain Multiplication problem. Develop a dynamic programming algorithm to find the optimal parenthesization for A1=5x4, A2=4x6, A3=6x2, A4=2x7 using matrix multiplication.	10 Marks	L3	CO3
	b)	Discuss the Floyd-Warshall algorithm for finding the shortest paths between all pairs of vertices in a weighted directed graph. Provide the algorithm steps and analyze its time complexity.	6 Marks	L3	CO3



(OR)

7.	a)	Find the minimum cost for a travelling sales person using dynamic programming for the following	10 Marks	L4	CO3



(a)

0	10	15	20
5	0	9	10
6	13	0	12
8	8	9	0

(b)

	b)	Solve the solution for 0/1 knapsack problem using dynamic programming (p1,p2,p3, p4) = (11, 21, 31, 33), (w1, w2, w3, w4) = (2, 11, 22, 15), M=40, n=4	6 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the solution to the 8 queen's problems using backtracking?	8 Marks	L2	CO3
	b)	Discuss the Single Source Shortest Paths problem and its significance and analyze the time complexity	8 Marks	L3	CO3

(OR)

9.	a)	Write control abstraction for backtracking.	6 Marks	L3	CO3
	b)	Explain the Graph – coloring problem. And draw the state space tree for m= 3 colors n=4 vertices graph. Discuss the time and space complexity.	10 Marks	L3	CO3

MODULE-V

10.		Explain 0/1 knapsack problem in Branch and Bound technique and Discuss about general method of branch and bound technique.	16 Marks	L1	C04

(OR)

11.		Explain the concepts of NP-Hard and NP-Complete classes. Define these complexity classes.	16 Marks	L2	CO4

B

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology,
Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List fundamental steps involved in Algorithmic problem solving.	2 Marks	L2	CO1
	b)	Define Amortized Efficiency.	2 Marks	L1	CO2
	c)	Write short notes on DSU and its operations.	2 Marks	L1	CO2
	d)	Define Strassen's Formula's.	2 Marks	L2	CO3
	e)	Define Dynamic Programming Concept.	2 Marks	L1	CO3
	f)	Define Travelling Salesman Problem.	2 Marks	L1	CO4
	g)	List out the properties of Minimum spanning tree.	2 Marks	L2	CO4
	h)	Define General Method for Backtracking.	2 Marks	L1	CO5
	i)	Differentiate NP Complete and NP Hard Problem	2 Marks	L2	CO5
	j)	Mention two examples for Non-Deterministic Algorithms.	2 Marks	L2	CO1

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the factors of Performance Measurement.	8 Marks	L2	CO1
	b)	Explain methods involved in Recurrence relation with example	8 Marks	L2	CO1
		(OR)			
3.	a)	Identify Amortized analysis for dynamic arrays using accounting method.	8 Marks	L2	CO1
	b)	Prove T(n)=3T(n/2)+n^2 falls in O(n^2) using Masters theorem?	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe Binary Search Algorithm using Divide and Conquer strategy?	8 Marks	L2	CO2
	b)	Construct an algorithm to Sort the given elements {5,10,3,6,32,41,12,57,82,24} in an Average running time using Quick Sort?	8 Marks	L2	CO2
		(OR)			
5.	a)	Write and Algorithm for Union by Size and simple find with example?	8 Marks	L3	CO2
	b)	Solve the Time complexity for Strassen's Matrix Multiplication using DAC?	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain General method for Dynamic Programming by constructing an algorithm for Fibonacci series.	8 Marks	L3	CO3
	b)	Explain Travelling sales person problem for any graph using dynamic programming	8 Marks	L3	CO3

(OR)

7.	a)	Solve 0/1 Knapsack problem for the given weights w={2,4,5,3} and profits p={1,2,4,6} with bag of capacity=10 by analyzing the objects with maximum profit.	10 Marks	L4	CO3
	b)	Classify various types of Flow Shop Scheduling.	6 Marks	L3	CO3

MODULE-IV

8.	a)	Describe minimum cost spanning tree using Krushkals Algorithm.	6 Marks	L2	CO3
	b)	Explain sum of subsets problem using backtracking.	10 Marks	L3	CO3

(OR)

9.	a)	Construct a path identifying the minimum cost spanning tree for Dijkstra's algorithm.	8 Marks	L3	CO3
	b)	Design an algorithm for n-Queens problem using backtracing.	8 Marks	L3	CO3

MODULE-V

10.	a)	Describe the characteristics of Branch and Bound Algorithm.	8 Marks	L1	C04
	b)	Explain Travelling sales person problem using branch and bound technique.	8 Marks	L2	CO4

(OR)

11.	a)	Explain NP Hard and NP Complete classes.	10 Marks	L2	CO4
	b)	Illustrate Cook's Theorem with example.	6 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

ABAP PROGRAMMING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	How do you define an ABAP project in Eclipse?	2 Marks	L1	CO1
	b)	What does ADT stand for?	2 Marks	L1	CO1
	c)	Discuss the process of editing a repository object in Eclipse.	2 Marks	L2	CO2
	d)	What are the steps involved in installing Eclipse for SAP development?	2 Marks	L1	CO2
	e)	How do you create repository objects in Eclipse for SAP development?	2 Marks	L1	CO2
	f)	What does CDS stand for?	2 Marks	L1	CO2
	g)	Explain the debugging process for ABAP in Eclipse.	2 Marks	L1	CO3
	h)	What does ABAP Programming in Eclipse refer to?	2 Marks	L2	CO3
	i)	Which shortcut key combination is used to save a file in most text editors?	2 Marks	L1	CO4
	j)	List any two perspectives in ADT and explore them.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		Explore the steps to Installing Eclipse, and Defining an ABAP Project.	16 Marks	L1	CO1

(OR)

3.	a)	Describe the process of Organizing Work with the Eclipse Workbench.	8 Marks	L2	CO1
	b)	Provide examples to illustrate the use of Eclipse in ABAP development.	8 Marks	L1	CO1

MODULE-II

4.	a)	Discuss the creation of Repository Objects and their significance.	8 Marks	L2	CO2
	b)	Explore the steps to create and Editing a Repository Object.	8 Marks	L3	CO2

(OR)

5.		Explore the ABAP Development Cycle in Eclipse, Debugging ABAP in Eclipse.	16 Marks	L2	CO2

MODULE-III

6.		Describe the creation of Function Group and a Function Module in eclipse with example	16 Marks	L1	CO2

(OR)

7.		Explore the ABAP Dictionary Objects in Eclipse, Working with Data Elements and Structures and Modelling Views with ABAP Core Data Services.	16 Marks	L2	CO2

MODULE-IV

8.	a)	Describe the creation of ABAP Objects in the Eclipse.	8 Marks	L2	CO3
	b)	Discuss the advantages of using Eclipse in SAP ABAP development	8 Marks	L1	CO3
		(OR)			
9.		Explore the creation a Global Class with example program and Refactoring with example. Discuss about Web Dynpro Development.	16 Marks	L2	CO3

MODULE-V

10.		Explore the below Utilities in Eclipse. (i) Navigating in Eclipse (ii). Searching in Eclipse (iii). Managing Version Control (iv). Identifying Sources of Help and Information	16 Marks	L1	CO4
		(OR)			
11.	a)	Provide an overview of the ADT. Discuss the fundamentals of ABAP development in the eclipse, including the creation and modification of ABAP objects.	8 Marks	L1	CO5
	b)	Explore any 2Utilities in Eclipse.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, April – 2024

INTRODUCTION TO SAP HANA

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define SAP HANA in brief.	2 Marks	L1	CO1
	b)	What are the key features of SAP HANA?	2 Marks	L2	CO1
	c)	Explain the significance of in-memory computing in SAP HANA.	2 Marks	L1	CO2
	d)	What is the relationship between ABAP and SAP HANA?	2 Marks	L2	CO2
	e)	Describe the main functionalities of SAP HANA Studio.	2 Marks	L2	CO3
	f)	What dose CDS stands for?	2 Marks	L2	CO3
	g)	List any two perspectives in ADT and explore it?	2 Marks	L2	CO4
	h)	How does ADT streamline ABAP development processes?	2 Marks	L2	CO4
	i)	Explain the concept of SAP HANA as a secondary database.	2 Marks	L2	CO5
	j)	What dose ADT stands for?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		Investigate the Fundamentals and Technical Aspects of SAP HANA; Introduce SAP HANA Studio	16 Marks	L4	CO1

(OR)

3.	a)	Offer Instances to Demonstrate the Application of ABAP in conjunction with SAP HANA	8 Marks	L2	CO1
	b)	Explain the Functionality of the ABAP Development Tools (ADT)	8 Marks	L1	CO1

MODULE-II

4.		Examine the tools available for analysing potential performance issues and elucidate the SQL performance rules specific to SAP HANA.	16 Marks	L3	CO2

(OR)

5.	a)	Investigate the procedures involved in performing code checks to prepare ABAP code for SAP HANA.	8 Marks	L4	CO2
	b)	Discuss the usage of SAP HANA as a secondary database and its access via Open SQL	8 Marks	L1	CO2

MODULE-III

6.		Investigate the fundamental principles of Core Data Services in ABAP and delve into Associations within Core Data Services.	16 Marks	L4	CO3

(OR)

7.		Discuss the fundamentals of Classical Open SQL along with its constraints, and illustrate Enhanced Open SQL with an example	16 Marks	L1	CO3

MODULE-IV

8.		Explore the ABAP Database Connectivity (ADBC) and Use of SAP HANA Information Models in ABAP	16 Marks	L2	CO4

(OR)

9.	a)	Describe the Syntax of SAP HANA Native SQL	8 Marks	L1	CO4
	b)	Discuss the ABAP Managed Database Procedures	8 Marks	L1	CO4

MODULE-V

10.	a)	Examine ABAP List Viewer with Integrated Database Access (ALV IDA).	8 Marks	L4	CO5
	b)	Present a summary of Utilizing SAP HANA Full Text Search	8 Marks	L1	CO5

(OR)

11.		Investigate the process of transporting SAP HANA Objects using ABAP Transport Requests.	16 Marks	L4	CO5

SCHEME

MOHANBABUUNIVERSITY

SREESAINATHNAGAR,TIRUPATI-517102,ANDHRAPRADESH

B.TechIVSemester(MBU-22)RegularExaminationsApril–2024

DATAWAREHOUSINGANDMULTIDIMENSIONALMODELING

[Commonto:CSE(DS)]

Time:3hours **Max.Marks:100**

PART - A

AnswerAll Questions.
AllQuestionsCarryEqualMarks

			10x 2 = 20 Marks		
1.	a)	whatisDataWarehouse DesignandAnalysis? ➢ Datawarehousedesignandanalysisinvolvestructuringdata foroptimalstorage,retrieval,andanalysistosupport organizationaldecision-making processes.	2Marks	L2	CO1
	b)	DefineDataWarehouseModelinganditssignificancein therealm ofdatamanagement? ➢ Theprocessofcreatingadatawarehouse'sorganizational structureanddatainteractionsisknownasdatawarehouse modeling. ➢ Itisnecessarytoprovideeffectivedataanalysis,retrieval,and storagefordecision-making.	2Marks	L2	CO1
	c)	Definetheterm"Dimensions"inamulti-dimensionalmodel.? ➢ dimensionsarepiecesof datathatallowyou tounderstand and index measures in your data models. Dimensions are either characteristic of a measure or pieces of data that help contextualize the fact.	2Marks	L2	CO2
	d)	Whatroledodimensionrolesplayindimensional modeling? ➢ Dimension roles refer to the different perspectives or views of a dimension that can be used in analytical queries and reporting. Dimension roles allow the same dimension to be used multiple times within a single query, each time representing a different aspect or context of the data.	2Marks	L2	CO2
	e)	Outlinethe frameworkof MOLAP. ➢ Multidimensional OLAP (MOLAP) uses array-based multidimensionalstorageenginesformultidimensionalviews data. ➢MOLAPArchitecture MOLAPincludesthefollowingcomponents. ➢Databaseserver. ➢MOLAPserver. ➢Front-endtool.	2Marks	L2	CO3
	f)	How isdata loadedinHyperion? ➢ Hyperion Essbase, on the other hand, offers various methods for data loading. The most common method is using the Essbase data load utility, called ESSCMD or ESSCMDQ	2Marks	L2	CO3

	g)	What is the significance of time normalization in temporal modeling? ➢ Temporal modeling and design involve creating systems that can effectively store, manage, and analyze data over time. When it comes to dimensions, these refer to the attributes or characteristics of the data being analyzed	2Marks	L2	CO4
	h)	Howdoestime normalizationcontributetodatabaseefficiencyand accuracy? ➢ Temporal modeling refers to the process of representing and managing temporal data in a database. Temporal data includes information that has a time component, such as when an event occurred or when a specific piece of data was valid. Temporal modeling aims to provide a structured way to store andretrieve this type of data accurately. It involves creating database schemas that can handle temporal aspects and ensuring the data is stored and accessed in a manner that reflects the time dimension.	2Marks	L2	CO4
	i)	What are the primary components of a data warehouse architecture? ➢ OperationalSystem ➢ FlatFiles ➢ Meta Data ➢ Lightlyandhighly summarizeddata ➢ End-UseraccessTools	2Marks	L2	CO5
	j)	How does data warehousing facilitate decision-making in organizations? ➢ Organizations can get insights and make well-informed decisions by utilizing data warehousing, which centralizes and integrates data for analysis.	2Marks	L2	CO5
		PART - B			
		AnswerOneQuestionfromeachModule. AllQuestionsCarryEqualMarks			
					5x 16 = 80 Marks
		MODULE-I			
2.	a)	Differentiatebetweenadata warehouseandadata mart.? ➢ A data warehouse is a collection of data marts representing historical data from different operations in the company. This data is stored in a structure optimized for querying and data analysis as a data warehouse. Table design, dimensions and organizationshouldbeconsistentthroughoutadatawarehouse so that reports or queries across the data warehouse are consistent. ➢ Threecommonarchitecturesare: ➢ DataWarehouseArchitecture: Basic ➢ DataWarehouseArchitecture:WithStaging Area ➢ DataWarehouseArchitecture:WithStagingAreaandData Mart	8Marks	L2	CO1

		➢ Adatamartisanimportantcomponentofdatawarehousing.It can be said as the subset of a data warehouse that is focusedon a particular Business line like sales, marketing, human resource, etc.			
	b)	Evaluate the advantages and potential challenges associated with the Independent Data Mart architecture.? ➢ An independent data mart architecture implies stand-alonedata marts that are controlled by a particular workgroup, department, or line of business and are built solely to meet their needs. There may, in fact, not even be any connectivity with data marts in other workgroups, departments, or lines of business. For example, data for these data marts may be generated internally. The data may be extracted from operational systems but would then require the support of IS. IS would not control the implementation but would simply help manage the environment ➢ The independent data mart architecture requires sometechnical skills to implement, but the resources and personnel could be owned and managed by the workgroup, department, or line of business. These types of implementation typically have minimal impact on IS resources and can result in a very fast implementation.	8Marks	L2	CO1
		(OR)			
3.	a)	Briefly explaintheconceptofNormalization.Whyisitessential in designing a data warehouse.? ➢ Normalization is the process of organizing data in a database toreduceredundancyanddependency,therebyimprovingdata integrity and efficiency. ➢ In a data warehouse, normalization is essential to ensure that the database is structured optimally for efficient storage, retrieval, and analysis of data. It enables easier maintenance, reduces the risk of data anomalies, and supports better query performance, ultimately enhancing the overall effectiveness of the data warehouse	8Marks	L2	CO1
	b)	ElaborateonthesignificanceofaNormalSystemforMetadata Sharinginthecontext ofaData Warehouseenvironment ➢ Asetofdatathatdefinesandgivesinformationaboutother data. ➢ MetaDatausedinDataWarehouseforavarietyofpurpose, including: ➢ MetaDatasummarizesnecessaryinformationaboutdata, whichcanmakefindingandworkwithparticularinstancesof datamoreaccessible.Forexample,author,databuild,and datachanged,andfilesizeareexamplesofverybasic document metadata. ➢ Metadataisusedtodirectaquerytothemostappropriatedata source.	8Marks	L2	CO1
		MODULE-II			
4.	a)	Describetheprocessofrequirementsmodelinginthecontextof	8Marks	L2	CO2

		designingadata warehouse..? ➢ Requirements modeling in data warehousing is the process of identifying and specifying the business needs and objectives thatadatawarehouseshouldsupport.It involvesanalyzingthe sources, types, and quality of data, as well as the users,queries, and reports that the data warehouse will serve. ➢ Some of the common techniques and methods forrequirements modeling in data warehousing are: ➢ Ontology ➢ Multi-drivenapproach			
	b)	Examine the concepts of aggregation levels, MD model structures, fact identifiers, dimension keys, and uniqueness in the context of multidimensional data modeling.? ➢ In a data warehouse, fact identifiers (also known as fact keys or surrogate keys) are unique identifiers assigned to each record in the fact table. ➢ dimension keys are unique identifiers assigned toeach distinct member orattribute withina dimension.Dimensions represent categorical datathatprovidecontextforthemeasuresstoredin the fact table. ➢ Dimension keys must be unique within their respective dimension table. Each member or attribute within a dimension should have a unique identifier to ensure data integrity and to facilitate accurate querying and analysis	8Marks	L2	CO2
(OR)					
5.	a)	Explainwhatdimensionsare inadata warehouse? ➢ The qualitative measures can be then linked to specific characteristics of that measure, which are called dimensions. ➢ In the data warehouse context, dimensions are pieces of data that allow you to understand and index measures in your data models. Dimensions are either characteristic of a measure or pieces of data that help contextualize the fact.	8Marks	L2	CO2
	b)	Differentiate between measures and candidate measures in the context of a data warehouse ➢ In databases and data warehousing, we often speak of facts, measures, and dimensions when talking about organizing and modeling data. But the definition of facts, measures, and dimensionswithinthiscontextare notexactlywhat you would find in the dictionary. ➢ Measures canbe qualitative,likeaProduct ID,orquantitative, like the price of a product. ➢ Granularity of a measure in data warehousing is the level of detail or resolution at which the measure is stored and analyzed.It determineshowfine-grainedorcoarse-grainedthe measure is, and how it can be aggregated or disaggregated	8Marks	L2	CO2
MODULE-III					

6.	a)	Analyze the advantages and disadvantages of using a star schema in data warehouse design, focusing on its impact on query performance. Fact Table: The fact table is the central table in the star schema. It contains the quantitative measures or metrics that are being analyzed, such as sales amounts, quantities, or any other numerical data.	8Marks	L2	CO3
		➢ Dimension Tables: Dimension tables are associated with the fact table and provide descriptive attributes related to the measures. Each dimension table represents a different aspector viewpoint of the data, such as time, geography, product, or customer. Dimension tables contain hierarchies and levels that allow for drill-down and roll-up analysis. ➢ Relationships: The fact table is connected to the dimension tables through foreign key relationships. Each record in the fact table is associated with the corresponding records in the dimension tables based on the foreign keys.			
	b)	Explain the design techniques employed in ROLAP systems for efficient data retrieval and analysis. ➢ Star Schema: The star schema is a widely used design technique in R-OLAP. It organizes data into a central facttable surrounded by multiple dimension tables. ➢ Snowflake Schema: The snowflake schema is an extension of the star schema. ➢ Dimensional Hierarchies: R-OLAP systems leverage dimensional hierarchies to represent relationships between different levels of granularity within dimensions. ➢ Aggregation: Aggregation is a key technique in R-OLAP to pre-calculate and store aggregated values for faster query response times ➢ Indexing: Indexing is crucial for efficient data retrieval in R-OLAP systems.	8Marks	L2	CO3
		(OR)			
7.	a)	Describe the key features and functionalities of Cognos Transformer in OLAP data modeling and analysis. ➢ Cognos BI Server: The Cognos BI Server is the core component of the Cognos architecture. ➢ Cognos BI Clients: Cognos provides several clients that allow users toaccess andanalyze data.These clients includeCognos Connection, Cognos Workspace, Cognos Report Studio, and Cognos Analysis Studio. ➢ Cognos Data Manager: Cognos Data Manager is a data integration and ETL (Extract, Transform, Load) tool that allows users to extract data from various sources, transform it into a suitable format, and load it intoa target database or data warehouse.	8Marks	L2	CO3

	b)	Compare Hyperion with other OLAP systems, focusing on its data load capabilities, data load rules, and calculation storage types ➢ Cognos Transformer and Hyperion are both business intelligence tools that offer capabilities for data modeling and analysis. ➢ Hyperion, on the other hand, is a suite of business intelligence tools developed by Oracle. It includes Hyperion Essbase, which is a multidimensional database management system (MDBMS) ➢ In Cognos Transformer,data loadingistypically donethrough theuseofadatasourceconnection,suchasadatabase oraflat file. You can define the data source connection within the Transformer modeland specify thetablesor filestobeusedas the data source.	8Marks	L2	CO3
		➢ Hyperion Essbase, on the other hand, offers various methods for data loading. The most common method is using the Essbasedataloadutility,calledESSCMDorESSCMDQ.This utility allows you to load data from various sources, such as text files, spreadsheets, databases, and other Essbase cubes. You can define the data mapping and transformation rules withintheloadutilityscripttoensurethedataisloaded correctlyintotheEssbase cube			
		MODULE-IV			
8.	a)	Describe the process of exercise in temporal modeling and design. How does it help in understanding and implementing temporal databases effectively? ➢ To implement temporal modeling and design for customer address, follow these steps: ➢ Identify the key components: Determine the essentialelements of a customer address, such as street address, city, state, postal code, country, and any additional relevant information. ➢ Design the database schema: Create a database structure that can accommodate the address components and their historical changes. This may involve using additional tables to store address history or implementing triggers to update the main address table. ➢ Define relationships: Establish relationships between the customer address table and other relevant tables, such as the customer table or order table, to ensure that the address information is easily accessible and can be linked to otherdata. ➢ Implement temporal modeling: Utilize temporal database concepts like time-varying attributes and valid time to capture and store historical address information accurately.	8Marks	L2	CO4

	b)	Explain the concept of a solution in temporal modeling. Provide examples of how solutions are implemented to manage historical data effectively. ➢ A well-designed temporal modeling and design for customer address will provide several benefits, including: ➢ Accurate data: Ensuring that customer address information is up-to-date and complete helps improve the overall quality of data, which can lead to better decision-making. ➢ Efficient tracking: Historical address data can be easily accessed and analyzed, enabling organizations to identify patterns and trends in customer movements. ➢ Compliance: Maintaining accurate address information is crucial for regulatory compliance, particularly in industrieslike finance and healthcare.	8Marks	L2	CO4
		which are a set of guidelines that dictate how data should be structured in a database. The main goal of design time normalization is to create a well-structured and efficient databasedesignthatcanhandlevariousdatatypesand relationshipseffectively.			
	b)	Explainthesignificanceoftemporalmodelinginthecontextof keeping history about dimensions. How does it contribute to ➢ temporalmodelinganddesigninvolvecreatingsystemsthat can effectively store, manage, and analyze data over time. Whenitcomestodimensions,theserefertotheattributesor characteristics of the data being analyzed. Incorporating history about dimensions is crucial for understanding the evolution and patterns of the data.	8Marks	L2	CO4
		MODULE-V			
10.	a)	Analyze the IBM data warehouse case study involving American Airlines, highlighting its key features and outcomes. ➢ CelDial- The Company ➢ The project shall be limited to direct costs and revenues associated with products. Currently, CelDial′s manufacturing costs cannot be allocated at the product level. Therefore, only component costs can be included. At a future time, rules for allocation of manufacturing and overhead costs may be created, so the data warehouse should be flexible enough to accommodate future changes.	8Marks	L2	CO5
	b)	How does data warehouse architecture facilitate the storage and retrieval of large volumes of data? ➢ Data warehouse architecture facilitates the storage andretrieval of large volumes of data through scalable infrastructure, optimized storage formats, partitioning, distributed processing, caching, and query optimization techniques.	8Marks	L2	CO5
		(OR)			

11.	a)	Explore the scalability aspect of data warehouse architectures and its importance in accommodating growing data volumes. ➢ For data warehouse designs to effectively handle increasing data volumes, scalability is essential. In order to boost processing power and storage capacity as data volumes rise, it uses both vertical and horizontal scalability. ➢ Because of its scalability, the data warehouse can accommodate growing data loads without compromising speed, which helps businesses manage and analyze enormous amounts of data for strategic decision-making.	8Marks	L2	CO5
	b)	Discuss the concept of distributed process architecture in data warehousing and provide examples of its implementation. ➢ In data warehousing, distributed process architecture includes dividing up data processing work across severalgeographically separated yet networked systems or nodes.This architecture makes use of parallel processing to improve performance, fault tolerance, and scalability. ➢ A distributed ETL (Extract, Transform, Load) process, in which the tasks of data extraction, transformation, and loading are split among several servers or clusters, is one example of howitisimplemented.Duetotheabilitytoprocessinparallel,	8Marks	L2	CO5
		throughputis increasedandthe totalamount of time needed for ETL operations is decreased.			

CODE No.: 22DS101007 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, April – 2024

DATA WAREHOUSING AND MULTIDIMENSIONAL MODELING

[Computer Science and Engineering, Computer Science and Engineering (Data Science), Information Technology]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Data Warehouse Design and Analysis?	2 Marks	L2	CO1
	b)	Define Data Warehouse Modeling and its significance in the realm of data management.	2 Marks	L2	CO1
	c)	Define the term "Dimensions" in a multi-dimensional model.	2 Marks	L2	CO2
	d)	What role do dimension roles play in dimensional modeling?	2 Marks	L2	CO2
	e)	Outline the framework of MOLAP.	2 Marks	L2	CO3
	f)	How is data loaded in Hyperion?	2 Marks	L2	CO3
	g)	What is the significance of time normalization in temporal modeling?	2 Marks	L2	CO4
	h)	How does time normalization contribute to database efficiency and accuracy?	2 Marks	L2	CO4
	i)	What are the primary components of data warehouse architecture?	2 Marks	L2	CO5
	j)	How does data warehousing facilitate decision-making in organizations?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Differentiate between a data warehouse and a data mart.	8 Marks	L2	CO1
	b)	Evaluate the advantages and potential challenges associated with the Independent Data Mart architecture.	8 Marks	L2	CO1
		(OR)			
3.	a)	Briefly explain the concept of Normalization. Why is it essential in designing a data warehouse?	8 Marks	L2	CO1
	b)	Elaborate on the significance of a Normal System for Metadata Sharing in the context of a Data Warehouse environment.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the process of requirements modeling in the context of designing a data warehouse?	8 Marks	L2	CO2
	b)	Examine the concepts of aggregation levels, MD model structures, fact identifiers, dimension keys, and uniqueness in the context of multidimensional data modeling?	8 Marks	L2	CO2

(OR)

5.	a)	Explain what dimensions are in a data warehouse.	8 Marks	L2	CO2
	b)	Differentiate between measures and candidate measures in the context of a data warehouse.	8 Marks	L2	CO2

MODULE-III

6.	a)	Analyze the advantages and disadvantages of using a star schema in data warehouse design, focusing on its impact on query performance.	8 Marks	L2	CO3
	b)	Explain the design techniques employed in ROLAP systems for efficient data retrieval and analysis.	8 Marks	L2	CO3

(OR)

7.	a)	Describe the key features and functionalities of Cognos Transformer in OLAP data modeling and analysis.	8 Marks	L2	CO3
	b)	Compare Hyperion with other OLAP systems, focusing on its data load capabilities, data load rules, and calculation storage types.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the process of exercise in temporal modeling and design. How does it help in understanding and implementing temporal databases effectively?	8 Marks	L2	CO4
	b)	Explain the concept of a solution in temporal modeling. Provide examples of how solutions are implemented to manage historical data effectively.	8 Marks	L2	CO4

(OR)

9.	a)	Explain the concept of time normalization in temporal modeling. How does it contribute to maintaining consistency and accuracy in historical data?	8 Marks	L2	CO4
	b)	Explain the significance of temporal modeling in the context of keeping history about dimensions. How does it contribute to enhancing data analysis and decision-making processes?	8 Marks	L2	CO4

MODULE-V

10.	a)	Analyze the IBM data warehouse case study involving American Airlines, highlighting its key features and outcomes.	8 Marks	L2	CO5
	b)	How does data warehouse architecture facilitate the storage and retrieval of large volumes of data?	8 Marks	L2	CO5

(OR)

11.	a)	Explore the scalability aspect of data warehouse architectures and its importance in accommodating growing data volumes.	8 Marks	L2	CO5
	b)	Discuss the concept of distributed process architecture in data warehousing and provide examples of its implementation.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	An experiment consists of rolling a single die. Two events are defined as A = { a 6 shows up}. Find P(A).	2 Marks	L1	CO1
	b)	State Bayes' theorem.	2 Marks	L1	CO1
	c)	What is mixed random variable.	2 Marks	L1	CO2
	d)	Express the conditional probability density function.	2 Marks	L1	CO2
	e)	Define the statistical Independence of the Random variables.	2 Marks	L1	CO2
	f)	Define point conditioning & interval conditioning distribution function..	2 Marks	L1	CO2
	g)	Define the cross correlation function between two random processes X(t) & Y(t).	2 Marks	L1	CO3
	h)	Differentiate between Random Processes and Random variables with example.	2 Marks	L1	CO3
	i)	Define flicker noise.	2 Marks	L1	CO4
	j)	Define signal to noise ratio.	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Clarify. i) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$. ii) *Let P(A)= 0.9 and P(B)= 0.8. Show that* $P(A \cap B) \geq 0.7$.	8 Marks	L1	CO1
	b)	A single card is drawn from a 52 card of deck i) What is the probability that card is a jack ii) What is the probability the card will be a 5 or smaller iii) What is the probability that card is a red 10	8 Marks	L1	CO1
		(OR)			
3.	a)	Given that P(A)=0.9 , P(B)=*0.8*, and P(A? B)=*0.75*, Find: i) $P(A \cap B)$, ii) $P(A \cap B^C)$, iii) $P(A \cap B^C)$.	8 Marks	L2	CO1
	b)	A company producing electric relays has three manufacturing plants producing 50, 30, and 20 percent, respectively, of its product. Suppose that the probabilities that a relay manufactured by these plants is defective are 0.02, 0.05, and 0.01, respectively. i) If a relay is selected at random from the output of the company, what is the probability that it is defective? ii) If a relay selected at random is found to be defective, what is the probability that it was manufactured by plant 2?	8 Marks	L1	CO1

MODULE-II

4.	a)	Define Random variable and list the conditions for the function to be a random variable.	8 Marks	L1	CO2
	b)	Let X be a Random Variable with pdf given by $f_x(x) = \begin{cases} 4x, & 0 < x < 1 \\ 0, & Otherwise \end{cases}$, Find the pdf of y = 4x + 1.	8 Marks	L2	CO2

(OR)

5.	a)	Explain the Gaussian Random Variable and Exponential Random variable with corresponding neat Sketches.	8 Marks	L1	CO2
	b)	Let X be random variable defined by the density function $f_x(x) = \left(\frac{9}{4}\right)\left(1 - x^4\right)$ for $0 < x \leq 1$and 0elsewhere. Find E[X], $E[X^2]$ and variance.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss about Joint central Moments	8 Marks	L2	CO2
	b)	The random variable X and Y have the joint characteristic function $\varphi\left(\omega_1 - \omega_1\right) = \exp\left(-2\omega_1^2 - 9\omega_2^2\right)$. Show that X and Y are both are zero means and that they are uncorrelated.	8 Marks	L3	CO2

(OR)

7.	a)	Discuss the Properties of Gaussian Random Variable.	8 Marks	L2	CO2
	b)	Write inference for the following question about uncorrelated and orthogonal between two random variables of X and Y. $Y = -6X + 22$. Given that X having Mean 3 and Variance 2.	8 Marks	L1	CO2

MODULE-IV

8.	a)	Explain about stationary random process	8 Marks	L2	CO3
	b)	Given a random process by x(t) – A $\cos(\pi t)$ where A is Gaussian random variable with zero mean and variance σ_x^2. i) Find the density function of x(0). ii) Is x(t) stationary in any sense.	8 Marks	L2	CO3

(OR)

9.	a)	Explain the classification of random process with neat sketches.	8 Marks	L2	CO3
	b)	Given the random process by X(t) = A $\cos\omega_o t$ + B sin $\omega_o t$; where $\omega_o$is a constant and A, B are uncorrelated zero mean random variables having different density functions but the same variance, show that x(t) is wide sense stationary but not strict stationary.	8 Marks	L3	CO3

MODULE-V

10.	a)	For a radio operating at a temperature of 19 degree centigrade with a bandwidth of 12 kHz determine the thermal noise in dB. If the load resistance is 125ohms, calculate the r.m.s voltage.	8 Marks	L3	CO4
	b)	An antenna having a noise temperature of 30K is connected to an amplifier having a gain of 100dB and an equivalent noise bandwidth of 1.5MHz. The equivalent noise temperature of the amplifier is 270K. Find the available noise power.	8 Marks	L2	CO5

(OR)

11.	a)	Explain the importance of Friss's Formula with the help of example	8 Marks	L1	CO5
	b)	An amplifier has a bandwidth of 500KHz, and an input resistance of 50. When a 0.5×10^{-6}V input signal level is applied to the amplifier input under matched condition, the output SNR=0dB. Determine the noise figure of the amplifier.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is an operational amplifier?	2 Marks	L1	CO1
	b)	A Differential amplifier has a differential voltage gain of 2000 and common mode gain of 0.2. Determine CMRR.	2 Marks	L4	CO1
	c)	List the characteristics of instrumentation amplifier	2 Marks	L1	CO2
	d)	What is a voltage regulator?	2 Marks	L1	CO2
	e)	What is a filter? List the types of filters.	2 Marks	L1	CO3
	f)	What are the comparative advantages and limitations of employing a Wien-Bridge oscillator in contrast to an RC oscillator	2 Marks	L1	CO3
	g)	Explain the use of VCO.	2 Marks	L2	CO4
	h)	How does the internal flip-flop contribute to the operation of a 555 timer in Astable mode	2 Marks	L2	CO4
	i)	Define resolution of DAC converter.	2 Marks	L1	CO5
	j)	Name the types of resistive techniques for ADC converters.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Compare and contrast ideal and practical op-amp?	7 Marks	L4	CO1
	b)	Draw and explain the various functional blocks of an operational amplifier IC?	9 marks	L2	CO1
		(OR)			
3.	a)	Draw the inverting amplifier circuit and non-inverting amplifier circuit of an op-amp in closed loop configuration. Obtain the expression for the closed loop gain for both amplifiers.	8 marks	L3	CO1
	b)	Determine the output voltage of a differential amplifier for the input voltages of 300μV and 240μV. The differential gain of the amplifier is 5000 and the value of the CMRR is (i)100 (ii)105	8 marks	L4	CO1

MODULE-II

4.	a)	What is an instrumentation amplifier? Give the important features of an instrumentation amplifier. Explain the working of three op-amp instrumentation amplifier. Give its application.	10 Marks	L2	CO2
	b)	Design a Schmitt trigger circuit for UTP and LTP of +3V and -3V respectively. Explain its hysteresis curve.	6 Marks	L3	CO2

(OR)

5.	a)	Explain the inverting and non-inverting AC amplifier.	8 Marks	L2	CO2
	b)	Demonstrate the operation of Sample & Hold circuit with a neat circuit diagram	8 Marks	L3	CO2

MODULE-III

6.	a)	Design a first order low pass filter for a high cut-off frequency of 2KHz and pass band gain of 2.	8 Marks	L3	CO3
	b)	How does the Wien-bridge oscillator circuit operate, and what are its key components and design considerations?	8 Marks	L4	CO3

(OR)

7.	a)	Explain the basic principle of operation of RC phase shift oscillator using op-amp. Derive the condition for frequency of oscillations.	8 Marks	L2	CO3
	b)	What are the various types of active filters implemented using operational amplifiers, and how do they differ in terms of their frequency response, circuit topology, and applications.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define PLL. Sketch its block diagram and explain its operation.	8 Marks	L2	CO4
	b)	Define timer. Draw and Explain the functional diagram of 555 timer.	8 Marks	L2	CO4

(OR)

9.	a)	Draw and explain VCO working principle and derive a equation for its free running.	8 Marks	L4	CO4
	b)	Design an astable multivibrator to provide output frequency of 1KHZ with duty cycle of 60% with c=0.1μf.	8 Marks	L3	CO4

MODULE-V

10.	a)	Design a 4bit weighted resistor DAC technique and explain its transfer characteristics.	8 Marks	L3	CO5
	b)	The basic step of a 9-bit DAC is 10mv. If 000000000 represents 0v, what output is produced if the input is 101011011.	8 Marks	L4	CO5

(OR)

11.	a)	Draw the block diagram of R-2R ladder DAC. Explain its operation.	8 Marks	L2	CO5
	b)	Discuss in detail about Flash type ADC. Explain its operation.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the Differences between AM and SSB.	2 Marks	L1	CO1
	b)	List the differences between DSBSC and SSB.	2 Marks	L2	CO1
	c)	Define the Modulation Index in FM.	2 Marks	L1	CO1
	d)	Sketch the Spectrum of NBFM.	2 Marks	L3	CO1
	e)	Estimate the figure of merit of FM Signal.	2 Marks	L2	CO2
	f)	Define FM Capture effect.	2 Marks	L3	CO2
	g)	Identify the image Frequency and estimate how to remove image frequency.	2 Marks	L2	CO3
	h)	Classify the Tuned radio frequency receiver and super heterodyne receivers.	2 Marks	L3	CO3
	i)	List the different types of PAM.	2 Marks	L2	CO4
	j)	How to generate PPM from PWM.	2 Marks	L3	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		Explain how SSB wave is generated using phase and frequency discriminator method with only USB and rejecting the LSB.	16 Marks	L2	CO1

(OR)

3.	a)	Explain the working of FDM technique. With aid of neat Sketches.	8 Marks	L2	CO1
	b)	Discuss the appropriate amplitude modulation technique which requires modulated band width equal to the twice of message signal band width and more power consumption.	8 Marks	L2	CO1

MODULE-II

4.	a)	With the help of circuit diagram, explain demodulation of FM wave using balanced frequency discriminator.	8 Marks	L4	CO1
	b)	Estimate the modulation index and bandwidth for FM and PM signals for a modulating signal 5 cos 30000 π t angle modulates a carrier A cos2π fct. Assume $K_f = K_p$ =15KHz/volt .	8 Marks	L2	CO1

(OR)

5.		Explain the principle Of Armstrong method to generate FM modulated wave.	16 Marks	L4	CO1

MODULE-III

6.		Derive the expression for SNR & Figure of merit of coherent reception of DSB modulated wave.	16 Marks	L4	CO2
		(OR)			
7.	a)	Explain the noise performance in SSB - SC receiver and prove its S/N Ratio is unity.	8 Marks	L4	CO2
	b)	The noise figure of an amplifier is 5dB and its input S/N ratio is 55dB. Find the output S/N ratio.	8 Marks	L4	CO2

MODULE-IV

8.	a)	Compare low level modulation and high level modulation of radio transmitters.	8 Marks	L4	CO3
	b)	For an FM modulator with a modulating signal m(t)= Vm sin300wt, the carrier Signal Vc(t)=8 sin(6.5×106)t and the modulator index $\beta = 2$. Find out the significant side frequencies and their amplitudes.	8 Marks	L1	CO3
		(OR)			
9.	a)	An AM receiver operates with a tone modulation, and the modulation index ma=0.4. The message signal is 20 cos(1000πt). Calculate the output SNR relative to the base band performance.	8 Marks	L4	CO3
	b)	Discuss the following terms. i) Alignment ii) Tracking iii) Intermediate frequency	8 Marks	L1	CO3

MODULE-V

10.	a)	Briefly explain short notes on PAM modulation and its generation with neat sketches.	8 Marks	L1	CO4
	b)	List out Merits and Demerits of PAM.	8 Marks	L3	CO4
		(OR)			
11.		Explain the generation and demodulation of PPM from PWM with aid of neat sketches.	16 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

DIGITAL DESIGN

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Show the binary equivalent for $(41.6875)_{10}$.	2 Marks	L2	CO1
	b)	Subtract 28 from 15 using 6 bit 1's comp arithmetic	2 Marks	L2	CO1
	c)	Explain the duality theorem and find the duals for the following function $F = [(ab)'a]\,[(ab)'b]$	2 Marks	L2	CO1
	d)	Minimize the Boolean function using k-map for the following function F(X, Y, Z)=∑m(0,4,6,7).	2 Marks	L2	CO1
	e)	List the merits of combinational circuit.	2 Marks	L1	CO2
	f)	Draw the half subtractor logic diagram.	2 Marks	L3	CO2
	g)	Draw the SR-flip flop logic diagram.	2 Marks	L2	CO3
	h)	Distinguish any two points of Moore and Mealy machine	2 Marks	L2	CO3
	i)	Define dynamic hazards.	2 Marks	L2	CO4
	j)	Design the 4X2 PROM logic diagram.	2 Marks	L3	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	i) Simplify the Boolean expression A'B+A'B'C+ABC'+AB'C' ii) Convert SOP to equivalent POS A'B'C+A'B'C+A+BC+AB'C+ABC. iii) Apply DeMorgan's theorem [(A+B+C) D]'. iv) Using Boolean rules and laws simplify Z=(A'+B)(A+B)	8 Marks	L2	CO1
	b)	Assume that the even parity hamming code is $(0110011)_2$ is transmitted and that $(0100011)_2$ is received. The receiver does not know what is transmitted. Determine the bit location where error has occurred in the code received.	8 Marks	L2	CO1

(OR)

3.	a)	Determine the error bit location for the received information $(0101011)_2$using odd parity.	12 Marks	L2	CO1
	b)	Convert (A'+B')(A'+C)(B+C') into standard POS form.	4 Marks	L2	CO1

MODULE-II

4.	a)	Design and explain carry look ahead generator with a neat sketch.	6 Marks	L3	CO1
	b)	Minimize the function F(a, b, c, d)=∑m(0,4,6,8,9,10,12) + d(2,13). Implement the function using only NAND gates.	12 Marks	L3	CO1

(OR)

5.	a)	Minimize the following expression using tabular method Y(w, x, y, z)=∑m(1,2,3,5,9,12,14,15)+ ∑d(4,8,11).	10 Marks	L2	CO1
	b)	Minimize the following function using k-map, f=ABC'+A'B'C+ABC+AB'C & realize using NAND only	6 Marks	L2	CO1

MODULE-III

6.	a)	Solve the following Boolean function using 4:1MUX F(A,B,C,D)=∑m(0,1,2,4,6,9,12,14).	10 Marks	L2	CO2
	b)	Draw the block diagram of 4*16 decoder using two 3*8 decoder circuits.	6 Marks	L3	CO2

(OR)

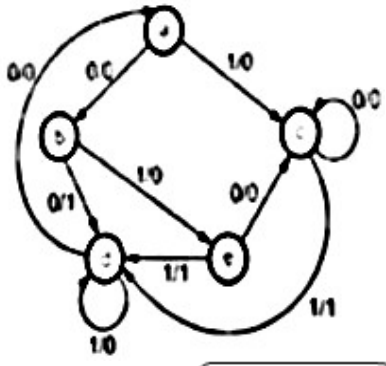
7.	a)	Design a 4-line to 16-line decoder using 3-line to 8-line decoders.	10 Marks	L3	CO2
	b)	Implement the following Boolean function using 4:1 Mux: F(A,B,C,D)=∑m(0,1,3,4,7,9,12,15)	6 Marks	L2	CO2

MODULE-IV

8.	a)	Design a counter that generates a sequence 3, 4, 6, 7, 3, 4, 6, 7……. Using J-K Flip-flop.	8 Marks	L4	CO3
	b)	With a neat logic diagram, explain the operation of the 4-bit SISO unidirectional shift resister.	8 Marks	L2	CO3

(OR)

9.	a)	Design Mod-12 Counter using T Flip-Flops.	8 Marks	L3	CO3
	b)	Design a Sequential circuit using JK Flip flop from the following state diagram.	8 Marks	L3	CO3



MODULE-V

10.	a)	Design 16 X 4 ROM with a suitable example.	6 Marks	L3	CO4
	b)	Design the sequential circuit using D-Flip-flop for the following state table	10 Marks	L4	CO4

Present state	Next state		Output(Z)	
	X=1	X=0	X=1	X=0
Q1	Q2	Q1	0	0
Q2	Q3	Q1	0	0
Q3	Q4	Q5	0	0
Q4	Q4	Q1	0	0
Q5	Q2	Q1	1	0

(OR)

11.	a)	Generate classification between PROM and PAL.	6 Marks	L2	CO4
	b)	Design a PAL, The circuit accepts 3-bit binary number and whose output is excess three of input.	10 Marks	L4	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State the working principle of hot-wire gas bridge type densitometer.	2 Marks	L1	CO1
	b)	Explain the term viscosity.	2 Marks	L2	CO1
	c)	Define the term pressure	2 Marks	L1	CO2
	d)	Explain the working principle of dead weight tester pressure gauge.	2 Marks	L2	CO2
	e)	Name any two units of liquid level measurement	2 Marks	L1	CO3
	f)	List the pros and cons of Fibre - optic type level measuring device.	2 Marks	L3	CO3
	g)	Classify the head type flow measuring devices.	2 Marks	L2	CO4
	h)	Describe the working principle magnetic rotary vane flow meter.	2 Marks	L1	CO4
	i)	Construct V to I converter to convert (0-5) V to (4-20) ma.	2 Marks	L3	CO5
	j)	Mention few applications of chopper amplifier.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is the need for viscosity measurement in industries? List some applications, safety issues that may arise due to improper selection of sensor in an industrial environment. Suggest one method of viscosity measurement and explain it.	8 Marks	L2	CO1
	b)	With a neat sketch explain the working principle of cone and plate viscometer with its industrial applications.	8 Marks	L2	CO1

(OR)

3.	a)	What is relative humidity, construct a psychrometer and explain how it is used for measurement of RH.	8 Marks	L3	CO1
	b)	Elaborate the working principle of hot-wire gas bridge type densitometer and mention its merits and demerits.	8 Marks	L3	CO1

MODULE-II

4.	a)	Identify an appropriate pressure measuring device to measure pressure using change in electromagnetic field, and explain its working in detail.	8 Marks	L3	CO1
	b)	List the medium pressure measuring devices and compare bellows and diaphragm with respect to construction.	8 Marks	L1	CO1

(OR)

5.	a)	With a neat sketch explain the working principle of Mcleod gage pressure measuring device.	8 Marks	L2	CO1
	b)	Classify the pressure based on range of measurement and summarize different methods of pressure measurement with their applications.	8 Marks	L3	CO2

MODULE-III

6.	a)	Construct a level measurement set up using ultrasonic principle and explain its industrial applications.	8 Marks	L3	CO3
	b)	Elaborate the working principle of bellow element type level transmitters with neat sketch.	8 Marks	L3	CO3
		(OR)			
7.	a)	Build a level measurement set up using magnetic float principle and explain its industrial applications.	8 Marks	L3	CO3
	b)	Describe the working principle of level measurement for conducting and non-conducting liquids using capacitive principle with neat sketch.	8 Marks	L3	CO3

MODULE-IV

8.	a)	"Flow measuring devices can be designed using differential pressure measuring devices" Justify it.	8 Marks	L3	CO4
	b)	Describe the construction and working principle of turbine flow meter.	8 Marks	L1	CO4
		(OR)			
9.	a)	Select a suitable flow measuring device to measure flow rate of conducting liquids and explain its working in detail.	8 Marks	L3	CO4
	b)	Compare different positive displacement flow meters with their construction.	8 Marks	L3	CO4

MODULE-V

10.	a)	List different limit switches explain their working and compare their merits and demerits.	8 Marks	L2	CO5
	b)	Design a Voltage to current convertor to convert input voltage to output current using op-amps.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the working of chopper amplifier with a neat sketch.	8 Marks	L2	CO5
	b)	Elaborate the safety measuring techniques used in intrinsic safety.	8 Marks	L2	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

VLSI SYSTEM DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is noise margin?	2 Marks	L2	CO1
	b)	Define speed power product and Mention its SI units?	2 Marks	L1	CO1
	c)	Write the formula for Ids Vs Vds in saturation and non-saturation region.	2 Marks	L1	CO2
	d)	Define Latch up problem in CMOS.	2 Marks	L2	CO2
	e)	Define layouts.	2 Marks	L2	CO3
	f)	Explain the concept of sheet resistance.	2 Marks	L2	CO3
	g)	Difference between ripple carry adder and carry select adder?	2 Marks	L1	CO4
	h)	What are the various shift operations available in VLSI?	2 Marks	L1	CO4
	i)	Difference between Synchronous and Asynchronous Counters.	2 Marks	L2	CO4
	j)	List out the building blocks architecture of FPGA.	2 Marks	L2	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	List out the differences between TTL and CMOS logic family	8 Marks	L2	CO1
	b)	Design a CMOS transistor circuit that has the functional behavior F (X) = [A* (B + C)].	8 Marks	L3	CO1

(OR)

3.	a)	Describe the circuit diagram of 2-input LS-TTL NAND gate and explain its operation.	8 Marks	L3	CO1
	b)	Draw 2-input DTL NOR gate and DTL NAND gate with truth table.	8 Marks	L2	CO1

MODULE-II

4.	a)	Paraphrase the transfer characteristics of NMOS inverter.	8 Marks	L3	CO2
	b)	Describe a step-by-step procedure for a typical n-well CMOS process with neat diagrams.	8 Marks	L4	CO2

(OR)

5.	a)	Derive the relation between Ids – Vds in non-saturation region.	8 Marks	L2	CO2
	b)	Discuss about Second order effects of MOSFETs in details.	8 Marks	L4	CO2

MODULE-III

6.	a)	What is stick diagram? Explain any example with color coding used in NMOS Design style.	8 Marks	L3	CO3
	b)	Draw the schematic, stick diagram and layout for a CMOS NOR gate.	8 Marks	L2	CO3

(OR)

7.	a)	What do you mean by Lambda based design rules? List the Lambda based design rules for CMOS technology.	8 Marks	L2	CO3
	b)	Explain how delay estimation can be performed for a standard MOS delay unit.	8 Marks	L3	CO3

MODULE-IV

8.	a)	With neat circuit diagram, Analyze the operation of Manchester carry chain adder	8 Marks	L4	CO4
	b)	Explain in detail about the operation of carry skip adder using example.	8 Marks	L2	CO4

(OR)

9.	a)	Explain the construction of transmission gate based adder in detail.	8 Marks	L3	CO4
	b)	Explain the structure of booth multiplier and list its advantages	8 Marks	L2	CO4

MODULE-V

10.	a)	Compare CPLD and FPGA and explain their applications.	8 Marks	L3	CO4
	b)	Discuss about Cell based Design Methodology in detail.	8 Marks	L2	CO4

(OR)

11.	a)	Describe high density memory elements used in VLSI design.	8 Marks	L3	CO4
	b)	Draw the schematic of Asynchronous counter and Explain its operation.	8 Marks	L4	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

TRANSMISSION AND DISTRIBUTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define inductance and its significance in single-phase transmission lines.	2 Marks	L2	CO1
	b)	Differentiate between single-phase and three-phase transmission lines in terms of capacitance.	2 Marks	L2	CO1
	c)	What is the purpose of the Nominal-π model in transmission line analysis?	2 Marks	L2	CO2
	d)	Define ABCD constants as applied to transmission line analysis.	2 Marks	L2	CO2
	e)	Define sag in the context of overhead lines.	2 Marks	L2	CO3
	f)	What is a stringing chart in the context of overhead lines?	2 Marks	L2	CO3
	g)	How do commercial loads differ from residential loads in terms of characteristics?	2 Marks	L1	CO4
	h)	Compare agricultural and industrial loads in terms of their impact on electrical distribution systems.	2 Marks	L2	CO4
	i)	How does the choice between gas and air insulation impact the design and operation of a substation?	2 Marks	L1	CO5
	j)	What are some key considerations in the layout design of a substation?	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Derive an expression for the capacitance per km of a single phase line taking into account the effect of ground.	8 Marks	L2	CO1
	b)	The three conductors of a 3− ϕ line are arranged at the corners of a triangle of sides 2m, 2.5m and 4.5m. Calculate the inductance per km of the line when the conductors are regulatory transposed. The diameter of each conductor is 1.24 cm.	8 Marks	L3	CO1
		(OR)			
3.	a)	What do you understand by grading of cable? Explain why grading is more of theoretical interest than practical? What is the modern practice adopted to avoid grading?	8 Marks	L1	CO1
	b)	Find the economic size of a single-core cable working on 220 kV, 3-phase system. The maximum permissible stress in the dielectric is not to exceed 250 kV/cm.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the physical significance of the generalized circuit constants A, B, C and D of a transmission line? Find the values of A, B, C and D constants of transmission line using nominal- Π method.	8 Marks	L2	CO2
	b)	A 3 − ϕ, 50Hz transmission line 100 km long delivers 20MW at 0.9 pf lagging and at 110 kV. The resistance and reactance of the line per phase per km are 0.2 Ω and 0.4 Ω respectively, while capacitance admittance is $2.5X10^{-6}$ S/km/phase. Calculate the current and voltage at the sending end for a nominal T-model.	8 Marks	L3	CO2

(OR)

5.	a)	Determine: i) propagation constant, ii) characteristic impedance, iii) attenuation constant, and iv) phase constant of a lossless transmission line.	8 Marks	L2	CO2
	b)	A 500 kV, 2 μ Sec rectangular surge on a line having a surge impedance of 350 ohms. Design a suitable capacitance termination at the station for maximum discharge of the transmitted wave at the station.	8 Marks	L4	CO2

MODULE-III

6.	a)	Describe the various methods/techniques for reducing corona effect in an overhead transmission line.	8 Marks	L2	CO3
	b)	A transmission line has a span of 250 m between supports, the supports being at the same level. The conductor has a cross-sectional area of 1·29 cm^2. The ultimate strength is 4220 kg/cm^2 and factor of safety is 2. The wind pressure is 40 kg/cm^2. Calculate the safe clearance of the conductor above ground level at which it should be supported if a minimum clearance of 7 m is to be kept between the ground and the conductor.	8 Marks	L4	CO3

(OR)

7.	a)	What is a sag in overhead lines? Discuss the disadvantages of providing too small or too large sag on a line.	8 Marks	L3	CO3
	b)	A string of eight suspension insulators is to be graded to obtain uniform distribution of voltage across the string. If the capacitance of the top unit is 10 times the capacitance to ground of each unit, determine the capacitance of the remaining seven units to sustain uniform voltage distribution across the string.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Classify different types of distribution loads and specify their voltage levels.	8 Marks	L2	CO4
	b)	A 1-phaseAC distributor 500 m long has a total impedance of (0.02+j 0.04) Ω and is fed from one end at 250V. It is loaded as under: i) 50A at unity power factor, 200 m from feeding point, ii) 100A at 0.8 power factor lagging, 300m from feeding point, iii) 50A at 0.6 power factor lagging at the far end. Calculate the voltage drop and voltage at the far end.	8 Marks	L3	CO4

(OR)

9.	a)	Discuss the method of approximate calculations in terms of resistance and reactance for the calculation of voltage drop in single phase AC distributor**.**	8 Marks	L2	CO4

	b)	A sub-urban area consisting of 2-wire DC distributor AB, 900 metres long is fed at A at 400 V and loads of 50 A, 100 A and 150 A are tapped off from C, D and E which are at a distance of 200 m, 500 m and 800 m from point A respectively. The distributor is also loaded uniformly at the rate of 0.5 A/m. If the resistance of distributor per metre (go and return) is 0.0001 Ω, calculate voltage (i) at point B and (ii) at point D.	8 Marks	L3	CO4

MODULE-V

10.	a)	What is a substation? Discuss the different classifications of the substations.	8 Marks	L3	CO5
	b)	Explain single bus bar arrangement with suitable diagram.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss how the rating of distribution substation is determined for a specific industry.	8 Marks	L2	CO5
	b)	Explain about gas and air insulated substations with neat schematic diagrams and also enumerate the potential requirements for sustainability of gas insulated substations.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

LINEAR CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Differentiate between open loop and closed system.	2 Marks	L1	CO1
	b)	Define Mason gain formula.	2 Marks	L1	CO1
	c)	Define type and order of a system.	2 Marks	L2	CO1
	d)	What is the expression for rise time and peak time?	2 Marks	L1	CO1
	e)	What are static error constants?	2 Marks	L3	CO2
	f)	Define phase cross over frequency.	2 Marks	L1	CO3
	g)	Draw the pole-zero plot of the lead compensator.	2 Marks	L1	CO4
	h)	Write the formula for converting state space model to transfer function.	2 Marks	L1	CO5
	i)	Define state-transition matrix.	2 Marks	L1	CO5
	j)	Write the expression for solution of homogenous state equation.	2 Marks	L1	CO5

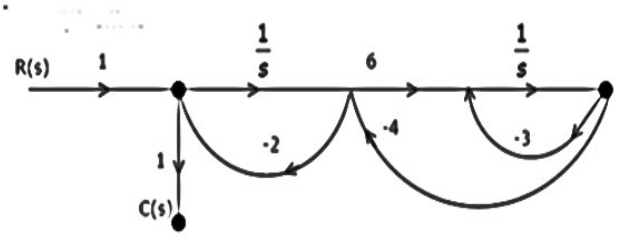
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Differentiate between open loop and closed loop control system.	8 Marks	L2	CO1
	b)	Find the transfer function c(s)/R(s) of the system shown in figure	8 Marks	L3	CO1



(OR)

3.	a)	Determine the transfer function of a armature controlled DC servomotor	8 Marks	L3	CO1
	b)	Find the transfer function $\frac{V_{o(s)}}{V_{o(s)}}$ of an RLC series circuit.Assume V_i is the input voltage and V_0 is the voltage across the capacitor.	8 Marks	L2	CO1

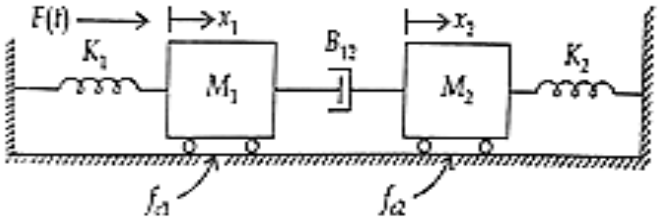
MODULE-II

4.	a)	Find the static error coefficients of the system whose forward path transfer function $G(s) = \frac{100}{S(S+4)(S^2+3S+12)}$ and find the steady-state error to the step input.	8 Marks	L3	CO2
	b)	Determine the Rise time,peak time, Settling time and peak	8 Marks	L3	CO2

overshoot for ς=0.5 ω_n=6 rad/sec for a typical second order system

(OR)

5.	a)	Derive the system response for a second order system with unit step input for an under damped case.	8 Marks	L3	CO2
	b)	Write the force –voltage, and force –current analogous equations for the system.	8 Marks	L2	CO2



MODULE-III

6.	a)	Draw the root locus for the given open loop transfer function, $G(S) = \frac{K}{S(S+4)(S+6)}$ and comment on stability.	8 Marks	L2	CO3
	b)	Discuss the stability of a system by the addition of pole and/or zero to the original transfer function.	8 Marks	L3	CO3

(OR)

7.	a)	By means of Routh-Hurwitz stability criterion, determine the range of value of K for the system to be stable, whose characteristic equation is given by $S^3 + 3KS^2 + (K+2)S + 4 = 0$.	8 Marks	L3	CO3
	b)	Discuss break away and break in points in Root locus.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the different steps to be followed for the design of lead compensator using Bode plot.	8 Marks	L3	CO4
	b)	Plot the bode diagram for the transfer function and obtain Phase margin and Gain margin. $G(s) = \frac{10}{S(1+0.4S)(1+0.1S)}$.	8 Marks	L3	CO4

(OR)

9.	a)	Sketch the Bode plot and find GM and PM. for the open loop transfer function $G(s) = \frac{20}{S(1+3S)(1+4S)}$.	8 Marks	L3	CO4
	b)	Discuss Nyquist stability criteria to determine stability.	8 Marks	L3	CO4

MODULE-V

10.	a)	Obtain the state model for an RLC series circuit.	8 Marks	L2	CO5
	b)	Discuss why state model is not unique.	8 Marks	L2	CO5

(OR)

11.	a)	Define the following i) State ii) State Variable iii) State Model.	8 Marks	L3	CO5
	b)	Obtain the state model of the system described by the transfer function $\frac{Y(s)}{U(s)} = \frac{1}{4S^2+2S+1}$.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

ELECTRICAL MACHINES-II

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain the concept of rotor reactance and its significance in an Induction Motor	2 Marks	L1	CO1
	b)	Name different types of losses in a 3-phase Induction Motor	2 Marks	L1	CO1
	c)	Describe the working principle behind auto-transformer starters	2 Marks	L1	CO2
	d)	What role does voltage modification play in controlling induction motor speed	2 Marks	L1	CO2
	e)	Explain the concept of short pitch and full pitch in armature winding layouts	2 Marks	L1	CO3
	f)	What are harmonics in generated EMF, and how do they affect machine performance?	2 Marks	L1	CO3
	g)	Define synchronizing current, power, and torque in the context of synchronization	2 Marks	L1	CO4
	h)	How does the change in excitation affect the behaviour of synchronous machines in parallel?	2 Marks	L1	CO4
	i)	Explain the relationship between excitation and power factor variations in synchronous motors.	2 Marks	L1	CO5
	j)	How are hunting effects suppressed in synchronous motors?	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Compare rotor e.m.f, current, power factor and torque of 3-phase induction motor under standstill and running conditions.	8 Marks	L2	CO1
	b)	Discuss the factors that affecting the sustainability of three phase induction machine.	8 Marks	L3	CO1
		(OR)			
3.	a)	Give the applications of both deep bar and double cage rotors of three phase induction motor.	8 Marks	L2	CO1
	b)	A 440v, 50Hz, 6pole, 3-ϕ induction motors draws an input power of 76kw from the supply mains. The rotor e.m.f makes 120 complete cycles per minute. Its stator losses are 1 kW and rotor current per phase is 62A. Calculate a) rotor copper losses / ph b) rotor resistance /ph and c) torque developed.	8 Marks	L3	CO1

MODULE-II

4.	a)	Sketch the typical torque-speed characteristic of an induction motor. How is this characteristic modified if its rotor circuit resistance is decreased?	8 Marks	L2	CO2
	b)	A 12-pole, 3-phase, 600V, 50Hz star connected, induction motor has rotor resistance and stand-still reactance of 0.03 and 0.5 ohms per phase respectively. Calculate the speed corresponding to maximum torque, ratio of full-load torque to maximum torque, if the full-load speed is 495 rpm.	8 Marks	L3	CO2
		(OR)			
5.	a)	Pole changing method is employed for obtaining the desired speeds of operation with 3-phase squirrel cage induction motor. Explain the method with suitable illustrations. Also, bring out the reason why the slip ring induction motor is not preferred for this method.	8 Marks	L2	CO2
	b)	A 4-pole, 20kW, 50Hz, 400V squirrel cage induction motor has a starting torque of 160 Nm and a full-load torque of 120Nm. Calculate starting torque for a stator	8 Marks	L2	CO2
		MODULE-III			
6.	a)	Why rotating field system is preferred against a stationary field in a synchronous machine?	8 Marks	L2	CO3
	b)	A 100 kVA, 3000V, 50Hz, 3-phase Y-connected Alternator has effective armature reactance of 0.2 Ω. The field current of 40A produces short circuit current of 200A and an open circuit e.m.f of 1040V. Calculate the full load voltage regulation at 0.8 pf lagging and 0.8 pf leading.	8 Marks	L2	CO3
		(OR)			
7.	a)	What are the causes of harmonics in the e.m.f. waveforms of synchronous generators and what means are adopted to minimize them to improve sustainability?	8 Marks	L2	CO3
	b)	Calculate the line value of the induced e.m.f per phase of a 8 pole, three phase, 50 Hz alternator with 2 slots per pole per phase and 4 conductors per slot in two layers. The coil span is 1500. The flux per pole is 0.12 Wb.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Derive expressions for the synchronizing power and synchronizing current between the two alternators connected in parallel.	8 Marks	L2	CO4
	b)	An industry has two 30 MVA, 3 phase alternators for backup power. They are operating in parallel to supply a load of 36 MVA at 0.8 p.f. lagging. If the output of one machine is 24 MVA at 0.9 lagging, Determine the output and power factor of the other machine.	8 Marks	L3	CO4
		(OR)			
9.	a)	Analyze the influence of varying mechanical input on the power factor, armature current and load angle of a synchronous generator connected to an infinite bus.	8 Marks	L4	CO4
	b)	Two 750 kW alternators operate in parallel. The speed regulation of one set is 100 to 102% from full load to no-load and that of the other is 100 to 104%. How will the two alternators share a load of 1000 kW and at what load will one machine ceases to supply any portion of the load?	8 Marks	L3	CO4

MODULE-V

10.	a)	Identify a method used to start synchronous motor under loaded condition and explain in detail.	8 Marks	L1	CO5
	b)	A factory has an average load of 300 kW at a power factor of 0.6 lagging. A synchronous motor with an efficiency of 88% is used to raise the combined power factor to 0.9 lagging and at the same time supply a mechanical load of 60kW. Calculate i) total load kVA ii) kVA capacity of the synchronous motor.	8 Marks	L3	CO5

(OR)

11.	a)	Develop the Excitation circle for a cylindrical rotor synchronous motor.	8 Marks	L2	CO5
	b)	Derive expressions for the power input and power output in terms of load angle, synchronous impedance and excitation voltage.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Differentiate between open loop and closed system.	2 Marks	L1	CO1
	b)	Define Mason gain formula.	2 Marks	L1	CO1
	c)	Define type and order of a system.	2 Marks	L2	CO1
	d)	What is the expression for rise time and peak time?	2 Marks	L1	CO1
	e)	What are static error constants?	2 Marks	L3	CO2
	f)	Define phase cross over frequency.	2 Marks	L1	CO3
	g)	Draw the pole-zero plot of the lead compensator.	2 Marks	L1	CO4
	h)	Write the formula for converting state space model to transfer function.	2 Marks	L1	CO5
	i)	Define state-transition matrix.	2 Marks	L1	CO5
	j)	Write the expression for solution of homogenous state equation.	2 Marks	L1	CO5

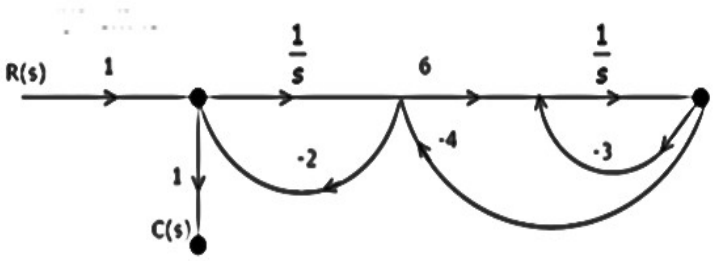
PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Differentiate between open loop and closed loop control system.	8 Marks	L2	CO1
	b)	Find the transfer function c(s)/R(s) of the system shown in figure.	8 Marks	L3	CO1



(OR)

3.	a)	Determine the transfer function of a armature controlled DC servomotor.	8 Marks	L3	CO1
	b)	Find the transfer function $\frac{V_0(s)}{V_1(s)}$ of an RLC series circuit.Assume V_i is the input voltage and V_o is the voltage across the capacitor.	8 Marks	L2	CO1

MODULE-II

4.	a)	Find the static error coefficients of the system whose forward path transfer function $G(s) = \frac{100}{s(s+4)(s^2+3s+12)}$ and find the steady-state error to the step input.	8 Marks	L3	CO2
	b)	Determine the Rise time, peak time, Settling time and peak overshoot for damping ration ς =0.5 ω_n=6 rad/sec for a typical second order system.	8 Marks	L3	CO2
		(OR)			
5.	a)	Derive the system response for a second order system with unit step input for an under damped case.	8 Marks	L2	CO2
	b)	Explain the effect of PID controller in time response of a second order system.	8 Marks	L2	CO2

MODULE-III

6.	a)	Draw the root locus for the given open loop transfer function, $G(s) = \frac{k}{s(s+4)(s+6)}$ and comment on stability.	8 Marks	L2	CO3
	b)	Discuss the stability of a system by the addition of pole and/or zero to the original transfer function.	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss the steps followed to design a lag compensator using bode plot.	8 Marks	L3	CO3
	b)	Discuss the lag and lead compensator with suitable electrical networks and write the transfer function.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the different steps to be followed for the design of lead compensator using Bode plot.	8 Marks	L3	CO4
	b)	Plot the bode diagram for the transfer function and obtain Phase margin and Gain margin $G(s) = \frac{10}{s(s+0.4s)(1+0.1s)}$.	8 Marks	L3	CO4
		(OR)			
9.	a)	Sketch the Bode plot and find GM and PM. for the open loop transfer function $G(s) = \frac{20}{s(1+3s)(1+4s)}$.	8 Marks	L3	CO4
	b)	Discuss Nyquist stability criteria to determine stability.	8 Marks	L3	CO4

MODULE-V

10.	a)	Obtain the state model for an RLC series circuit.	8 Marks	L2	CO5
	b)	Discuss why state model is not unique.	8 Marks	L2	CO5
		(OR)			
11.	a)	Define the following: i) State ii) State Variable iii) State Model.	8 Marks	L3	CO5
	b)	Obtain the state model of the system described by the transfer function $\frac{Y(s)}{U(s)} = \frac{1}{4S^2+2S+1}$.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

SOFTWARE ENGINEERING

[Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out the phases of the unified Process.	2 Marks	L2	CO1
	b)	Define Agile Process.	2 Marks	L2	CO1
	c)	List the Non-functional classifications with examples.	2 Marks	L2	CO2
	d)	Draw the Requirement change Management Process.	2 Marks	L2	CO2
	e)	Name the types of Interaction Diagrams and define them.	2 Marks	L2	CO3
	f)	List the Software Measures with example.	2 Marks	L2	CO3
	g)	Differentiate Testing and Debugging.	2 Marks	L2	CO4
	h)	Write the different types of Blackbox Testing.	2 Marks	L2	CO4
	i)	Define Reactive and Proactive risk strategies with example.	2 Marks	L2	CO5
	j)	Sketch the Diagram of Software Re-Engineering Process Model.	2 Marks	L2	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain Waterfall Model with a neat sketch.	8 Marks	L2	CO1
	b)	Demonstrate Software Process framework with five framework Activities.	8 Marks	L2	CO1
		(OR)			
3.	a)	Why software engineering is a layered technology? Explain in detail.	8 Marks	L2	CO1
	b)	Illustrate and Explain Evolutionary Models.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the various activities of Requirement Elicitation Process.	8 Marks	L3	CO2
	b)	Write the Structure of Software Requirement Specification (SRS) Document.	8 Marks	L3	CO2
		(OR)			
5.	a)	Write Short note on Scenario based Modeling Refining a Preliminary Use Case.	8 Marks	L3	CO2
	b)	Design UML Models that supplement the Use Case.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain in detail about types of design classes.	8 Marks	L4	CO3
	b)	List different types of architectural styles exist in software and explain in detail.	8 Marks	L4	CO3
		(OR)			
7.	a)	List and explain two metrics which are used to measure the software in detail. Discuss clearly the advantages and disadvantages of these metrics.	8 Marks	L4	CO3
	b)	Design a model for home automation system with class Diagram.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Illustrate the concept of Control Structure testing with an example.	8 Marks	L4	CO4
	b)	Explain the testing strategies for conventional software.	8 Marks	L4	CO4
		(OR)			
9.	a)	Discuss about Validation Testing Methods.	8 Marks	L4	CO4
	b)	Explain the different types of System Testing.	8 Marks	L4	CO4

MODULE-V

10.	a)	Explain in detail about metrics for Software Quality.	8 Marks	L3	CO5
	b)	Describe the guidelines for Formal Technical Reviews (FTR).	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the Software Reengineering process model with its activities.	8 Marks	L3	CO5
	b)	Explain in detail about Risk Identification.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

SOFTWARE ENGINEERING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out the Process Framework Activities.	2 Marks	L2	CO1
	b)	Point out two deficiencies in waterfall model.	2 Marks	L2	CO1
	c)	What is Requirement Engineering?	2 Marks	L1	CO2
	d)	Write down the types of requirements.	2 Marks	L1	CO2
	e)	What is design?	2 Marks	L1	CO3
	f)	List out the characteristics of good design.	2 Marks	L2	CO3
	g)	Define Cyclomatic Complexity.	2 Marks	L1	CO4
	h)	Compare error and defect.	2 Marks	L2	CO4
	i)	What is Risk Mitigation?	2 Marks	L1	CO5
	j)	Define Software reliability.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the XP programming in detail.	8 Marks	L2	CO1
	b)	Illustrate scrum model with an example.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss the unified process model.	8 Marks	L2	CO1
	b)	Discuss the drawbacks of waterfall model in detail.	8 Marks	L2	CO1

MODULE-II

4.	a)	Demonstrate the structure of requirement document.	8 Marks	L3	CO2
	b)	Show the possible users of requirement document.	8 Marks	L2	CO2
		(OR)			
5.	a)	Prepare a software requirement specification document for a "Library Management System" .	8 Marks	L4	CO2
	b)	Describe flow-oriented model with an example.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe in detail about Design Process.	8 Marks	L2	CO3
	b)	Explain the data centered architectural style in detail.	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe about user interface analysis in detail.	8 Marks	L2	CO3
	b)	Classify various cohesion methods used in software design.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Elaborate unit testing with an example.	8 Marks	L2	CO4
	b)	Explain the different approaches of integration testing.	8 Marks	L2	CO4
		(OR)			
9.	a)	Highlight Forward engineering process for different types of architectures.	8 Marks	L2	CO4
	b)	Classify different types of white box testing strategies.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the types of risk strategies.	8 Marks	L2	CO5
	b)	Discuss about Software Quality Assurance goals and metrics.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss in detail about RMMM plan.	8 Marks	L2	CO5
	b)	List the Phases in software Reengineering process model and explain each phase.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

FLUID MECHANICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define specific volume and give an example.	2 Marks	L1	CO1
	b)	Define vacuum pressure and provide an application where it is relevant.	2 Marks	L1	CO1
	c)	Differentiate between stream tube and path lines.	2 Marks	L1	CO2
	d)	How is the momentum equation applied to analyze flow through a pipe bend?	2 Marks	L1	CO2
	e)	Explain the concept of boundary layer thickness and its determination.	2 Marks	L1	CO3
	f)	Discuss the concept of minor losses in pipes and provide examples.	2 Marks	L1	CO3
	g)	Write down the factors influencing the force exerted by a jet on vertical plates.	2 Marks	L1	CO4
	h)	Define hydraulic turbines.	2 Marks	L1	CO4
	i)	How do pumps in series differ from pumps in parallel?	2 Marks	L1	CO5
	j)	Compare and contrast the single-acting and double-acting reciprocating pumps.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.		An inverted U-tube manometer is connected to two horizontal pipes A and B through which water is flowing. The vertical distance between the axis of these pipes is 30 cm. When an oil of sp. gravity 0.8 is used as a gauge fluid, the vertical heights of the columns in the two limbs of the inverted manometer are found to be same and equal to 35 cm. Determine the difference of pressure between the pipes.	16 Marks	L2	CO1

(OR)

3.	a)	Explain the different types of fluids?	8 Marks	L1	CO1
	b)	What is the difference between dynamic viscosity and kinematic viscosity? State their units of measurements.	8 Marks	L2	CO1

MODULE-II

4.		The water is flowing through a pipe having diameters 20 cm and 10 cm at sections 1 and 2 respectively. The rate of flow through the pipe is 35 litres/sec. The section 1 is 6 m above datum and section 2 is 4 m above datum. If the pressure at section 1 is 39.24 N/cm^2, find the intensity of pressure at section 2.	16 Marks	L3	CO2

(OR)

5.		Derive Bernoulli's equation for the flow of an incompressible frictionless fluid from consideration of momentum.	16 Marks	L2	CO2

MODULE-III

6.	a)	What is a boundary layer? Why does it increase with distance from the upstream edge?	8 Marks	L2	CO3
	b)	How will you find the drag on a flat plate due to laminar and turbulent boundary layers?	8 Marks	L2	CO3

(OR)

7.	a)	Draw a neat sketch of the Reynolds experiment and explain how the laminar flow can be demonstrated?	8 Marks	L2	CO3
	b)	The rate of flow of water through a horizontal pipe is 0.25 m^3/sec. The diameter of the pipe which is 20 cm is suddenly enlarged to 40 cm. The pressure intensity in the smaller pipe is 11.772 N/cm^2. Determine: i) Loss of head due to sudden enlargement, ii) Pressure intensity in larger pipe, iii) Power loss due to enlargement.	8 Marks	L3	CO3

MODULE-IV

8.		Derive an expression for the force exerted by a jet of water on a moving flat and inclined plate in the direction of flow.	16 Marks	L2	CO4

(OR)

9.	a)	Derive an expression for specific speed of Francis turbine.	8 Marks	L3	CO4
	b)	A turbine is to operate under a head of 25 m at 200 r.p.m. The discharge 9 m3/s. If the efficiency is 90 %, determine the performance of the turbine under a head of 20 metres.	8 Marks	L3	CO4

MODULE-V

10.	a)	Draw and explain the operating characteristics of a centrifugal pump.	8 Marks	L2	CO5
	b)	A centrifugal pump is to discharge 0.118m^3/sec at a speed of 1450 rpm against a head of 25 m. The impeller diameter at outlet is 250 mm and its width at outlet is 50mm and manometric efficiency is 75%. Determine vane angle at outer periphery of the impeller.	8 Marks	L3	CO5

(OR)

11.		Explain construction and working principle of a single acting reciprocating pump with a neat diagram.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is a dynamometer?	2 Marks	L1	CO1
	b)	What are the functions of braking system?	2 Marks	L1	CO1
	c)	What is Gyroscopic couple and Axis of Precession?	2 Marks	L1	CO2
	d)	Draw TDM for 4 Stroke ICE Engine.	2 Marks	L1	CO2
	e)	Draw the free body diagram of Hartung Governor?	2 Marks	L1	CO3
	f)	What is sensitivity of the Governor?	2 Marks	L1	CO3
	g)	What is Dynamic Balancing?	2 Marks	L1	CO4
	h)	What is balanced couple?	2 Marks	L1	CO4
	i)	What is logarithmic decrement?	2 Marks	L1	CO5
	j)	Express the conditions of critically damped systems.	2 Marks	L1	CO5

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe with a neat sketch a cone clutch and deduce an equation for the total torque transmitted.	6 Marks	L2	CO1
	b)	A conical friction clutch is used to transmit 90 kW at 1500 r.p.m. The semicone angle is 20º and the coefficient of friction is 0.2. If the mean diameter of the bearing surface is 375 mm and the intensity of normal pressure is not to exceed 0.25 N/mm^2, find the dimensions of the conical bearing surface and the axial load required.	10 Marks	L3	CO1
		(OR)			
3.	a)	Distinguish between brakes and dynamometers	6 Marks	L2	CO1
	b)	A simple band brake is operated by a lever of length 500 mm. The brake drum has a diameter of 500 mm and the brake band embraces 5/8 of the circumference. One end of the band is attached to the fulcrum of the lever while the other end is attached to a pin on the lever 100 mm from the fulcrum. If the effort applied to the end of the lever is 2 kN and the coefficient of friction is 0.25, find the maximum braking torque on the drum.	10 Marks	L3	CO1

MODULE-II

4.	a)	Write a short note on gyroscope.	6 Marks	L1	CO2
	b)	The turbine rotor of a ship has a mass of 3500 kg. It has a radius of gyration of 0.45 m and a speed of 3000 r.p.m. clockwise when looking from stern. Determine the gyroscopic couple and its effect upon the ship: i) when the ship is steering to the left on a curve of 100 m radius at a speed of 36 km/h. ii) when the ship is pitching in a simple harmonic motion, the bow falling with its maximum velocity. The period of pitching is 40 seconds and the total angular displacement between the two extreme positions of pitching is 12 degrees.	10 Marks	L3	CO2

(OR)

5.	a)	Differentiate between fly wheel and governor	6 Marks	L1	CO2
	b)	The turning moment diagram for a multicylinder engine has been drawn to a scale 1 mm = 600 N-m vertically and 1 mm = 3° horizontally. The intercepted areas between the output torque curve and the mean resistance line, taken in order from one end, are as follows : + 52, – 124, + 92, – 140, + 85, – 72 and + 107 mm2 , when the engine is running at a speed of 600 r.p.m. If the total fluctuation of speed is not to exceed ± 1.5% of the mean, find the necessary mass of the flywheel of radius 0.5 m	10 Marks	L3	CO2

MODULE-III

6.	a)	What are the functions of a governor? Classify mechanical governors?	6 Marks	L1	CO3
	b)	The lengths of the upper and lower arms of a Porter governor are 200mm and 250mm respectively. Both the arms are pivoted on the axis of the rotation. The central load is 150N, the weight of each ball is 20N and the friction of the sleeve together with the resistance of the operating gears is equivalent to a force of 30N at the sleeve. If the limiting inclinations of the upper arms to the vertical are 30^0 and 40^0, determine the range of speed of the governor.	10 Marks	L3	CO3

(OR)

7.		The arms of a Hartnell governor are of equal length. When the sleeve is in the midposition, the masses rotate in a circle of diameter 200mm (the arms are vertical in the mid-position). Neglecting friction, the equilibrium speed for this position is 300 rpm. Maximum variation of speed, taking friction into account, is to be ± 5% of the mid-position speed for a maximum sleeve / movement of 25 mm. The sleeve mass is 5 kg and the friction at the sleeve is 30 N.Assuming that the power of the governor is sufficient to overcome the friction by 1 % change of speed on each side of the mid-position, find (neglecting obliquity effect of arms). i) The mass of each rotating ball ii) The spring stiffness iii) The initial compression of the spring.	16 Marks	L3	CO3

MODULE-IV

8.		A,B,C and D are four masses carried by a rotating shaft at radii 100mm, 150mm, 150mm and 200mm respectively. The planes in which masses rotate are spaced at 500mm apart and the magnitude of the masses, B, C and D are 9Kg, 5Kg and 4Kg respectively. Find the required mass A and the relative angular settings of the 4 masses so that the shaft shall be in complete balance.	16 Marks	L3	CO4

(OR)

9.	A single cylinder horizontal engine runs at 120 r.p.m. The length of stroke is 400 mm. The mass of the revolving parts assumed concentrated at the crank pin is 100 kg and mass of reciprocating parts is 150 kg. Determine the magnitude of the balancing mass required to be placed opposite to the crank at a radius of 150mm which is equivalent to all the revolving and 2/3 rd of the reciprocating masses. If the crank turns 300 from the inner dead centre, find the magnitude of the unbalanced force due to the balancing mass.	16 Marks	L4	CO4

MODULE-V

10.	A shaft 1.5 m long, supported in flexible bearings at the ends carries two wheels each of 50 kg mass. One wheel is situated at the center of the shaft and the other at a distance of 375 mm from the center towards left. The shaft is hollow of external diameter 75 mm and internal diameter 40 mm. The density of the shaft material is 7700 kg/m3 and its modulus of elasticity is 200 GN/m2. Find the lowest whirling speed of the shaft, taking into account the mass of the shaft.	16 Marks	L3	CO5

(OR)

11.	A machine has a mass of 100 kg and unbalanced reciprocating parts of mass 2 kg which move through a vertical stroke of 80 mm with simple harmonic motion. The machine is mounted on four springs, symmetrically arranged with respect to center of mass, in such a way that the machine has one degree of freedom and can undergo vertical displacements only. Neglecting damping, calculate the combined stiffness of the spring in order that the force transmitted to the foundation is 1 / 25 th of the applied force, when the speed of rotation of machine crank shaft is 1000 r.p.m. When the machine is actually supported on the springs, it is found that the damping reduces the amplitude of successive free vibrations by 25%. Find: 1. the force transmitted to foundation at 1000 r.p.m., 2. the force transmitted to the foundation at resonance, and 3. the amplitude of the forced vibration of the machine at resonance.	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations April – 2024

THERMAL ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 100**

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is 'delay period' and what are the factors that affect the delay period?	2 Marks	L1	CO1
	b)	Define the terms 'Bore' and 'Stroke'	2 Marks	L1	CO1
	c)	How will you determine IMEP from an indicator diagram?	2 Marks	L1	CO1
	d)	Briefly explain Willan's line method.	2 Marks	L1	CO1
	e)	What is the function of a regenerator in a gas turbine?	2 Marks	L1	CO2
	f)	What are the components of a gas turbine plant?	2 Marks	L1	CO2
	g)	What are the advantages of a rotary compressor over a reciprocating compressor?	2 Marks	L1	CO3
	h)	Name the methods adopted for increasing isothermal efficiency of reciprocating air compressor.	2 Marks	L1	CO3
	i)	What are the advantages of the reheat cycle?	2 Marks	L1	CO4
	j)	Why Carnot cycle cannot be realized in practice?	2 Marks	L1	CO4

PART - B

Answer One Question from each Module.
All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

2.	a)	Draw the valve-timing diagram of the four-stroke CI engine and explain the various processes.	8 Marks	L2	CO1
	b)	Define the flame speed. Discuss the influence of Engine variables on the flame speed.	8 Marks	L2	CO1
		(OR)			
3.	a)	Compare the relative advantages and disadvantages of four-stroke and two-stroke engines.	8 Marks	L2	CO1
	b)	What is meant by abnormal combustion? Explain the phenomena of knock in CI engines.	8 Marks	L2	CO1

MODULE-II

4.		The following details were noted in a test on a four-cylinder, four-stroke engine, diameter = 100 mm; stroke = 120 mm; speed of the engine = 1600 rpm; fuel consumption = 0.2 kg/min; calorific value of fuel is 44000 kJ/kg; difference in tension on either side of the brake pulley = 40 kg; brake circumference is 300 cm. If the mechanical efficiency is 80%, calculate i) brake thermal efficiency ii) indicated thermal efficiency iii) indicated mean effective pressure and iv) brake specific fuel consumption.	16 Marks	L3	CO1

(OR)

5.		The following results were obtained in a test on a gas engine: Gas used = 0.16 m^3/min at NTP Calorific value of gas at NTP = 14 MJ/m^3 Density of gas at NTP = 0.65 kg/m^3 Air used = 1.50 kg/min Specific heat of exhaust gas = 1.0 kJ/kg K Temperature of exhaust gas = 400°C Room temperature = 20°C Cooling water per minute = 6 kg Specific heat of water = 4.18 kJ/kg K Rise in temp. of cooling water = 30°C IP = 12.5 kW BP = 10.5 kW	16 Marks	L3	CO1

MODULE-III

6.		A gas turbine cycle has a perfect heat exchanger. Air enters the compressor at a temperature and pressure of 300 K and 1 bar and discharges at 475 K and 5 bar. After passing through the heat exchanger the air temperature increases to 655 K. The temperature of air entering and leaving the turbine are 870◦C and 450◦C. Assuming no pressure drop through the heat exchanger, compute i) the output per kg of air, ii) the efficiency of the cycle, and iii) the work required to drive the compressor.	16 Marks	L3	CO2

(OR)

7.	a)	Discuss the principle of operation of the Pulse Jet Engine with a neat sketch.	8 Marks	L2	CO2
	b)	Discuss the working of the turboprop engine with a neat sketch.	8 Marks	L2	CO2

MODULE-IV

8.		A compressor running at 410 rpm has a bore of 9 cm and a stroke of 10 cm. Two cylinders are used. The clearance is 4 % of stroke. If compression and expansion follow the law pV^{γ}= C, determine the power developed and the FAD in m^3/hr. Inlet conditions are 0.96 bar and 40°C and delivery is at 6 bar. Assume effects other than clearance can be neglected in arriving at volumetric efficiency. Standard conditions for free air are 1 bar & 20°C.	16 Marks	L3	CO3

(OR)

9.		A single-stage, single-acting reciprocating air compressor has a bore of 200 mm and a stroke of 300 mm. It receives air at 1 bar and 20°C and delivers at 5.5 bar. If the compression follows the law $pV^{1.3}$ = C and the clearance volume is 5 % of the stroke volume, determine the power required to drive the compressor at 500 rpm.	16 Marks	L3	CO3

MODULE-V

10.	a)	Draw P-V and T-S diagrams of the Rankine cycle using dry saturated steam and develop the equation for the Rankine cycle efficiency.	8 Marks	L2	CO4
	b)	Explain the concept of the binary vapour cycle with a neat sketch	8 Marks	L2	CO4

(OR)

11.		A Rankine cycle operates between pressures of 80 bar and 0.1 bar. The maximum cycle temperature is 600°C. If the steam turbine and condensate pump efficiencies are 0.9 and 0.8 respectively, calculate the specific work and thermal efficiency.	16 Marks	L3	CO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech I Semester (SVEC16) Supplementary Examinations May - 2024

MULTI-VARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS

[MECHANICAL ENGINEERING,ELECTRONICS AND COMMUNICATION ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1. a) Evaluate the family of curves whose differential equation is $\frac{dy}{dx}(x^2y^3 + xy) = 1$. 7 Marks

   b) State the general form of Bernoulli type differential equation and solve the differential equation $(1-x^2)\frac{dy}{dx} + xy = y^3 \sin^{-1} x$. 7 Marks

(OR)

2. a) Evaluate the equation of the curve satisfying the differential equation $(1+x^2)\frac{dy}{dx} + 2xy = 4x^2$ and passing through origin. 7 Marks

   b) Find the solution of the differential equation $(1+y^2)\,dx = (\tan^{-1} y - x)\,dy$. 7 Marks

UNIT-II

3. a) By the technique of finding the particular integrals , find the general solution of the differential equation $(D^2 + 4D + 13)y = 2e^{-x}$. 7 Marks

   b) Write the general form of a non-homogeneous differential equation of order n and establish a general solution for the differential equation $(D+2)(D-1)^2 y = e^{-2x} + 2\sinh x$. 7 Marks

(OR)

4. a) Solve the differential equation $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 3y = \sin 3x \cos 2x$. 7 Marks

   b) Establish solution of the differential equation $y'' + 4y' + 4y = 4\cos x + 3\sin x$ satisfying the conditions $y(0) = 0,\ y'(0) = 0$. 7 Marks

UNIT-III

5. a) Investigate the continuity at (0 , 0) of the function 7 Marks

$$f(x,y) = \begin{cases} \frac{x^2 - y^2}{x^2 + y^2}, & (x,y) \neq (0,0) \\ 0 & (x,y) = (0,0) \end{cases}$$

   b) If $u = f(r,s,t)$ where $r = \frac{x}{y}$, $s = \frac{y}{z}$, $t = \frac{z}{x}$, then show that 7 Marks

$$x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + z\frac{\partial u}{\partial z} = 0$$

(OR)

6. a) Evaluate $\underset{\substack{x\to 1\\ y\to 2}}{Lt} \dfrac{2x^2y}{x^2+y^2+1}$ 7 Marks

b) Define continuity of the function f(x,y) at a point (a,b) and analyze the function $f(x,y)=\begin{cases} \dfrac{2xy}{x^2+y^2}, & (x,y)\neq(0,0) \\ 0, & (x,y)=(0,0) \end{cases}$ for the continuity at origin 7 Marks

UNIT-IV

7. a) Prove that the length of the arc of the parabola $y^2 = 4ax$ cut off by its latus rectum is $2a(\sqrt{2} + \log(1+\sqrt{2}))$ 7 Marks

b) Find the surface area generated by the revolution of an arc of the catenary $y = c\cosh\frac{x}{c}$ about the x – axis 7 Marks

(OR)

8. a) Find the perimeter of the cardioid $r = a(1 - \cos\theta)$ 7 Marks

b) Change the order of integration and evaluate $\int_0^b \int_0^{\frac{a\sqrt{b^2-y^2}}{b}} xydxdy$ 7 Marks

UNIT-V

9. a) Define gradient of a scalar point function and show that $\nabla[f(r)] = \dfrac{f'(r)}{r}\bar{r}$ where $\bar{r} = x\bar{i} + y\bar{j} + z\bar{k}$ 7 Marks

b) Define directional derivative and find the directional derivative of $f = x^2 - y^2 + 2z^2$ at the point p= (1,2,3) in the direction of the line PQ, where Q = (5,0,4) 7 Marks

(OR)

10. a) Find the directional derivative of $xyz^2 + xz$ at (1,1,1) in a direction of the normal to the surface $3xy^2 + y = z$ at (0,1,1) 7 Marks

b) Find the angle between the normal to the surface $x^2 = yz$ at the points (1,1,1) and (2,4,1) 7 Marks

CODE No.: 16BT1BS01 SVEC-16

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech I Semester (SVEC16) Supplementary Examinations, May - 2024

ENGINEERING CHEMISTRY

[MECHANICAL ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Explain the Ion-Exchange process for softening of water with the reactions involved and mention the advantages, disadvantages of this process. 14 Marks

(OR)

2. a) Explain the following, 7 Marks
   (i) Priming (ii) Foaming
   b) Write short note on internal treatment methods for softening of water. 7 Marks

UNIT-II

3. a) Differentiate short and long fibre-reinforced composites 7 Marks
   b) What are the advantages of composite material? Mention its applications. 7 Marks

(OR)

4. What are biodegradable polymers? Formulate the mechanism of degradation of biodegradable polymers and mention their applications. 14 Marks

UNIT-III

5. Design the synthesis of nanomaterials by Sol-Gel method with a neat sketch. 14 Marks

(OR)

6. Why the properties of nanomaterials differ significantly from bulk materials? Explain the properties of nanomaterials with examples. 14 Marks

UNIT-IV

7. Discuss the construction and working principle of Ni-Cd battery. List out the applications of Ni-Cd batteries. 14 Marks

(OR)

8. Discuss the construction and working of Lithium- ion battery with the reactions occurring during charging and discharging. Mention the applications of Li-ion batteries. 14 Marks

UNIT-V

9. a) Define lubricant. Mention the important functions of lubricant. 7 Marks
   b) Write an explanatory note on any two solid lubricants. 7 Marks

(OR)

10. Define lubrication. Illustrate the mechanism of thin film and extreme pressure lubrication. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2024

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Define the rank of a matrix. Reduce the matrix $\begin{bmatrix} 3 & 1 & 4 & 6 \\ 2 & 1 & 2 & 4 \\ 4 & 2 & 5 & 8 \\ 1 & 1 & 2 & 2 \end{bmatrix}$ into Echelon form and evaluate its rank. 14 Marks

(OR)

2 Write all possible normal forms of the matrix. Determine the rank of the matrix, $\begin{bmatrix} 1 & 2 & -1 & 3 \\ 4 & 1 & 2 & 1 \\ 3 & -1 & 1 & 2 \\ 1 & 2 & 0 & 1 \end{bmatrix}$ by reducing it to the corresponding normal form. 14 Marks

UNIT-II

3 Applying Bisection method, estimate an approximate root correct to two decimal places for the equation $x^3 - x - 1 = 0$. 14 Marks

(OR)

4 Establish a formula $x_{n+1} = \frac{1}{2}\left(x_n + \frac{N}{x_n} \right)$ for a square root of a number by Newton-Raphson's method and hence deduce that $\sqrt{10}$. 14 Marks

UNIT-III

5 a) Choose the appropriate interpolation formula and estimate the value of $e^{1.75}$ from the following data. 7 Marks

x	1.7	1.8	1.9	2.0
$y = e^x$	5.474	6.050	6.686	7.389

b) Estimate the population for the year 1925 from the data given below. 7 Marks

Year x	1891	1901	1911	1921	1931
Population y (in lakhs)	46	66	81	93	101

(OR)

6 Write Newton's backward interpolation formula and using it estimate the value of $f(42)$ from the following data. 14 Marks

x	20	25	30	35	40	45

$f(x)$	354	332	291	260	231	204

UNIT-IV

7 a) Estimate $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ for $x = 1.2$ from the following table of values of x and y. 7 Marks

x	1.0	1.2	1.4	1.6	1.8	2.0	2.2
y	2.7183	3.3201	4.0552	4.9530	6.0496	7.3891	9.0250

b) State Simpson's 1/3 rule and applying it evaluate $\int_0^2 e^{-x^2} dx$ taking h = 0.25. 7 Marks

(OR)

8 a) Obtain $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at $x = 1.6$ from the following table. 7 Marks

x	1.0	1.1	1.2	1.3	1.4	1.5	1.6
y	7.989	8.403	8.781	9.129	9.451	9.750	10.031

b) Apply Simpson's $\frac{1}{3}$ rd rule to find $\int_0^{0.6} e^{-x^2} dx$ by taking seven ordinates. 7 Marks

UNIT-V

9 Write Taylors iteration formula for numerical solution of a differential equation and applying it, estimate the approximate value of $y(0.1)$ and $y(0.2)$, given that $y' = 2x + 3e^x$, $y(0) = 0$. Compare the numerical solution obtained with exact solution. 14 Marks

(OR)

10 Write Runge-Kutta 4th order formulae and use it to evaluate $y(0.1)$ and $y(0.2)$ given $y' = x^2 - y$ and $y(0)=1$. Compare the numerical solution obtained with analytical solution. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-19) Supplementary Examinations, May- 2024

DIFFERENTIAL EQUATIONS AND MULTIVARAIBLE CALCULUS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Solve the differential equation $\left(D^3 + 2D^2 + D\right)y = e^{2x} + x^2 + x$.	6 Marks	L3	CO1	PO1 PO2
	b)	Solve $x^3 \frac{d^3y}{dx^3} + 2x^2 \frac{d^2y}{dx^2} x + 2y = 10\left(x + \frac{1}{x}\right)$ by suitable substitution.	6 Marks	L3	CO1	PO1 PO2
		(OR)				
2.		The charge q in a L-C-R circuit is given by the differential equation $L\frac{d^2q}{dt^2} + R\frac{dq}{dt} + \frac{q}{C} = E \sin pt$ *where* $p^2 = \frac{1}{LC}$. If initially the current *i* and the charge *q* in the circuit are zero, then show that for small values of $\frac{R}{L}$, the current *i* in the circuit at time *t* is $\frac{ET}{2L}\sin pt$.	12 Marks	L2	CO1	PO1 PO2

UNIT-II

3.	a)	Construct the partial differential equation by eliminating the arbitrary function ϕ *from* $lx + my + nz = \phi\left(x^2 + y^2 + z^2\right)$.	6 Marks	L3	CO1	PO1
	b)	Solve $z^2\left(p^2x^2 + q^2\right) = 1$ and write its complete solution.	6 Marks	L3	CO1	PO1 PO2
		(OR)				
4.	a)	By the method of separation of variables, solve $u_{xt} = e^{-t}\cos x$, *given* $u(x,0) = 0$ *and* $u(0,t) = 0$.	6 Marks	L3	CO1	PO1 PO2
	b)	Solve the partial differential equation $\frac{\partial^2 z}{\partial x^2} - 2\frac{\partial^2 z}{\partial x^2 \partial y} = 2e^{2x} + 3x^2 y$.	6 Marks	L3	CO1	PO1 PO2

UNIT-III

5.	a)	Determine $\frac{\partial(u,v,w)}{\partial(x,y,z)}$, *when* $x + y + z = u,\ y + z = uv,\ z = uvw$.	6 Marks	L3	CO2	PO1
	b)	If $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$, Show that the minimum value of the function $a^3x^2 + b^3y^2 + c^3z^2$ *is* $(a + b + c)^3$.	6 Marks	L2	CO2	PO1 PO2

(OR)

6.	a)	Examine the following function for extreme values $f(x,y) = x^3 + 3xy^2 - 3x^2 - 3y^2 + 4$.	6 Marks	L4	CO2	PO1 PO2
	b)	Using Lagrange's method, Find the volume of greatest rectangular parallelopiped that can be inscribed in the ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$.	6 Marks	L3	CO2	PO1 PO2

UNIT-IV

7.	a)	Evaluate $\int_0^1 \int_0^{\sqrt{(1+x^2)}} \frac{1}{1+x^2+y^2}\, dxdy$.	6 Marks	L5	CO2	PO1
	b)	Show that the area between the plane curves $y^2 = 4ax$ *and* $x^2 = 4ay$ *is* $\frac{16}{3}a^2$.	6 Marks	L2	CO2	PO1 PO2

(OR)

8.	a)	Evaluate $\int_0^4 \int_0^{2\sqrt{z}} \int_0^{\sqrt{4z-x^2}} dydxdz$.	6 Marks	L5	CO2	PO1
	b)	Evaluate $\iiint \frac{xyz}{\sqrt{x^2+y^2+z^2}}\, dxdydz$ taken over the volume of the sphere $x^2 + y^2 + z^2 = a^2$.	6 Marks	L5	CO2	PO1 PO2

UNIT-V

9.	a)	Find the directional derivative of $f(x,y,z) = x^2 - y^2 + 2z^2$ at the point P(1,2,3) in the direction of the line PQ where Q is the point (5,0,4).	6 Marks	L1	CO3	PO1
	b)	Calculate work done by the force $\bar{F} = (3x^2 + 6y)\,\bar{i} - 14yz\,\bar{j} + 20xz^2\,\bar{k}$ in moving a particle along a line from (0,0,0) *to* (1,0,0) *then to* (1,1,0) *and then to* (1,1,1).	6 Marks	L3	CO3	PO1 PO2

(OR)

10.		Verify Gauss divergence theorem for $\bar{F} = x^2\,\bar{i} + y^2\,\bar{j} + z^2\,\bar{k}$, over the cube formed by the planes $x = 0, x = a, y = 0, y = b, z = 0, z = c$	12 Marks	L5	CO3	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May– 2024

DIFFERENTIAL EQUATIONS AND MULTIVARIABLE CALCULUS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Business Systems, Computer Science and Design, Computer Science and Engineering (Artificial Intelligence and Machine Learning),Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Solve the differential equation $(D-2)^2 y = 8\left(e^{2x} + \sin 2x\right)$.	7 Marks	L3	CO1	PO1
	b)	Solve the differential equation $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = e^x \sin x$.	7 Marks	L3	CO1	PO1
		(OR)				
2.	a)	By applying the method of variation of parameters, solve the differential equation $\frac{d^2y}{dx^2} + a^2 y = \sec ax$.	7 Marks	L3	CO1	PO1
	b)	Solve the Cauchy's linear homogeneous equation $x^2\frac{d^2y}{dx^2} + 3x\frac{dy}{dx} + y = \frac{1}{(1-x)^2}$.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Construct a partial differential equation by eliminating the arbitrary functions from $z = f(x-it) + g(x-it)$.	7 Marks	L3	CO2	PO1
	b)	Solve the partial differential equation $x^2(y-z)\,p + y^2(z-x)\,q = z^2(x-y)$.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Analyze and solve the partial differential equation $\frac{\partial^2 z}{\partial x^2} - 2\frac{\partial^2 z}{\partial x \partial y} + \frac{\partial^2 z}{\partial y^2} = \sin(2x+3y)$.	7 Marks	L3	CO2	PO2
	b)	Using method of separation of variables, find the solution of $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, where $u(x,0) = 6e^{-3x}$.	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	Show that the functions $u = xy + yz + zx, v = x^2 + y^2 + z^2$ and $w = x + y + z$ are functionally related. Find the relation between them.	7 Marks	L2	CO3	PO1
	b)	Find the dimensions of the rectangular box requiring least material for its construction when the box is open at the top is to have a volume of 32 cubic feet.	7 Marks	L1	CO3	PO2

(OR)

6.	a)	If $u = \frac{yz}{x}; v = \frac{zx}{y}; w = \frac{xy}{z}$, show that $\frac{\partial(u,v,w)}{\partial(x,y,z)} = 4$.	7 Marks	L2	CO3	PO1
	b)	Using Lagrange's method of undetermined multipliers, find the minimum value of $x^2+y^2+z^2$ subject to the condition $x+y+z=1$.	7 Marks	L3	CO3	PO2

UNIT-IV

7.	a)	Evaluate $\int_0^a \int_0^x \int_0^{x+y} e^{x+y+z}\, dz\, dy\, dx$.	7 Marks	L5	CO4	PO1
	b)	Change the order of integration, evaluate $\int_0^{4a} \int_{\frac{x^2}{4a}}^{2\sqrt{ax}} dy\, dx$.	7 Marks	L5	CO4	PO2

(OR)

8.	a)	Evaluate the integral, by the technique of transforming into polar coordinates $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)}\, dx\, dy$.	7 Marks	L5	CO4	PO2
	b)	Evaluate $\iint_R y\, dx\, dy$ where R is the region bounded by the first quadrant of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.	7 Marks	L5	CO4	PO2

UNIT-V

9.	a)	Define the divergence of a vector point function and find $div\vec{f}$ where $\vec{f} = r^n\vec{r}$. Find n if it is solenoidal.	7 Marks	L1	CO5	PO1
	b)	Find the directional derivative of $f = x^2 - y^2 + 2z^2$ at the point $P = (1,2,3)$ in the direction of the line PQ ,where $Q = (5,0,4)$.	7 Marks	L1	CO5	PO1

(OR)

10.		Verify Green's theorem for $\int_C (xy + y^2)\, dx + x^2\, dy$, where c is bounded by $y = x$ and $y = x^2$.	14 Marks	L5	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ENGINEERING PHYSICS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	How Newton's rings are formed? Derive an expression for the wavelength of a monochromatic source using Newton's ring experiment.	10 Marks	L3	CO1	PO2
	b)	Recall various engineering applications of polarization.	4 Marks	L1	CO1	PO1
		(OR)				
2.	a)	List the difference between interference and diffraction of light.	4 Marks	L1	CO1	PO1
	b)	Develop the theory of Fraunhofer diffraction due to a double slit and explain the condition of interference and diffraction effects.	10 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	State Maxwell's equation in differential and integral forms.	4 Marks	L1	CO2	PO1
	b)	Explain the propagation of electromagnetic waves through a non-conducting medium.	10 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Summarize the following: total internal reflection, acceptance angle, acceptance cone, and numerical aperture.	8 Marks	L2	CO2	PO1
	b)	Classify the different types of optical fibers.	4 Marks	L2	CO2	PO1
	c)	Calculate the numerical aperture of a given optical fiber of the refractive indices of the core and the claddings are 1.563 and 1.498 respectively.	2 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Define Semiconductor. Explain the extrinsic semiconductors.	6 Marks	L2	CO3	PO1
	b)	State Hall effect? Derive an equation for the Hall coefficient.	8 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Distinguish between direct band gap semiconductors and indirect band gap semiconductors.	5 Marks	L4	CO3	PO1
	b)	Discuss the construction and working mechanism of the diode laser with a neat diagram.	9 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Recall various types of polarization.	2 Marks	L1	CO4	PO1
	b)	Define local field in a dielectric material? Explain how the local field could be calculated for a cubic dielectric crystal.	12 Marks	L2	CO4	PO2
		(OR)				
8.	a)	Classify different types of magnetic materials.	9 Marks	L4	CO4	PO1
	b)	Differentiate hard and soft magnetic materials. Write their application.	5 Marks	L2	CO4	PO1
		UNIT-V				

9.	a)	State and explain the Meissner effect? How it is used to classify Type-I and Type-II superconductors?	10 Marks	L1	CO5	PO1
	b)	Recite various applications of superconductors.	4 Marks	L1	CO5	PO1
		(OR)				
10.	a)	How do nanomaterials differ from bulk materials? Explain the effect of nanosize on the magnetic and optical properties of nanomaterials.	8 Marks	L2	CO5	PO1
	b)	Summarize the application of applications of nanomaterials.	6 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May– 2024

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

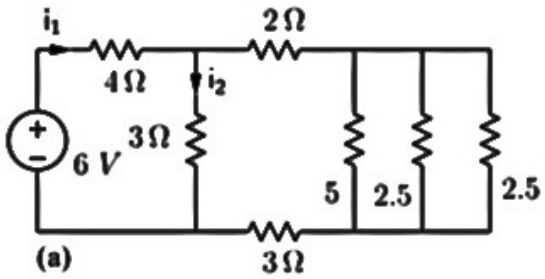
[Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence), Computer Science and Design, Computer Science and Engineering (Cyber Security), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things)]

Time: 3 hours **Max. Marks: 70**

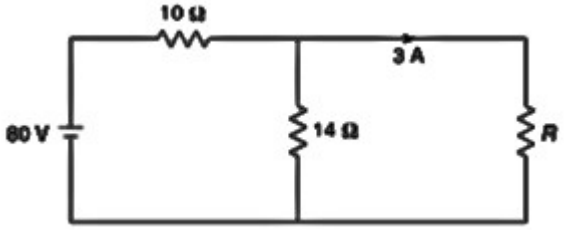
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Determine the current flowing through 5 Ω resistor shown in figure.	7 Marks	L3	CO1	PO2



	b)	Determine the current delivered by the source and value of unknown resistance *R* for the given network.	7 Marks	L3	CO1	PO2



(OR)

2.	a)	State Kirchhoff's laws and validate the law with suitable examples.	7 Marks	L2	CO1	PO1
	b)	Obtain the RMS and Average values of a sinusoidal voltage of peak V_m and angular frequency ω rad/s.	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	With the help of neat sketch describe the operation of clean environmental method for sustainable energy generations also mention its advantage and disadvantages.	7 Marks	L2	CO2	PO7
	b)	Explain the functional aspects of a relay.	7 Marks	L2	CO2	PO1

(OR)

4.	a)	With neat sketch explain the operation of sustainable power generation using thermal power plant.	7 Marks	L2	CO2	PO7
	b)	Explain the significance of power factor and enumerate the methods of improving the power factor.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	With neat sketch demonstrate the working principle of single phase transformer.	7 Marks	L2	CO3	PO1
	b)	Explain the working of Brushless DC motor and mention any one of its application.	7 Marks	L2	CO3	PO1

(OR)

6.	a)	Explain the constructional details of single phase capacitor start and run induction motor.	7 Marks	L2	CO3	PO1
	b)	Explain the working principle of three phase induction motor and mention any one application.	7 Marks	L2	CO3	PO1

UNIT-IV

7.		Explain the operation of a PN junction diode in forward biased and reverse biased condition. Draw its V-I characteristics.	14 Marks	L2	CO4	PO1

(OR)

8.	a)	Distinguish between half wave rectifier and full wave rectifier.	7 Marks	L2	CO4	PO2
	b)	What is the need for biasing in transistor operation?	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Define Op-Amp and list out the ideal characteristics of ideal Op-Amp.	7 Marks	L1	CO4	PO1
	b)	In an inverting adder circuit, the input voltages ate 0.4 V, 0.6 V, 0.2 V while $R_1=R_2=R_3=1$ KΩ, If $R_f=10$ KΩ. Calculate the output voltage.	7 Marks	L2	CO4	PO2

(OR)

10.	a)	Examine and derive an expression for V_0 of the differentiator circuit by using Op-Amp.	7 Marks	L2	CO4	PO2
	b)	Draw the block diagram of Op-Amp and explain in detail.	7 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

MATERIALS SCIENCE AND ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss briefly the following structures for metallic elements: i) Body centered cubic, ii) Face centered cubic. iii) Hexagon close-packed.	7 Marks	L2	CO1	PO1
	b)	Demonstrate the Edge and Screw dislocations with neat sketches.	7 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Draw Fe-Fe_3C phase diagram and explain the phase transformation reactions in the diagram.	8 Marks	L3	CO1	PO1 PO2
	b)	State Gibb's Phase rule. What is its importance?	6 Marks	L2	CO1	PO1 PO2 PO3 PO4

UNIT-II

3.	a)	Define annealing. Differentiate between full annealing and process annealing.	7 Marks	L2	CO2	PO1 PO7
	b)	Classify the various types of hardening treatments. Write short notes on Flame and induction hardening.	7 Marks	L2	CO2	PO1 PO2 PO7
		(OR)				
4.	a)	Explain Time Temperature Transformation (TTT) diagram for eutectoid steel.	7 Marks	L2	CO2	PO1 PO2
	b)	Carburizing heat treatment is generally done on low carbon steels. Why?	7 Marks	L3	CO2	PO1 PO2 PO3

UNIT-III

5.	a)	List the properties and applications of hadfield manganese, stainless and tool steels.	7 Marks	L2	CO3	PO1
	b)	Draw the micro structure of plain carbon steels and write the applications of it.	7 Marks	L3	CO3	PO1 PO2 PO3 PO4
		(OR)				
6.	a)	What are different types of cast irons? Draw the micro structure of any two types of cast irons. Give composition and applications of each.	7 Marks	L2	CO3	PO1 PO2
	b)	Interpret the effect of alloying elements on properties of cast iron.	7 Marks	L2	CO3	PO1 PO2 PO3

UNIT-IV

7.	a)	State and describe some of the important properties of nonferrous metals and alloys.	7 Marks	L2	CO4	PO1
	b)	Differentiate between brasses and bronzes in view of properties and applications.	7 Marks	L2	CO4	PO1 PO2 PO3
		(OR)				
8.	a)	Explain the composition, properties and uses of Titanium alloys.	7 Marks	L2	CO4	PO1
	b)	Write short notes on refractory and precious metals.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	What are ceramics? How ceramics are classified? Write the advantages and applications of ceramics.	7 Marks	L2	CO5	PO1 PO2
	b)	Write short notes on processing and recycling of polymers.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Briefly explain various properties and applications of Ceramic matrix composites.	7 Marks	L2	CO5	PO1
	b)	What is polymerization? Explain addition polymerization and condensation polymerization.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

BASIC CIVIL AND MECHANICAL ENGINEERING

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Briefly explain how Civil Engineering contributes for the welfare of society?	7 Marks	L1	CO1	PO1 PO6
	b)	The following observations were taken to a boundary from a chain line.	7 Marks	L4	CO1	PO1 PO2 PO5

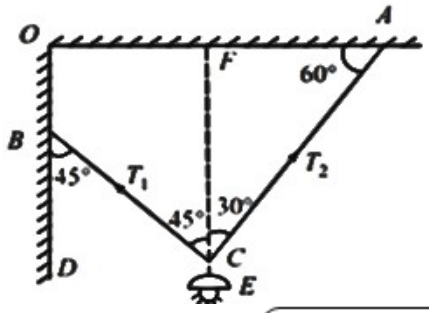
Distance in m	0	10	20	30	40	50	60	70
Offset in m	2.4	3.6	4.2	4.8	4.4	3.8	2.8	1.2

Calculate the area enclosed between the chain line, the boundarline and the end offsets by.

i) Trapezoidal rule
ii) Simpson's rule

(OR)

2.	a)	Discuss the geological and physical classification of rocks.	6 Marks	L4	CO1	PO1 PO2
	b)	An electric light fixture weighing 15N hangs from a point C, by two strings AC and BC. The string AC is inclined at 60o to the horizontal and BC at 45o to the horizontal as shown in figure below. Determine the forces in the strings AC and BC using Lami's theorem.	8 Marks	L4	CO1	PO1 PO2 PO10



UNIT-II

3.	a)	What are the requirements of good foundation?	6 Marks	L2	CO1	PO1 PO8
	b)	Explain different types of bonds used in brick masonry with sketches.	8 Marks	L2	CO1	PO1 PO5 PO10

(OR)

4.	a)	Mention different types of roofs and explain briefly.	7 Marks	L2	CO1	PO1
	b)	What is rainwater harvesting? Explain about types of rainwater harvesting systems.	7 Marks	L4	CO1	PO1 PO5 PO7

UNIT-III

5.	a)	Write short notes on specialized sub-disciplines in Mechanical Engineering.	4 Marks	L2	CO2	PO1
	b)	Explain the working principle of 4 stroke petrol engine with neat sketch.	10 Marks	L2	CO2	PO1
		(OR)				
6.		Define turbine. Describe the working principle of impulse turbine with a neat sketch.	14 Marks	L2	CO2	PO1
		UNIT-IV				
7.	a)	Explain centrifugal tension and initial tension in belt drives.	7 Marks	L2	CO2	PO1 PO2 PO3
	b)	Derive an expression for maximum power transmitted in flat belt drive.	7 Marks	L2	CO2	PO1 PO2 PO3
		(OR)				
8.		Define a gear train and explain the different gear tooth terminologies with a neat sketch.	14 Marks	L1	CO2	PO1 PO2 PO3
		UNIT-V				
9.		Give an illustrative explanation on casting process. Summarize the factors influencing the quality of finished casting.	14 Marks	L2	CO2	PO1
		(OR)				
10.		Describe the process of turning operation performed on a lathe. Sketch a lathe machine, with brief explanation, through some light on its vital components.	14 Marks	L2	CO2	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

PROGRAMMING FOR PROBLEM SOLVING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence), Computer Science and Business Systems, Computer Science and Design, Computer Science and Engineering (Cyber Security), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe the Anatomy of C program.	7 Marks	L2	CO1	PO1
	b)	Write a C program to illustrate implicit type conversion.	7 Marks	L2	CO1	PO3
		(OR)				

2.	a)	#include<stdio.h>
		void main()
		{
		int a=5,b=7;
		printf("%d"(a+b)++);
		}
		Predict the output of above program.
			7 Marks	L2	CO1	PO2

	b)	Discuss increment and Decrement operators.	7 Marks	L3	CO1	PO1

UNIT-II

3.	a)	Draw a flow chart that illustrates any one conditional statement.	7 Marks	L2	CO2	PO1
	b)	In number theory, a perfect number is a positive integer that is equal to the sum of its positive divisors, excluding the number itself. For instance, 6 has divisors 1, 2 and 3 (excluding itself), and 1 + 2 + 3 = 6, so 6 is a perfect number. The sum of divisors of a number, excluding the number itself, is called its aliquot sum, so a perfect number is one that is equal to its aliquot sum. Equivalently, a perfect number is a number that is half the sum of all of its positive divisors including itself. For instance, 28 is perfect as 1 + 2 + 4 + 7 + 14 + 28 = 56 = 2 × 28. Develop a c program to check given input number is perfect or not.	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Define Flowchart. List the different symbols used in flowchart.	7 Marks	L2	CO2	PO1
	b)	Explain the topdown design with an example.	7 Marks	L2	CO2	PO5

UNIT-III

5.	a)	Discuss any three functions of string.h header file.	7 Marks	L2	CO3	PO3
	b)	Write a C program to generate a composite number between 1 to 100.	7 Marks	L3	CO3	PO3

		(OR)				
6.	a)	Discuss different kinds of function calling mechanisms in C.	7 Marks	L2	CO3	PO2
	b)	Write a C program to find the reverse of a string.	7 Marks	L3	CO3	PO3
		UNIT-IV				
7.	a)	Write a C program for dynamic memory allocation.	7 Marks	L2	CO4	PO3
	b)	Discuss pointer arithmetic operations.	7 Marks	L3	CO4	PO1
		(OR)				
8.	a)	Write any C program to understand void pointer concept.	7 Marks	L2	CO4	PO2
	b)	Differentiate between Dangling pointer and Void pointer.	7 Marks	L3	CO4	PO2
		UNIT-V				
9.	a)	Define structure. Write a C Program to print student details using structures.	7 Marks	L2	CO5	PO3
	b)	Write a C program that implements nested structures.	7 Marks	L3	CO5	PO3
		(OR)				
10	a)	Discuss *fopen* function with a suitable program.	7 Marks	L2	CO5	PO3
.	b)	Write a C program to print the content of a file in reverse order.	7 Marks	L3	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Construct the PDNF and DNF for i) $[((\sim P \rightarrow Q) \rightarrow \sim R) \rightarrow (PVS)]$ ii) $((PVQ) \wedge (R)) \leftrightarrow (Q \wedge (PVR))$.	14 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Construct PCNF for (~P)→(~(P→Q)V(Q ∧ P)) without using the truth table.	7 Marks	L3	CO1	PO1
	b)	Show that the following premises are inconsistent. i) If Elonloses many people through covid, then he becomes alone. ii) If Elon becomes alone, then he will not have home iii) If Jack follows covid protocols, then he will have home. iv) Jack loses many people through covid and follows Covid protocols.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Design the Hasse diagram on the set S = {1,2,3,5,6,10,15,30} and the relation ≥ be such that x is greater than or equal to y is y divides x.	7 Marks	L4	CO2	PO2
	b)	Give an example for symmetric, anti symmetric, compatibility and transitive relations.	7 Marks	L4	CO2	PO2
		(OR)				
4.	a)	Show that a mapping f: R→R defined by f(x)= 2x+1 for x∈ R is a bijective map from R to R.	7 Marks	L4	CO2	PO4
	b)	Show that the relation "Lesser than or equal to" is a partial ordering on the set of integers.	7 Marks	L4	CO2	PO3

UNIT-III

5.		Let G={1,-1,i,-i} which form a group under multiplication and I is the group of all integers under addition. Prove that the mapping f: I→ G such that $f(x)=i^x$ for all x ∈ I is a homomorphism.	14 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Define a semi group and Monoid. Give an example of a Monoid which is not group. Justify your answer	7 Marks	L2	CO3	PO2
	b)	Check whether(Z,-) and (Z,/) satisfies Semigroup or not where Z be the set of integers and subtraction, division (-,/) are binary operations.	7 Marks	L4	CO3	PO2

UNIT-IV

7.	a)	Solve the recurrence relation: $a_n + a_{n-1} - 6a_{n-2} = 0$ where $a_0 = 1$, $a_1=10$.	7 Marks	L3	CO4	PO3
	b)	Prove that $1^2 + 2^2 + 3^2 + ... + n^2 \frac{-n}{6}(n+1)(2n+1)$ for all $n \in N$ using Mathematical induction.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Compute the number of ten letter combinations of the English alphabet. If no letter is to appear in the combination more than 3 times.	7 Marks	L4	CO4	PO2
	b)	A group of 10 is to be formed out of 6 kids and 4 adults. In how many ways this can be done when : i) At least 2 adults are included ii) At most 4 kids are included.	7 Marks	L4	CO4	PO2

UNIT-V

9.	a)	Check whether the complete graph K_n for $k \leq 6$ is a planar graph. Explain in-detail.	7 Marks	L3	CO5	PO2
	b)	Distinguish between DFS and BFS with an examples.	7 Marks	L2	CO5	PO1
		(OR)				
10.		What is Kruskal's algorithm? Construct Minimum Spanning Tree using Kruskal's algorithm. Assume any graph which has atleast 7 nodes, atleast 12 edges and atleast 3 edges having same weight. Also apply BFS for the same graph.	14 Marks	L4	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ENGINEERING CHEMISTRY

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning),]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Congratulations for running a project on drinking water supply by using brackish water to your college successfully. Explain the plan of action behind the project success.	10 Marks	L2	CO1	PO2
	b)	A sample of water is found to contain following dissolved salts in mg/L. $Mg(HCO_3)_2$ = 16.8, $MgCl_2$ = 12, $CaSO_4$ = 13.6. Calculate the temporary and permanent hardness of a water sample.	4 Marks	L3	CO1	PO2
		(OR)				
2.		Write the principle of EDTA method and describe the estimation of hardness of water by EDTA method.	14 Marks	L2	CO1	PO1

UNIT-II

3.		What does VSEPR theory indicate regarding the influence of valence shell electron pair on the shapes of molecules? Predict the shapes following molecules, $BeCl_2$, BF_3, NH_3 and H_2O based on VSEPR theory.	14 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Sketch the energy level diagram of N_2 molecule and explain its magnetic behavior.	7 Marks	L2	CO2	PO1
	b)	Explain the π-molecular orbital of 1, 3-butadiene.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Discuss about the construction and working of Solid oxide Fuel cells. Mention its advantages and applications.	8 Marks	L2	CO3	PO1
	b)	Define Fuel cell and explain how fuel cells are different from batteries.	6 Marks	L2	CO3	PO1
		(OR)				
6.		Define Corrosion and discuss about the factors affecting the rate of corrosion.	14 Marks	L2	CO3	PO1

UNIT-IV

7.		Discuss about principle and applications of XRD. Mention the differences between SEM and TEM.	14 Marks	L2	CO4	PO1
		(OR)				
8.	a)	With the neat sketch explain the principle, working of UV-Visible spectrophotometer.	8 Marks	L2	CO4	PO5
	b)	Discuss about the applications of IR spectroscopy.	6 Marks	L2	CO4	PO1

UNIT-V

9.		Discuss in detail about classification of solid and liquid Lubricants.	14 Marks	L1	CO5	PO1

(OR)

10.	a)	What is meant by calorific value of a fuel? Differentiate gross and net calorific value of a fuel.	8 Marks	L2	CO5	PO1
	b)	A sample of coal containing following compositions C=70%, H=10%, N=3%, S=1%, O=8% and Ash=8%. Calculate HCV and NCV.	6 Marks	L3	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ENGINEERING PHYSICS

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security) Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss the theory of interference in a thin film by reflection with the help of a ray diagram.	10 Marks	L2	CO1	PO1
	b)	In a Newton's rings experiment the diameter of the 15th ring was found to be 0.59 cm and the 5th ring was 0.36 cm. Radius of the plano-convex lens is 100 cm, and then calculates the wavelength of light.	4 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Explain necessary theory of Fraunhoffer diffraction due to double slits.	10 Marks	L2	CO1	PO1
	b)	Summarize the theory of Quarter wave plate and Half wave plate.	4 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Recite the divergence and curl of electric & magnetic fields.	4 Marks	L1	CO2	PO1
	b)	Derive an expression for electromagnetic wave propagation through non-conducting medium.	10 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Develop an expression for acceptance angle and numerical aperture of an optical fibre.	10 Marks	L3	CO2	PO2
	b)	Find the numerical aperture and acceptance angle for an optical fiber with core and cladding refractive indices being 1.48 and 1.45 respectively.	4 Marks	L1	CO2	PO2
		UNIT-III				
5.	a)	State Hall effect. Derive an expression for Hall coefficient. Mention its applications.	10 Marks	L3	CO3	PO2
	b)	The R_H of a specimen is 3.66×10^{-4} m^3c^{-1}, its resistivity is $8.93\times10^{-3}\Omega m$. Find μ and n.	4 Marks	L1	CO3	PO2
		(OR)				
6.	a)	Explain construction and working mechanism of a semiconductor diode laser.	10 Marks	L2	CO3	PO1
	b)	Outline the application of LED in various fields.	4 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	Discuss various types of polarization in dielectric materials with neat diagrams.	10 Marks	L2	CO4	PO1
	b)	Summarize Piezoelectricity.	4 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Classify the materials as dia, para and ferro-magnetic?	10 Marks	L4	CO4	PO1
	b)	List the applications of Magnetic materials.	4 Marks	L1	CO4	PO1
		UNIT-V				
9.	a)	Differentiate between Type-I and Type-II superconductors.	6 Marks	L2	CO5	PO1
	b)	Explain AC and DC Josephson's effect.	8 Marks	L2	CO5	PO1
		(OR)				
10	a)	Why the properties of nanomaterials different from the properties	7 Marks	L1	CO5	PO1

. of a bulk material?

b) Recall the various properties of nanomaterials. 7 Marks L1 CO5 PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations April-2024

TRANSFORMATION TECHNIQUES AND LINEAR ALGEBRA

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security) Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Express $f(x)$ as a Fourier series in $(-\pi, \pi)$, where $f(x)=\begin{cases} 0, & for\ -\pi < x < 0 \\ x^2, & for\ \ 0 < x < \pi \end{cases}$.	7 Marks	L3	CO1	PO1
	b)	Establish Fourier cosine transform for the function xe^{-ax}.	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Using Fourier integral, Show that $e^{-ax} - e^{-bx} = \frac{2(b^2 - a^2)}{\pi}\int_0^\infty \frac{\lambda \sin \lambda x}{(\lambda^2 + a^2)(\lambda^2 + b^2)} d\lambda$.	5 Marks	L3	CO1	PO2
	b)	Show that the Fourier sine transform of $f(x)=\begin{cases} x, & 0 < x < 1 \\ 2 - x & 1 < x < 2 \\ 0, & x > 2 \end{cases}$ is $\frac{2}{p^2}\sin p(1 - \cos p)$.	9 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Determine $L\left\{\frac{\sin 3t \cos t}{t}\right\}$.	7 Marks	L3	CO2	PO1
	b)	Evaluate the Laplace transform of $\int_0^t \frac{1 - e^{-t}}{t} dt$.	7 Marks	L5	CO2	PO2
		(OR)				
4.	a)	Find the Laplace transform of the saw-toothed wave of period T defined by $f(t) = \frac{k}{T}t$, *where* $0 < t < T$.	7 Marks	L1	CO2	PO1
	b)	Using Laplace transform, Show that $\int_0^\infty t e^{-3t} \sin t\, dt = \frac{3}{50}$.	7 Marks	L3	CO2	PO2

UNIT-III

5.		Using Laplace transform, solve the differential equation $(D^2+2D+5)y=e^{-t}\sin t$, given that $y(0)=0, y'(0)=1$.	14 Marks	L3	CO2	PO2

(OR)

6.	a)	Find the inverse Laplace transform of $\cot^{-1}\left(\frac{s+2}{3}\right)$.	7 Marks	L1	CO2	PO1
	b)	Apply convolution theorem to evaluate $L^{-1}\left[\frac{1}{(s-2)(s+2)^2}\right]$.	7 Marks	L3	CO2	PO2

UNIT-IV

7.		Determine the Eigen values and corresponding Eigen vectors of the matrix $A=\begin{bmatrix}2&2&0\\2&5&0\\0&0&3\end{bmatrix}$.	14 Marks	L3	CO3	PO1

(OR)

8.	a)	Find the rank of matrix $A=\begin{bmatrix}8&1&3&6\\0&3&2&2\\-8&-1&-3&4\end{bmatrix}$ by reducing it to echelon form.	7 Marks	L1	CO3	PO1
	b)	Test the consistency for the system of equations $x+y+z=6,\ 2x+3y-2z=2,\ 5x+y+2z=13$. If they are consistent, solve them.	7 Marks	L4	CO3	PO2

UNIT-V

9.	a)	Examine whether the set of vectors $\begin{bmatrix}1\\1\\0\end{bmatrix}, \begin{bmatrix}0\\1\\1\end{bmatrix}$ *and* $\begin{bmatrix}1\\0\\1\end{bmatrix}$ is linearly independent or not.	7 Marks	L4	CO4	PO2
	b)	Show that the transformation $T:R^2\to R^3$ *defined by* $T\begin{bmatrix}x\\y\end{bmatrix}=\begin{bmatrix}x\\2x+y\\3x-4y\end{bmatrix}$ is linear.	7 Marks	L2	CO4	PO1

(OR)

10.	a)	Show that the vectors $\begin{bmatrix}1\\2\\3\end{bmatrix}, \begin{bmatrix}-1\\0\\1\end{bmatrix}$ *and* $\begin{bmatrix}4\\9\\7\end{bmatrix}$ form a basis of $R^3(R)$.	7 Marks	L2	CO4	PO1
	b)	Show that the linear transformation $T:R^2\to P_1$ defined by $T\begin{bmatrix}a\\b\end{bmatrix}=a+(a+b)x$ is one-to-one and onto, where P_1 is a vector space of all linear polynomial over real field.	7 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ELECTRICAL CIRCUITS

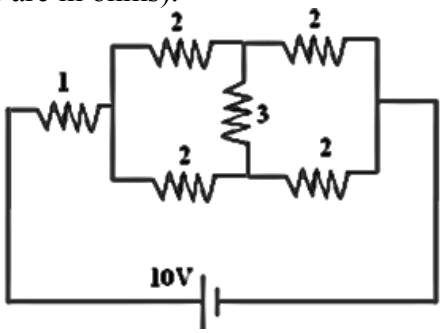
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

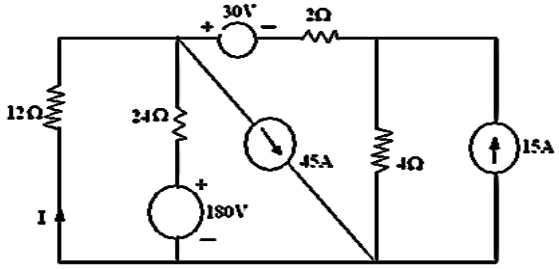
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Find the total power dissipated in the circuit shown in the figure (All resistances are in ohms).	7 Marks	L3	CO1	PO2

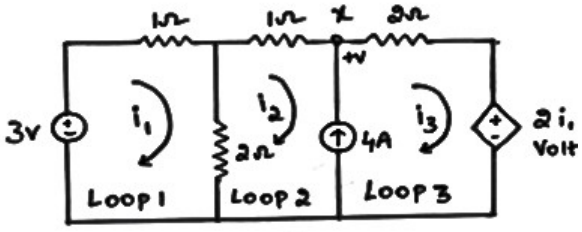


	b)	Reduce the network shown in figure to a single loop network by successive source transformation, to obtain the current in the 12 resistor.	7 Marks	L3	CO1	PO2

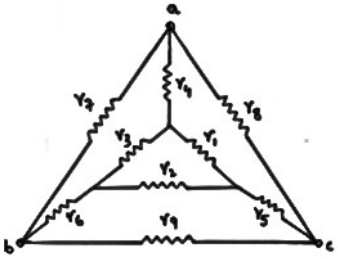


(OR)

2.	a)	Find the loop currents i_1, i_2 and i_3 in the network shown in figureby using mesh analysis.	7 Marks	L4	CO1	PO4

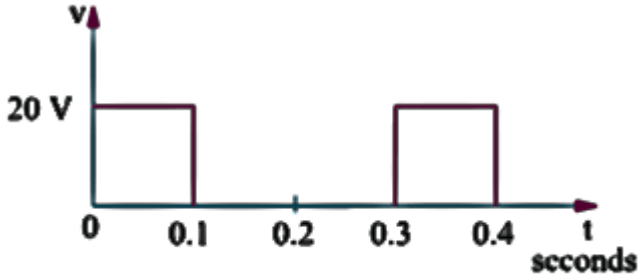


	b)	Find equivalent resistance between ab terminals network shown in figure and find R_{a-b} (all the resistances being 5Ω).	7 Marks	L3	CO1	PO5



UNIT-II

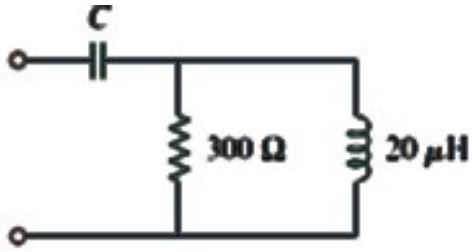
3. a) Determine the form factor of the wave form shown in figure. 7 Marks L3 CO2 PO2



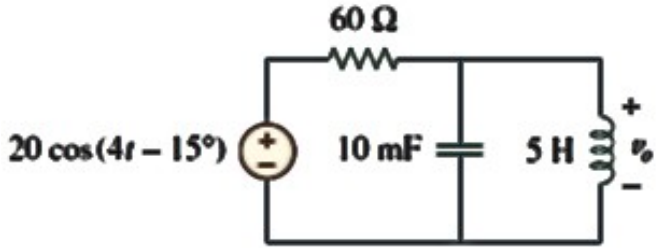
b) Design a series R-L-C circuit that resonates at 1.5 kHz and consumes 50 W from a 50 V A.C source operating at the resonance frequency. The bandwidth is 0.75 kHz. 7 Marks L4 CO2 PO3

(OR)

4. a) Design the value of capacitance of the circuit shown in figure, if the net impedance to be resistive at 10 MHz. 7 Marks L4 CO2 PO3

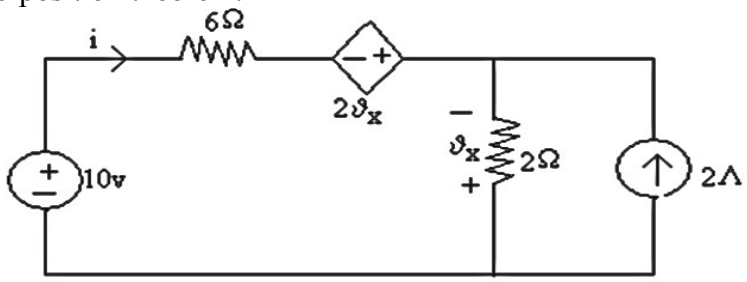


b) Determine V_0 of the circuit shown in figure. 7 Marks L3 CO2 PO2

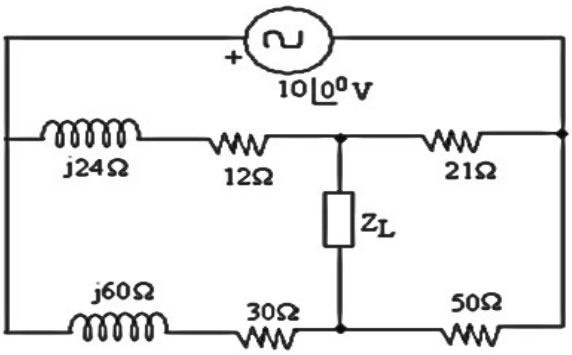


UNIT-III

5. a) Find the current i in the circuit shown in figure, using superposition theorem. 7 Marks L3 CO3 PO5

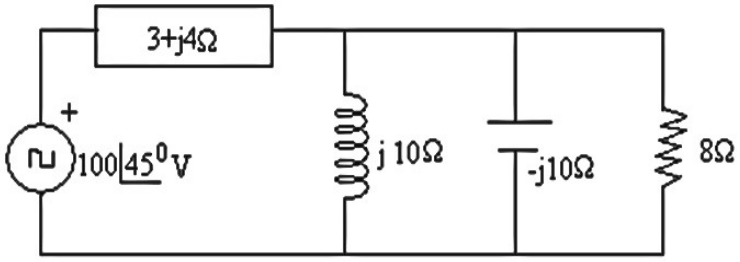


b) Determine the Z_L of the circuit shown in figure, so that maximum power delivered to the load. Also find P_{max}. 7 Marks L3 CO3 PO5

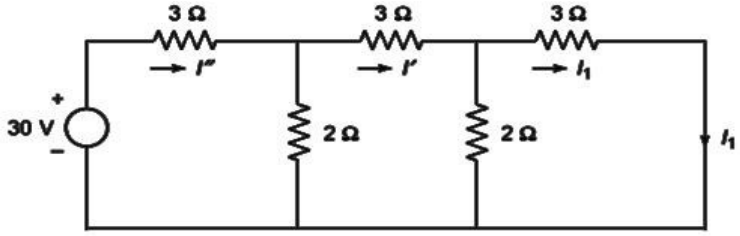


(OR)

6.	a)	Find the current through 8 Ω resistor using Thevenin's theorem of the circuit shown in figure.	7 Marks	L3	CO3	PO5

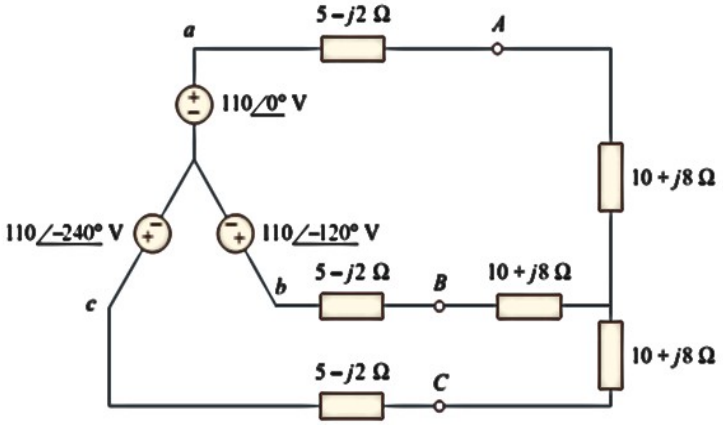


	b)	Verify reciprocity theorem for the circuit shown infigure.	7 Marks	L3	CO3	PO2



UNIT-IV

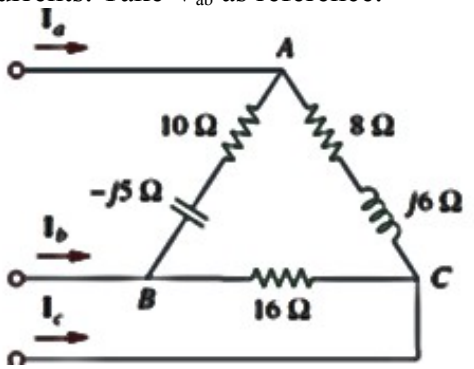
7.	a)	Calculate the line currents of the network shown in figure.	7 Marks	L3	CO4	PO2



	b)	Elucidate the measurement of power and power factor of a balanced three phase load with neat sketch using two watt meter method.	7 Marks	L2	CO4	PO2

(OR)

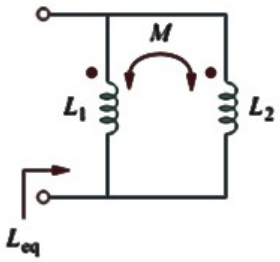
8.	a)	The unbalanced load of circuit shown in figure is supplied by balanced line-to-line voltages of 440 V in the positive sequence. Find the line currents. Take V_{ab} as reference.	7 Marks	L3	CO4	PO2



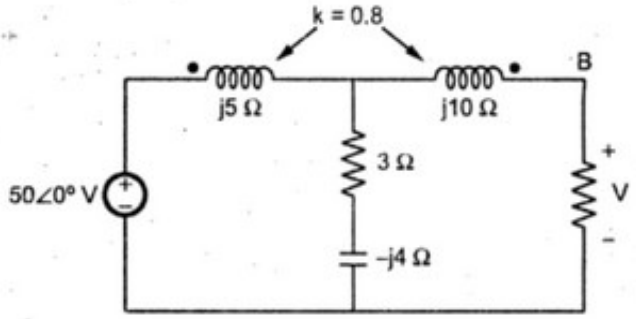
	b)	A three-phase motor can be regarded as a balanced Y-load. A three phase motor draws 5.6 kW when the line voltage is 220 V and the line current is 18.2 A. Determine the power factor of the motor.	7 Marks	L3	CO4	PO6

UNIT-V

9. a) Show that $L_{eq} = \dfrac{L_1 L_2 - M^2}{L_1 + L_2 - 2M}$ for the coupled coils shown in figure. 7 Marks L2 CO5 PO2

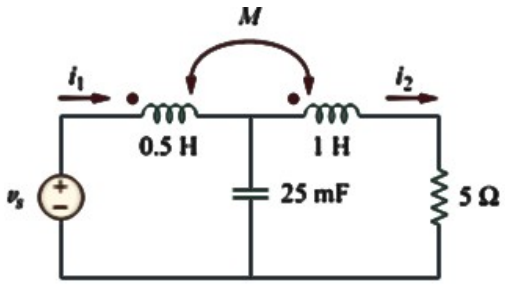


b) Compute the voltage 'V' for the coupled circuit shown in figure. 7 Marks L3 CO5 PO2



(OR)

10. a) If M=0.2H and $v_s = 12\cos 10t$ V in the circuit of figure, find i_1 and i_2. Calculate the energy stored in the coupled coils at t = 15 ms. 7 Marks L4 CO5 PO2



b) Derive the expressions for equivalent inductance of two coils in parallel with i) Parallel aiding and ii) Parallel opposition. 7 Marks L2 CO5 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

BASIC ENGINEERING MECHANICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Two forces equal to 2P and P respectively act on a particle. If first be doubled and the second increased by 12N the direction of the resultant is unaltered. Find the value of P.	7 Marks	L4	CO1	PO1
	b)	A point is acted upon by a set of three forces given by (3i+5j+2k), (2i+7j+3k) and (i+2j+5k). Find the magnitude of the resultant force and irs direction cosines.	7 Marks	L4	CO1	PO1 PO2
		(OR)				
2.	a)	Two cylinder of diameters 100 mm and 50 mm, weighing 200 N and 50N, respectively are placed in a trough as shown in Fig. 2a. Neglecting friction, find the reactions at contact surfaces 1, 2, 3 and 4.	7 Marks	L4	CO1	PO1

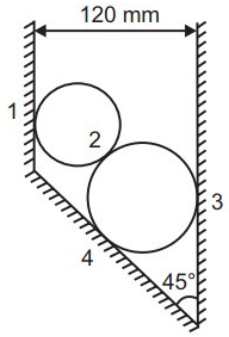
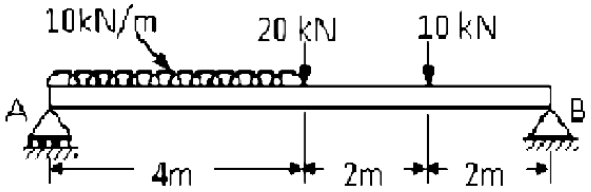


Fig.2a.

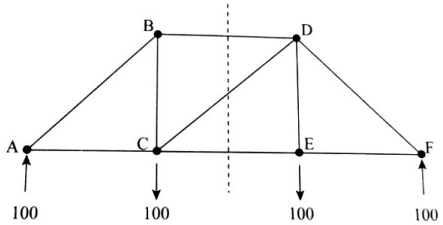
	b)	Consider the F =(5i+2j-6k) kN that passes through the origin. Determine the magnitude of the force and the angles it makes with the x, y and z-axis.	7 Marks	L4	CO1	PO1 PO2

UNIT-II

3.	a)	A beam AB is located supported and loaded as shown in Fig.3a Find the reactions at the supports.	7 Marks	L4	CO1	PO1 PO2

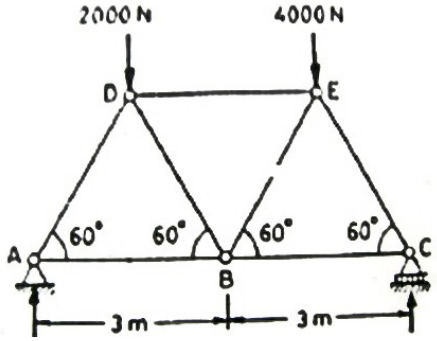


	b)	Find the forces in members BD, CD and CE of the truss as shown in figure (the loads are indicated in newtons).	7 Marks	L4	CO1	PO1 PO2

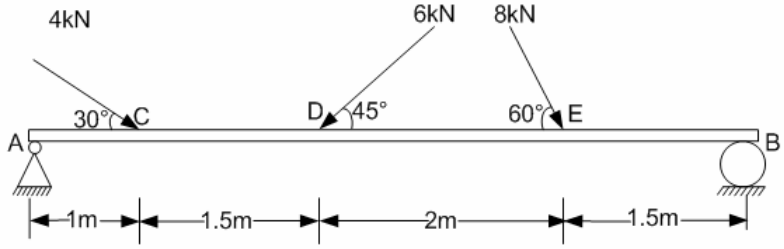


(OR)

4.	a)	Determine the axial forces induced in the members of a truss as shown in Fig.4a	7 Marks	L4	CO1	PO1 PO2

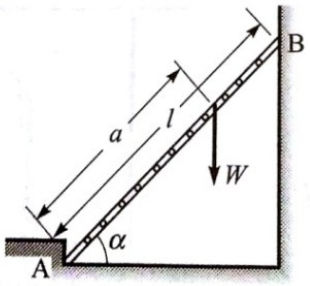


	b)	A beam AB of span 6m is hinged at A and supported on rollers at end B and carries load as shown in Fig. Determine the reactions at A and B.	7 Marks	L4	CO1	PO1 PO2



UNIT-III

5.	a)	On a ladder supported at A and B, as shown in the figure, a vertical load W can have any position as defined by the distance a from the bottom. Neglecting friction, determine the magnitude of the reaction at B. Neglect the weight of the ladder.	7 Marks	L4	CO1	PO1 PO2



	b)	Explain the terms: coefficient of friction, angle of friction and cone of friction.	7 Marks	L4	CO1	PO1 PO2

(OR)

6.	a)	In the given Fig.6a, weights of two blocks A and B are 100N and 150 N respectively. Find the smallest value of the horizontal force F to just move the lower block B if (i) the block is restrained by a string; (ii) when the string is removed.	7 Marks	L4	CO1	PO1

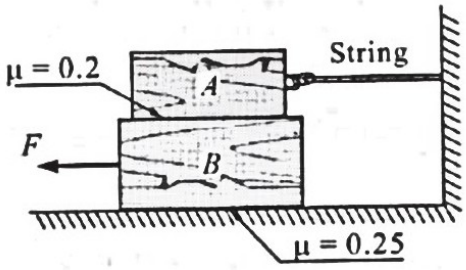
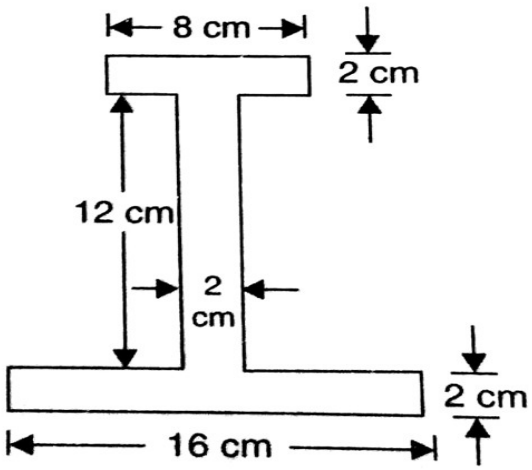


Fig. 6a

	b)	Explain the terms: coefficient of friction, angle of friction and cone of friction.	7 Marks	L4	CO1	PO1 PO2

UNIT-IV

7.	a)	Discuss the procedure to find the location of the centre of gravity of a composite body.	7 Marks	L4	CO2	PO1 PO2
	b)	For the I-section shown in figure, find the moment of inertia about the centroidal axis X-X perpendicular to the web.	7 Marks	L4	CO2	PO1 PO2



(OR)

8.	a)	State and prove the parallel-axis theorem.	7 Marks	L4	CO2	PO1
	b)	Determine moment of inertia of a steel sphere 150mm diameter with respect to centre of gravity axes. Given density of steel as 7830 kg/m^3.	7 Marks	L4	CO2	PO1 PO2

UNIT-V

9.	a)	A flywheel rotates with a constant retardation due to braking. From t = 0 to t = 10 seconds, it made 300 revolutions. At time t = 7.5 sec, its angular velocity was 40 π rad/sec. Determine i) value of constant retardation ; ii) total time taken to come to rest and iii) total revolutions made till it comes to rest.	7 Marks	L4	CO3	PO1
	b)	The masses of two balls are in the ratio of 2: 1 and their velocities are in the ratio of 1 : 2, but in the opposite direction before impact. If the coefficient of restitution be 5/6, prove that after the impact, each ball will move back with $5/6^{th}$ of its original velocity.	7 Marks	L4	CO3	PO1 PO2

(OR)

10.	a)	A simple pendulum consists of a 600 mm long cord and a bob of mass 2 kg. Find the no. of oscillations made by the bob per second. If the same pendulum is suspended inside a train, accelerating smoothly on a level track at the rate of 3 m/s^2, find the angle which the cord will make with the vertical. Also find the tension in the cord.	7 Marks	L4	CO4	PO1 PO2
	b)	Derive an expression for the period of oscillation of a mass when attached to a helical spring.	7 Marks	L4	CO4	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Express the following numbers in decimal: i) $(10110.0101)_2$ ii) $(26.24)_8$	7 Marks	L3	CO1	PO1
	b)	Simplify using Boolean Algebra and implement the simplified expression using basic logic gates (AND, OR, NOT). i) $A + CD + (A + D')(C' + D)$ ii) $A'B(D' + CD) + B(A + A'CD)$	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Given the 8-bit data word 11000100, generate the 12-bit composite word for the Hamming code that corrects single errors and detects double errors.	7 Marks	L3	CO1	PO1
	b)	Find the complement of the following expressions: i) $(BC' + A'D)(AB' + CD')$ ii) $(AB' + C)D' + E$	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Express the Boolean function $F=A+B'C$ in a sum of min-term form.	7 Marks	L4	CO2	PO2
	b)	Draw a logic diagram using only two-input NAND gates to implement the following expression: $(AB+A'B')(CD'+C'D)$.	7 Marks	L4	CO2	PO3
		(OR)				
4.	a)	Simplify the following Boolean expressions to a minimum number of literals: i) $xy + x(wz+wz')$ ii) $xy' + y'z' + x'z'$	7 Marks	L4	CO2	PO2
	b)	Simplify the following expression to sum-of-products and products-of-sums. $yzw' + xyz' + xzw$	7 Marks	L4	CO2	PO2

UNIT-III

5.		Describe the operations performed by the following logic circuits with an example i) Comparator ii) Decoder iii) Encoder	14 Marks	L2	CO3	PO1
		(OR)				
6.	a)	A Combinational logic circuit is defined by the following Boolean functions: F1 = ABC + AC F2 = ABC + AB F3= ABC + AB Design the circuit with a Decoder and external gates.	9 Marks	L4	CO3	PO3

	b)	Implement 64 × 1 Multiplexer with four 16 × 1 and one 4 ×1 Multiplexer.	5 Marks	L3	CO3	PO3

UNIT-IV

7.	a)	Describe the operation of the SR Latch using NAND gate with the help of truth table, transition table and the circuit.	7 Marks	L2	CO3	PO1
	b)	Design a 4-bit ripple counter using T Flip-Flops.	7 Marks	L4	CO3	PO3

(OR)

8.		Design a sequential circuit with two D-Flip A and B, 1 input x. when x=0, the state of the circuit remains same. When x=1, the circuit goes through the state transitions from 00 to 01 to 10 to 11 and back to 00.Show the state diagram, state tables, state transition maps and circuit diagram.	14 Marks	L4	CO3	PO3

UNIT-V

9.	a)	Write short notes on the following ROM variants: i) PROM ii) EPROM iii) EEPROM	7 Marks	L2	CO4	PO1
	b)	With a block diagram explain the functioning of a PAL.	7 Marks	L2	CO4	PO1

(OR)

10.		A combinational circuit is defined by the following Boolean functions F1 (X, Y, Z) = $\sum$ (1, 2, 4, 6) and F2 (X, Y, Z) = $\sum$ (0, 1, 6, 7) Derive the PLA programming table and the PLA structure for the given functions.	14 Marks	L4	CO4	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

PROGRAMMING IN C AND DATA STRUCTURES

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define flow chart. List the symbols used in flow charts.	7 Marks	L1	CO1	PO1
	b)	Write an algorithm and C program to swap the two variables without using third variable.	7 Marks	L3	CO2	PO3
		(OR)				
2.	a)	Discuss about relational and logical operators.	7 Marks	L2	CO2	PO1
	b)	Write an algorithm and c program to find sum and average of three numbers.	7 Marks	L3	CO2	PO4

UNIT-II

3.	a)	What is the purpose of scanf(), printf(),getchar() and putchar() statements .	7 Marks	L2	CO2	PO2
	b)	Write a C program to illustrate switch and if-else statements.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Write a C program to find sum of the digits of any given positive integer.	7 Marks	L3	CO2	PO3
	b)	What is the difference between while and do-while loop? Write a c program to find factorial of number.	7 Marks	L3	CO2	PO3

UNIT-III

5.	a)	Compare single dimensional array with multi-dimensional array.	7 Marks	L2	CO3	PO2
	b)	Write a C program to concatenate two strings using built-in string function.	7 Marks	L3	CO3	PO3
		(OR)				
6.	a)	Define string. How to declare and initialize string variables with an example?	7 Marks	L2	CO3	PO2
	b)	What is a recursion? Compare the recursive programs with iterative programs.	7 Marks	L2	CO2	PO2

UNIT-IV

7.	a)	Write a program in C to find the sum and mean of all elements in an array using pointers.	7 Marks	L3	CO3	PO3
	b)	What are enumerated data types? Explain with an example.	7 Marks	L2	CO3	PO1
		(OR)				
8.	a)	What is a pointer? Explain how the pointer variable is declared and initialized.	7 Marks	L2	CO3	PO1
	b)	What is a linked list? Write a program to implement singly linked list.	7 Marks	L3	CO3	PO3

UNIT-V

9.	a)	Show the stack after each operation of the following sequence that starts with the empty stack: push(a), push(b), pop, push(c), push(d), pop.	7 Marks	L4	CO3	PO4
	b)	Write a C program to implement selection sort.	7 Marks	L3	CO4	PO4
		(OR)				
10	a)	Write an algorithm to perform the following operations on a queue.	7 Marks	L4	CO3	PO3

. i) Insert ii) Delete iii) Display

b) Write a C program to search an element using binary search. 7 Marks L3 CO4 PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is a class? Explain the syntax for declaring a class with an example.	7 Marks	L2	CO1	PO1
	b)	Explain the following: i) Byte code ii) This keyword	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Write about any two non-access modifiers in Java.	5 Marks	L2	CO1	PO1
	b)	Construct a class Rectangle. The class has two attributes, length and width, each of which defaults to 0. It has methods that calculate the perimeter and area of the rectangle. It has set and get methods for both length and width. The set methods should verify that length and width are floating – point numbers larger than 0.0 and less than 20.0.	9 Marks	L3	CO2	PO3

UNIT-II

3.	a)	List categories of operators supported by JAVA.	5 Marks	L2	CO1	PO1
	b)	What is an array? Explain different ways of creating an array.	9 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Write about wrapping and unwrapping.	7 Marks	L2	CO1	PO1
	b)	Classify different data types in Java.	7 Marks	L2	CO1	PO2

UNIT-III

5.	a)	Write a program to create an abstract class named Shape that contains an empty method named number of Sides ( ). Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method number Of Sides ( ) that shows the number of sides in the given geometrical figures.	7 Marks	L3	CO3	PO2
	b)	Design a java program to demonstrate the concept of Generic Functional Interfaces.	7 Marks	L3	CO3	PO3
		(OR)				
6.	a)	Distinguish between class, abstract class and interfaces.	7 Marks	L4	CO2	PO2
	b)	With an example program explain the usage of final keyword in inheritance.	7 Marks	L2	CO3	PO3

UNIT-IV

7.	a)	What is a package? Explain with a suitable example.	7 Marks	L2	CO2	PO1
	b)	How to achieve synchronization among threads. Write suitable code.	7 Marks	L3	CO4	PO4
		(OR)				
8.	a)	Develop a java program to read 20 marks and store them in an array, Define your own exception named wrong mark exception. Throw and catch this type of exception when a mark is (<0 and >100).	7 Marks	L3	CO3	PO3
	b)	Write a program to create a class "Book" with name, id, author, publisher and quantity as instance variables and a constructor to initialize them. Create a HashSet object of type Book and three Book instances b1, b2 and b3. Add these instances into HashSet and display them.	7 Marks	L4	CO3	PO2

UNIT-V

9.	a)	Develop a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.	7 Marks	L3	CO5	PO5
	b)	Write a program to demonstrate keyboard events with suitable functionality.	7 Marks	L3	CO5	PO3
		(OR)				
10.	a)	What is an Event? Discuss about Window Event and Mouse Event.	7 Marks	L2	CO1	PO1
	b)	Design a user interface to collect data from student for admission application using swings concept.	7 Marks	L4	CO5	PO3

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2024

FLUID MECHANICS AND HYDRAULIC MACHINERY

[CIVIL ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define density, specific gravity, viscosity and vapour pressure. Calculate the specific weight, specific mass, specific volume and specific gravity of a liquid having a volume of 6 m^3 and weight of 44kN	CO1	7 Marks
	b)	Describe Newton's law of viscosity and a plate 0.05 mm distant from a fixed plate moves at 1.2 m/s and requires a force of 2.2 N/m^2 to maintain this speed. Find the viscosity of the fluid between the plates	CO2	7 Marks
		(OR)		
2.	a)	Two large fixed parallel planes are 12 mm apart. The space between the surfaces is filled with oil of viscosity 0.972 $N.s/m^2$. A flat thin plate 0.25 sq.m area moves through the oil at a velocity of 0.3 m/s. Calculate the drag force i) when the plate is equidistant from both planes and ii) when the thin plate is at a distance of 4 mm from one of the plane surfaces.	CO2	7 Marks
	b)	Derive an expression to determine the capillary rise or fall of liquid and if the surface tension at air-water interface is 0.069N/m, what is the pressure difference between inside and outside of an air bubble of diameter 0.009 mm.	CO1	7 Marks

UNIT-II

3.	a)	Define velocity potential function and the velocity potential function for a two dimensional flow is $\varphi = x(2y - 1)$. At a point (4, 5) determine the velocity and the value of stream function.	CO2	7 Marks
	b)	State and prove Bernoulli's theorem with limitations.	CO2	7 Marks
		(OR)		
4.	a)	Explain the description of fluid motion and list out types of fluid flows with an example.	CO1	8 Marks
	b)	Describe types of flow lines and velocity for a two dimensional flow field is given by $V = (3 + 2xy + 4t^2)\,i + (xy^2 + 3t)\,j$. Find the velocity and acceleration at a point (1,2) after 2 sec.	CO2	6 Marks

UNIT-III

5.	a)	Two parallel plates kept 100 mm apart have laminar flow of oil between them with a maximum velocity of 1.5 m/s. Calculate discharge per meter width, shear stress at the plates, difference in pressure between two points 20 m apart and velocity gradient at the plates.	CO2	7 Marks
	b)	Derive an expression for loss head due to friction and list out types of losses.	CO2	7 Marks
		(OR)		
6.	a)	Explain Reynolds's experiment with a neat sketch and list out the characteristics of laminar flow.	CO1	7 Marks
	b)	Derive an expression for flow of viscous fluid in circular pipes with assumptions.	CO1	7 Marks

UNIT-IV

7.	a)	List out types of channels and compare open channel flow and pipe flow. What is the purpose of providing bed slope in open channels?	CO1	7 Marks
	b)	Classify flows and define energy and momentum correction factors. Hydraulic jump forms at the downstream end of spillway causing 18 cumec discharges. If the depth before jump is 0.8 m, determine the depth after the jump and energy loss.	CO2	7 Marks

(OR)

8.	a)	Discuss the distribution of velocity in an open channel flow. Which velocity is called relative velocity? How does an open channel flow differ from pressure flow?	CO1	7 Marks
	b)	A trapezoidal channel with base width 3 m and side slope 2H: 1V carries a discharge of 10 cumec at a depth of 1.5 m under uniform flow condition. The longitudinal slope of the channel is 0.001. Compute the average shear stress on the boundary and also compute the Manning's N value.	CO3	7 Marks

UNIT-V

9.	a)	Classify turbines. Explain work done and efficiency of a Pelton wheel with a neat sketch. A Pelton wheel is receiving water from a penstock with a given head of 510 m. One third of the head is lost in friction in the penstock. The rate of flow through the nozzle fitted at the end of the penstock is 2.2 cumec. The angle of deflection of th jet is 165 degrees. Determine power given by water of the runner and hydraulic efficiency of the Pelton wheel. Assume coefficient of velocity as 1.00 and speed ratio as 0.45	CO2	7 Marks
	b)	What are the design aspects of Pelton wheel? A Pelton wheel produces 8000 kW under a head of 130 m at a speed of 200 rpm. The coefficient of velocity of the nozzle is 0.98, hydraulic efficiency is 87%. Speed ratio is 0.45 and jet diameter is one tenth of the wheel diameter. Find the discharge, diameter of the wheel, diameter and number of jets required and the specific speed. The mechanical efficiency is 75%.	CO3	7 Marks

(OR)

10.	a)	State Impulse Momentum Principle. Derive an expression for impact of jet of liquid on a fixed vertical plate. Find the force exerted by a 4 cm diameter water jet directed against a flat plate held normal to the jet, if the jet is discharging 60 litres of water per second.	CO2	7 Marks
	b)	Derive an expression for impact of jet of liquid on an inclined plate moving in the direction of the jet of liquid. A jet of water 120 mm in diameter and moving with a velocity of 25 m/s strikes normally on a flat plate. Determine the force exerted on the plate and the work done when the plate is stationary, the plate is moving with a velocity of 8 m/s in the direction of the jet, and the plate is moving with a velocity of 8 m/s towards the jet.	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2024

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[ELECTRICAL AND ELECTRONICS ENGINEERING,ELECTRONICS AND COMMUNICATION ENGINEERING,ELECTRONICS AND INSTRUMENTATION ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Express $J_4(x)$ in terms of $J_0(x)$ and $J_1(x)$. CO4 7 Marks

   b) Show that $J_{5/2}(x) = \sqrt{\frac{2}{\pi x}}\left[\frac{3-x^2}{x^2}\sin x - \frac{3}{x}\cos x\right]$ CO4 7 Marks

(OR)

2. a) Define Beta and Gamma function and evaluate $\int_0^1 \frac{x^2}{\sqrt{1-x^4}}dx \times \int_0^1 \frac{1}{\sqrt{1-x^4}}dx$ CO1, CO4 7 Marks

   b) Compute the value of (i) $\Gamma\left(\frac{1}{4}\right)\Gamma\left(\frac{3}{4}\right)$ (ii) $\beta\left(\frac{9}{2},\frac{7}{2}\right)$ $\beta\left(\frac{9}{2},\frac{7}{2}\right)$ CO4 7 Marks

UNIT-II

3. Define continuity of f(z) at origin. Check whether the function $f(z)$ defined by $f(z) = \begin{cases} \frac{x^3(1+i)-y^3(1-i)}{x^2+y^2}, (z \neq 0) \\ 0 \quad , z = 0 \end{cases}$ is continuous at origin, Cauchy-Riemann equations are satisfied at the origin, also discuss about the existence of $f'(0)$. CO1, CO4 14 Marks

(OR)

4. a) Define Harmonic function and show that the real and imaginary parts of an analytic function are harmonic CO1 7 Marks

   b) Show that $\left[\frac{\partial^2}{\partial x^2}+\frac{\partial^2}{\partial y^2}\right]|f(z)|^2 = 4|f'(z)|^2$, if $f(z)$ is a regular function of z. CO4 7 Marks

UNIT-III

5. a) Compute the integral $\int_C (x-2y)dx + (y^2-x^2)$ over the boundary of the first quadrant of the circle $x^2+y^2=4$. CO4 7 Marks

   b) Construct Laurent's series about $z=1$ for $f(z) = \frac{e^{2z}}{(z-1)^3}$. Analyze the series and identify the region of convergence. CO2, CO3 7 Marks

(OR)

6.	a)	Evaluate the value of the integral $\int_0^{1+i} (x^2 - iy)dz$ along paths i) $y = x$ (ii) $y = x^2$.	CO4	7 Marks
	b)	Construct a series of positive and negative powers of (z – 1) for the function $f(z) = \frac{z}{(z-1)(z-3)}$.	CO3	7 Marks

UNIT-IV

7.	a)	Define pole of a function. Evaluate the product of poles of the function $f(z) = \frac{z^2}{(z-1)(z-2)^2}$ at $z = 1, 2$.	CO1, CO4	7 Marks
	b)	Show that $\int_0^{2\pi} \frac{d\theta}{2+\cos\theta} = \frac{2\pi}{\sqrt{3}}$ using complex variable technique.	CO5	7 Marks

(OR)

8.		Define the singularity of a function and give an example. Estimate the poles of $f(z) = \frac{z^2 - 2z}{(1+z)^2(z^2+1)}$ and find residues at these poles.	CO1, CO4	14 Marks

UNIT-V

9.		Construct an image in $w-$ plane, for the rectangle $x = 0, y = 0, x = 1, y = 2$ under the transformation map $w = (1+i)z + (2-i)$	CO3	14 Marks

(OR)

10.	a)	Define a Bilinear transformation and show that Bilinear transformation preserves cross ratio of four points.	CO1, CO4	4 Marks
	b)	What is the difference between isogonal and conformal transformations and illustrate with an example.	CO4	6 Marks
	c)	Construct bilinear transformation whose invariant points are 1, i and which maps 0 onto -1.	CO3	4 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations, May – 2024

OPERATING SYSTEMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is Process Control Block? With the help of a diagram, describe the actions taken by the kernel to context-switch between processes.	6 Marks	L2	CO1	PO1
	b)	Consider the following set of processes that arrive at time 0 with the length of the CPU burst time given in milliseconds. Process Burst Time P1 24 P2 3 P3 3 Draw the Gnatt chart using FCFS and Round Robin Scheduling Algorithm. Calculate the average waiting time in both cases. Note: Take time quantum = 4ms.	8 Marks	L3	CO1	PO3
		(OR)				
2.	a)	What is Inter process Communication? Explain Shared Memory Systems with example.	7 Marks	L2	CO1	PO2
	b)	Write short notes on the following OS structures. i) Layered approach ii) iOS	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Define Race Condition. With pseudo code, present the Peterson's solution for critical section problem.	7 Marks	L4	CO2	PO3
	b)	Using monitors give adeadlock free solution to Dining-Philosophers Problem and explain the same.	7 Marks	L3	CO2	PO5
		(OR)				
4.	a)	Explain the safety and Resource-Request Algorithms.	6 Marks	L2	CO3	PO1
	b)	Consider the following snapshot of a system:	8 Marks	L4	CO3	PO3

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

Using Bankers Algorithm,

i) Check whether the system is in safe state or not.

ii) If a request from process P_1 arrives for (0,4,2,0), can the request be granted immediately?

UNIT-III

5.	a)	What is virtual memory? Discuss the benefits of virtual memory technique.	7 Marks	L2	CO4	PO1
	b)	What do you mean by Thrashing? State the cause of Thrashing. Explain how does a system detect and eliminate the problem of Thrashing.	7 Marks	L2	CO4	PO2

(OR)

6.	a)	Compare and contrast internal fragmentation and external fragmentation.	6 Marks	L2	CO4	PO2
	b)	Suppose the head of a moving head disk with 200 tracks, numbered 0 to 199, is currently serving a request at track 143 and has just finished a request at track 125.If the queue of requests is kept in FIFO order: 86, 147, 91, 177, 94, 150, 102, 175, 130. What is the total head movement to satisfy these requests for the following disk scheduling algorithms? i) FCFS ii) SCAN iii) SSTF iv) C- SCAN	8 Marks	L3	CO4	PO3

UNIT-IV

7.	a)	Briefly explain single level, two level, and Tree structured directories.	7 Marks	L2	CO5	PO2
	b)	Write in detail about the on-disk and in-memory structures used to implement a file system.	7 Marks	L2	CO5	PO2

(OR)

8.		Write short notes on: i) Interrupts. ii) DMA controllers. iii) Application I/O interface.	14 Marks	L2	CO6	PO1

UNIT-V

9.	a)	Explain the various questions that arise in revocation of access rights.	7 Marks	L2	CO6	PO2
	b)	Explain why a capability-based system such as Hydra provides greater flexibility than the ring-protection scheme in enforcing protection policies.	7 Marks	L4	CO6	PO2

(OR)

10.	a)	Appraise the various kinds of program threats and system threats.	7 Marks	L4	CO6	PO4
	b)	State symmetric and asymmetric encryption schemes and elaborate how asymmetric encryption algorithm can be used to achieve Authentication, secrecy.	7 Marks	L4	CO6	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations, May - 2024

LINUX PROGRAMMING

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Write and explain the characteristics of Unix Operating System.	CO1	8 Marks
	b)	Illustrate importance of GNU project and list the major examples of software from GNU project.	CO5	6 Marks
		(OR)		
2	a)	Explain about Program Arguments.	CO1	7 Marks
	b)	Write a linux program to extracts some host computer information.	CO2	7 Marks

UNIT-II

3	a)	Explain about the following commands in detail i) echo; ii) export; iii) find; iv) set; v) unset.	CO2	7 Marks
	b)	Write shell script to print given numbers in reverse order. (eg. If no is 321 it must print as 123).	CO3	7 Marks
		(OR)		
4	a)	Explain about environment and parameter variables.	CO1	7 Marks
	b)	Write a shell Script, using case statement to perform basic math operations as '+' for addition, '-'for subtraction, 'x' for multiplication and '/' for division.	CO4	7 Marks

UNIT-III

5	a)	Discuss about the directory handling system calls.	CO2	7 Marks
	b)	Write a c program to copy one file to another, character by character.	CO6	7 Marks
		(OR)		
6	a)	Discuss about system calls and device drivers.	CO1	7 Marks
	b)	Distinguish between getc( ), getch ( ), getchar( ) and gets( ).	CO2	7 Marks

UNIT-IV

7	a)	Describe the role of process identifiers in process control.	CO1	7 Marks
	b)	Create a Process using fork() and display Child and Parent Process Id's.	CO5	7 Marks
		(OR)		
8	a)	Which system call is used to suspend the calling process until a signal is caught. Explain it in detail.	CO2	7 Marks
	b)	Write short notes about signal sets.	CO1	7 Marks

UNIT-V

9	a)	What is meant by inter process communication? Explain its role in UNIX operating system.	CO1	7 Marks
	b)	Write a program to implement the creation of a pipe.	CO6	7 Marks
		(OR)		
10	a)	Write short notes on the following: i) Socket( ); ii) bind ( ); iii) listen ( ); iv) accept( ).	CO5	8 Marks
	b)	Explain about Host and network byte Ordering.	CO1	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-19) Supplementary Examinations, May – 2024

DATA STRUCTURES

[Computer Science and Engineering, Information Technology]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	List out the advantages of doubly linked list over singly linked list.	4 Marks	L2	CO1	PO1
	b)	Write a program to insert a given value into an ordered doubly linked list into its proper position.	8 Marks	L3	CO1	PO3
		(OR)				
2.	a)	List the advantages of linked list over arrays.	4 Marks	L1	CO1	PO1
	b)	What is a linked list? With a neat diagram show how an element is added and removed from front end of the list.	8 Marks	L2	CO1	PO2

UNIT-II

3.	a)	Distinguish between array, stack and queue.	6 Marks	L1	CO1	PO1
	b)	Convert the following Infix Expression to postfix using stack. ((A-(B+C))*D)$(E+F).	6 Marks	L2	CO1	PO2
		(OR)				
4.	a)	Explain What is a circular queue? How do you check the queue full condition?	6 Marks	L2	CO1	PO1
	b)	Explain how to evaluate a postfix expression using stack with an algorithm.	6 Marks	L2	CO1	PO2

UNIT-III

5.	a)	Define binary search tree and its properties.	4 Marks	L1	CO2	PO1
	b)	Explain algorithms for binary tree traversals.	8 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Define full binary tree and complete binary tree with suitable example.	4 Marks	L1	CO2	PO1
	b)	Construct a binary search tree by inserting the following data sequentially. 45,32,70,67,21,85,92,40 and explain steps involved in detail.	8 Marks	L3	CO2	PO2

UNIT-IV

7.		Illustrate quick sort algorithm and identify the behavior of Quick sort when input is already sorted.	12 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Explain Java code for linear search with an example.	6 Marks	L3	CO3	PO2
	b)	Construct step by step, how Merge sort sorts, for the following list of numbers {142, 543, 123, 65, 453, and 879,572,434} and explain in detail.	6 Marks	L2	CO3	PO2

UNIT-V

9.	a)	Explain in detail different ways of representing graphs.	6 Marks	L1	CO2	PO1
	b)	Construct and discuss about any two collision avoiding techniques.	6 Marks	L2	CO4	PO2
		(OR)				
10.	a)	Define a graph and write about different types of graphs.	6 Marks	L2	CO2	PO2
	b)	Determine the various Hashing techniques and explain in detail.	6 Marks	L2	CO2	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-19) Supplementary Examinations, May – 2024

DISCRETE MATHEMATIC STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Convert the statements into symbolic form and show the validity of the following arguments. "If I get my Christmas bonus AND my friends are free I will take a road trip with my friends. If my friends don't find a job after Christmas, Then they will be free. I got my Christmas bonus and my friends did NOT find a job after Christmas. Therefore I will take a road trip with my friends."	6 Marks	L4	CO1	PO4
	b)	Construct the converse, inverse and contra positive of the statement: *"If the floods destroy my house or the fires destroy my house, then my insurance company will pay me".*	6 Marks	L4	CO1	PO1
		(OR)				
2.	a)	Interpret the correct conclusion for the following: Given the following statements as premises, all referring to an arbitrary meal: If he takes coffee, he does not drink milk. He eats crackers only if he drinks milk. He does not take soup unless he eats crackers. At noon today, he had coffee. Whether he took soup at noon today?	6 Marks	L2	CO1	PO4
	b)	Rewrite the following statement in symbolic form using quantifiers: i) All students have taken a course in mathematics. ii) Some students are intelligent, but not hardworking.	6 Marks	L6	CO1	PO1

UNIT-II

3.	a)	Show that the function f and g both of which are from N to N given by $f(x, y) = x + y$ and $g(x, y) = XY$ are onto but not one-one.	6 Marks	L4	CO2	PO2
	b)	Define Lattice. List all its properties.	6 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Show that a relation R defined on the set of real numbers as (a, b) R (c, d) iff $a^2 + b^2 = c^2 + d^2$. Show that R is an equivalence relation.	6 Marks	L4	CO2	PO2
	b)	Define Hasse diagram. Illustrate with an example.	6 Marks	L1	CO2	PO1

UNIT-III

5.	a)	Distinguish between semi group and subgroup with clear examples.	6 Marks	L2	CO3	PO2
	b)	Illustrate Monoid and its applicable properties with examples.	6 Marks	L1	CO3	PO1
		(OR)				
6.	a)	Define a group. Let S = {0, 1, 2, 3, 4, 5, 6, 7} and * denote "multiplication modulo 8" i.e. x mod y , y mod8	6 Marks	L1	CO3	PO1
	b)	Show that the additive group Z_4 is isomorphic to the multiplicative groups of non zero element of Z_5.	6 Marks	L4	CO3	PO2

UNIT-IV

7.	a)	Solve the generating function of the following numeric function $a_n = 2^n$, if n is even $= -2^n$, if n is odd	6 Marks	L3	CO4	PO2
	b)	Solve $a_n - 2\,a_{n-1} - 3\,a_{n-2} = 0$, n Є N, with initial conditions $a_0 = 3$, $a_1 = 1$.	6 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Find the number of ways that 9 students can be seated in the room so that there is at least one student in each of the five rows.	6 Marks	L4	CO4	PO2
	b)	Solve $a_{n+2} - 2\,a_{n+1} + a_n = 2^n$ with initial conditions $a_0 = 2$, $a_1 = 1$.	6 Marks	L4	CO4	PO2

UNIT-V

9.	a)	Prove that the chromatic number of a tree is always 2 .	6 Marks	L5	CO5	PO2
	b)	Explain about graph isomorphism with an example.	6 Marks	L1	CO5	PO1
		(OR)				
10.	a)	Prove these are equivalent i) A graph G is 2- colorable. ii) G is bipartite	6 Marks	L5	CO5	PO2
	b)	Prove that if the graph has 'n' vertices and vertex 'u' is connected to vertex 'w' then there exist a path from u to w of length no more than n.	6 Marks	L5	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

NUMERICAL METHODS, PROBABILITY AND STATISTICS

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (IoT), Computer Science and Engineering (Cyber Security), Computer Science and Design, Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Using method of false position, find an approximate root for the equation $e^x \sin x = 1$. — 7 Marks L3 CO1 PO2

   b) Find a real root of $xe^x - \cos x = 0$ by using Newton Raphson method. — 7 Marks L1 CO1 PO2

(OR)

2. a) Choose the appropriate interpolation formula and estimate the value of $e^{1.95}$ from the following data. — 7 Marks L1 CO1 PO5

x	1.7	1.8	1.9	2.0
$y = e^x$	5.474	6.050	6.686	7.389

   b) Using Lagrange's interpolation formula, express the function $\frac{3x^2 + 6x - 1}{(x^2 - 1)(x - 4)(x - 6)}$ as sum of partial fractions. — 7 Marks L3 CO1 PO1

UNIT-II

3. Evaluate $\int_0^1 \frac{1}{1+x^2}\,dx$ using Simpson's 1/3rd rule by dividing the interval in to 10 equal parts and hence deduce the value of π. — 14 Marks L5 CO1 PO1

(OR)

4. Apply the fourth order Runge-Kutta method to find $y(1.1)$ and $y(1.2)$, given $\frac{dy}{dx} = x^2 + y^2$, $y(1) = 1.5$. — 14 Marks L3 CO1 PO1

UNIT-III

5. A random variable X has the following probability function — 14 Marks L1 CO2 PO1

$X = x$	-3	-2	-1	0	1	2	3
$P(X = x)$	K	0.1	K	0.2	2K	0.4	2K

Find: i) K ii) Mean iii) Variance.

(OR)

6. a) Let X denote the number of heads in a single toss of 4 fair coins. Determine: i) $P(X < 2)$ ii) $P(1 < X \leq 3)$. — 7 Marks — L3 — CO2 — PO2

b) The probability density function of random variable X is given by — 7 Marks — L1 — CO2 — PO1

$$f(x) = \begin{cases} \frac{1}{2}\sin x, for\ \ 0 \leq x \leq \pi \\ 0, \quad elsewhere \end{cases}$$

Find the Mean and $P\left(0 \leq X \leq \frac{\pi}{2}\right)$.

UNIT-IV

7. Fit a Binomial distribution for the following data and find the expected frequencies. — 14 Marks — L1 — CO3 — PO1

x	0	1	2	3	4	5
$f(x)$	42	33	14	6	4	1

(OR)

8. a) Suppose the weights of 800 male students are normally distributed with mean 140 pounds and standard deviation 10 pounds. Find the number of students whose weights are i) between 138 and 148 pounds ii) more than 152 pounds. — 7 Marks — L1 — CO3 — PO1

b) Fit a Poisson distribution for the following data and find the expected frequencies. — 7 Marks — L1 — CO3 — PO1

x	0	1	2	3	4	5
$f(x)$	142	156	69	27	5	1

UNIT-V

9. a) Explain briefly about: — 7 Marks — L2 — CO4 — PO1
   i) critical region ii) level of significance

b) An ambulance service claims that it takes on the average less than 10 minutes to reach its destination in emergency calls. A sample of 36 calls has a mean of 11 minutes and the variance of 16 minutes. Test the claim at 0.05 level of significance. — 7 Marks — L4 — CO4 — PO4

(OR)

10. a) A random sample of size 16 values from a normal population showed a mean of 53 and a sum of squares of deviations from the mean equals to 150. Test whether the sample is taken from the population having mean 56 and also find 95% confidence limits of the mean of the population. — 7 Marks — L4 — CO4 — PO4

b) The following table gives the classification of 100 workers according to sex and nature of work. Test whether the nature of work is independent of the sex of the worker. — 7 Marks — L4 — CO4 — PO4

	Stable	Unstable	Total
Males	40	20	60
Females	10	30	40
Total	50	50	100

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SPECIAL FUNCTIONS AND COMPLEX ANALYSIS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Show that the relation $\Gamma(n)\,\Gamma(1-n) = \dfrac{\pi}{\sin n\pi}$ and hence deduce the values of $\Gamma\left(\dfrac{1}{4}\right)\Gamma\left(\dfrac{3}{4}\right)$.	14 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Evaluate the integral $\int_0^{\infty} \dfrac{x\,dx}{1+x^6}$ using Beta and Gamma functions.	7 Marks	L5	CO1	PO1
	b)	Prove that $\int_0^{\pi/2} \dfrac{d\theta}{\sqrt{\sin\theta}} \times \int_0^{\pi/2} \sqrt{\sin\theta}\; d\theta = \pi$.	7 Marks	L5	CO1	PO1

UNIT-II

3.	a)	Prove that $J_0^2 + 2\left[J_1^2 + J_2^2 + J_3^2 + \ldots\ldots\right] = 1$.	7 Marks	L5	CO2	PO2
	b)	Show that $\cos(x\sin\theta) = J_0 + 2\left(J_2\cos 2\theta + J_4\cos 4\theta + \ldots\ldots\right)$.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Define Legendre polynomial $P_n(x)$ and hence establish the result $P_n(x) = \dfrac{1}{2^n n!}\dfrac{d^n}{dx^n}(x^2-1)^n$.	7 Marks	L1	CO2	PO1
	b)	Using Rodrigue's formula find $P_0(x)$, $P_1(x)$, $P_2(x)$ and express $2x^2 - 4x + 2$ in terms of Legendre polynomials.	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	Find the value of p such that the function $f(z) = \dfrac{1}{2}\log\left(x^2+y^2\right) + i\tan^{-1}\left(\dfrac{px}{y}\right)$ be an analytic function.	7 Marks	L1	CO3	PO1
	b)	Discuss the transformation $w = z^2$.	7 Marks	L2	CO4	PO2
		(OR)				
6.	a)	Show that the function $u = 4xy - 3x + 2$ is harmonic and find its conjugate.	7 Marks	L2	CO3	PO2
	b)	Determine the bilinear transformation which maps the points $(0, i, 1)$ of the $z-$ plane onto $(-1, 0, 1)$ $w-$ plane respectively.	7 Marks	L3	CO4	PO2

UNIT-IV

7.	a)	Evaluate the contour integral $\int_c \frac{\sin \pi z^2 + \cos \pi z^2}{(z-1)(z-2)} dz$ where c is the circle $\|z\| = 3$ using Cauchy's Integral formula.	7 Marks	L5	CO5	PO2
	b)	Find Taylor's series expansion for the function $f(z) = \frac{z^2 - 1}{(z+2)(z+3)}$ in the region $\|z\| < 2$.	7 Marks	L1	CO5	PO2
		(OR)				
8.	a)	Evaluate the value of the integral $\int_0^{1+i} (x^2 - iy) dz$ along the paths i) $y = x$ and ii) $y=x^2$.	7 Marks	L5	CO5	PO2
	b)	Construct Laurent's series for $f(z) = \frac{1}{z^2 - 3z + 2}$ in the regions $0 < \|z-1\| < 1$ *and* $1 < \|z\| < 2$.	7 Marks	L3	CO5	PO1
		UNIT-V				
9.		Define the singularity of a function and give an example. Estimate the poles and residues of the function $f(z) = \frac{(2z+1)^2}{4z^3 + z}$.	14 Marks	L1	CO5	PO1
		(OR)				
10.		Show that $\int_0^{\infty} \frac{\cos mx}{(x^2 + a^2)^2} dx = \frac{\pi}{4a^3}(1 + ma)e^{-ma}$ integrating by the technique of complex variables.	14 Marks	L2	CO5	PO5

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Construct the PCNF for $(\sim P \rightarrow R) \wedge (P \rightarrow Q) \wedge (Q \rightarrow P)$.	7 Marks	L4	CO1	PO3
	b)	Find the converse, inverse and contra positive of the given implication. "If it is raining then I get wet".	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	Calculate the truth value of ∀(x) (P(x) V Q(x)) Where P(x): x=1 Q(x): x=2 and universe of discourse is {1,2}.	7 Marks	L3	CO1	PO3
	b)	Construct the PDNF for (~PV~Q) V (P↔Q) without using the truth table.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Show that a mapping f: R→R defined by f(x)= 2x+1 for x∈ R is a bijective map from R to R.	7 Marks	L4	CO2	PO2
	b)	Examine R is a partial order relation or not, on N, where N be the set of all-natural numbers with the relation R: aRb if and only if a divides b.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Draw the Hasse diagram for X={2,3,6,24,36,48}and relation ≤ be such that x≤y, if x divides y	7 Marks	L4	CO2	PO3
	b)	Find the Maximum Compatibility Block for the relation {(x_1,x_1), (x_2,x_2), (x_3,x_3), (x_4,x_4), (x_5,x_5), (x_3,x_4), (x_4,x_1), (x_2,x_5), (x_5,x_2), (x_1,x_4), (x_4,x_3), (x_2,x_5), (x_1,x_3), (x_3,x_1), (x_2,x_3), (x_3,x_2), (x_5,x_4), (x_4,x_5)}on set X{x_1, x_2, x_3, x_4, x_5}.	7 Marks	L3	CO2	PO3

UNIT-III

5.	a)	Consider the semi group (R^+, X) and (R, +) where R^+ is set of all positive real numbers with usual meanings of +, X. Let the function f: R^+→ R be defined by f(x)= log x for any x ∈ R^+. Is f an isomorphism? Justify.	7 Marks	L4	CO3	PO3
	b)	Show that (S, *) and (P, ⊕) are Isomorphic for the sets S={a, b, c}and P={1,2,3} where * denote a binary operation on S and ⊕ be a binary operation on P given by table1 and 2 respectively.	7 Marks	L3	CO3	PO2

table 1

*	a	b	c
a	a	b	c
b	b	b	c
c	c	b	c

table 2

⊕	1	2	3
1	1	2	1
2	1	2	2
3	1	2	3

(OR)

6.	a)	Define a semi group and Monoid. Give an example of a Monoid which is not group. Justify your answer	7 Marks	L2	CO3	PO1
	b)	Show that every cyclic group is abelian group.	7 Marks	L4	CO3	PO2

UNIT-IV

7.	a)	Prove that $1^2+2^2+3^2+\ldots+n^2 = \frac{n}{6}(n+1)(2n+1)$ for all $n \in N$ using Mathematical induction.	7 Marks	L4	CO4	PO2
	b)	Compute the number of six letter combinations of the letter of English alphabet. If no letter is to appear in the combination more than 2 times.	7 Marks	L3	CO4	PO3

(OR)

8.	a)	A committee of 5 is to be formed out of 6 gents and 4 ladies. In how many ways this can be done when i) at least 2 ladies are included ii) at most 2 ladies are included.	7 Marks	L3	CO4	PO4
	b)	Compute the number of integers between 1 and 1000 that are not divisible by2, 3, 5 or 7.	7 Marks	L3	CO4	PO3

UNIT-V

9.	a)	Explain graph coloring problem with an example.	7 Marks	L2	CO5	PO1
	b)	A tree has two vertices of degree 2, one vertex of degree 3 and three vertices of degree4.How many vertices of degree 1 does it have?	7 Marks	L2	CO5	PO4

(OR)

10	a)	Illustrate isomorphism of graphs with an example.	7 Marks	L2	CO5	PO1
.	b)	Prove that a simple graph with n vertices must be connected if it has more than $(n-1)(n-2)/2$ edges.	7 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DATA STRUCTURES AND ALGORITHMS

[Computer Science and Systems Engineering, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe briefly the Asymptotic notations used to evaluate complexity of an algorithm.	6 Marks	L2	CO1	PO1
	b)	Appraise the performance of bubble sort with appropriate examples.	8 Marks	L4	CO2	PO2
		(OR)				
2.	a)	Write steps to sort the following data by using insertion sort (77, 32, 45, 99, 83, 22, 107, 54, 11,69, 81, 40,38).	8 Marks	L3	CO2	PO5
	b)	Briefly explain the time complexity and space complexity of an algorithm.	6 Marks	L3	CO1	PO1

UNIT-II

3.	a)	Demonstrate with an algorithm, how to insert a node in Single Linked List at the middle.	6 Marks	L4	CO3	PO3
	b)	Differentiate circular queue and linear queue and also Write a function to insert an element into a circular queue.	8 Marks	L2	CO3	PO2
		(OR)				
4.	a)	With algorithms explain the basic operations on double linked list.	7 Marks	L2	CO3	PO2
	b)	Two linked lists contain information of the same type in ascending order. Write a module to merge them to a single linked list that is sorted.	7 Marks	L3	CO3	PO3

UNIT-III

5.	a)	Define a stack. Explain the implementation of the stack using linked lists.	6 Marks	L2	CO4	PO3
	b)	Give an algorithm to convert infix to postfix notation using stacks and convert the following infix expression to postfix notation. A * (B + C * D) + E.	8 Marks	L3	CO4	PO3
		(OR)				
6.	a)	Write algorithms for ENQUEUE and DEQUEUE operations using a list?	8 Marks	L3	CO4	PO3
	b)	List out the drawbacks of linear queue and specify how to overcome with proper explanation.	6 Marks	L2	CO4	PO2

UNIT-IV

7.	a)	A binary tree has seven nodes. The Preorder and Post order traversals of the tree are given below. Can you draw the tree? Justify. Pre order: GFDABEC. Post order: ABDCEFG.	7 Marks	L2	CO5	PO2

	b)	Create a BST for the data items {23,14, 44,12,18,4,52, 16,20, 96, 9, 1, 13} and explain about various cases possible for deleting 23 from the created binary search tree.	7 Marks	L3	CO5	PO2
		(OR)				
8.	a)	Describe about various cases that arise while inserting a new node in to an AVL tree with illustrations.	6 Marks	L2	CO5	PO1
	b)	Write a program to find the key element in a BST.	8 Marks	L2	CO5	PO2
		UNIT-V				
9.	a)	Explain matrix and linked list representation of a graph. Also give the application of Graph.	7 Marks	L2	CO5	PO2
	b)	Create the hash table using liner open addressing for the data items {39, 49, 52, 82, 13, 40, 31, 35, 28,44,17, 9, 34, 56, 11, 71, 86, 55, 22, 10, 4,3,17} using the hash function h(x)= x mod 7, when the hash table is having 7 buckets and each bucket can hold 4 data items.	7 Marks	L4	CO6	PO3
		(OR)				
10.	a)	Write a program to implement Depth First Search Algorithm.	7 Marks	L3	CO5	PO2
	b)	Explain insertion and deletion operations in a B-tree with suitable examples.	7 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May– 2024

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	State Newton's low of viscosity and explain the terms i) dynamic viscosity and ii) kinematic viscosity. state their units of measurements.	7 Marks	L2	CO1	PO1
	b)	Two horizontal plates are placed 1.25 cm apart, the space between them being filled with oil of viscosity 14 poise. Determine the shear stress in oil if upper plate is moved with a velocity of 2.5 m/s.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		(OR)				
2.	a)	A rectangular plane surface is 2m wide and 3 m deep. It lies in vertical plane in water. Determine the total pressure and the position of center of pressure on the plane surface when its upper edge is horizontal and i) coincides with water surface, ii) 2.5m below the water surface.	7 Marks	L4	CO1	PO1 PO2 PO4
	b)	Explain the phenomenon of capillarity. Obtain an expression for capillary rise of a liquid.	7 Marks	L4	CO1	PO1 PO2 PO5 PO10

UNIT-II

3.	a)	In a fluid, the velocity field is given byV = (3x + 2y) i + (2z + 3x2) j + (2t – 3z) k Determine: i) The velocity components u, v, w at any point in the flow field; ii) The speed at point (1, 1, 1); iii) The speed at time t = 2s at point (0, 0, 2). Also classify the velocity field as steady, or unsteady, uniform or non-uniform and one, two or three dimensional.	7 Marks	L4	CO2	PO1 PO2 PO4
	b)	The diameters of a tapering pipe at the sections1-1 and 2-2 are 100 mm and 150 mm respectively. If the velocity of water flowing through the pipe at section 1-1 is 5 m/s, find: i) Discharge through the pipe, and ii) Velocity of water at section 2-2.	7 Marks	L4	CO2	PO1 PO2 PO4 PO10
		(OR)				
4.	a)	A discharge through a 24 cm diameter horizontal pipe increases linearly from 30to 120 liters/sec of water in 4 seconds. i) What pressure gradient must exist to produce this acceleration? ii) What is the difference in pressure intensity that exists between two sections that lie 9 m apart?	7 Marks	L4	CO2	PO1 PO2 PO10
	b)	A pipe (1) 400 mm in diameter, conveying water, branches into two pipes (2) and 3 of diameters300 mm and 200 mm respectively. (i) Find the discharge in pipe (1) if the average velocity of water in this pipe is 3 m/s. (ii) Determine the velocity of water in 200mm pipe if the average velocity in 300mm diameter pipe is 2 m/s.	7 Marks	L4	CO2	PO1 PO2 PO4 PO10

UNIT-III

5.	a)	Three pipes of lengths 900 m, 600 m and 450 m and of diameters 600 mm, 450mm and 350 mm respectively are connected in series. These pipes are to be replaced by a single pipe of length 1500 m. Design the diameter of the single pipe.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5
	b)	The velocity of water flowing through a 12 cm diameter pipe was found to be 3.5 m/s. The flow path in pipe is destructed by an iron plate of 8 cm diameter. Calculate, the loss of head due to obstruction if co-efficient of contraction Cc = 0.75.	7 Marks	L4	CO4	PO1 PO2 PO4
		(OR)				
6.	a)	Describe the procedure to determine the relationship between dependent and independent variable using Rayleigh's method.	7 Marks	L4	CO4	PO1 PO2 PO5
	b)	A 7.2 m high and 15 m long spillway discharges 94 m3/s discharge under a head of 2.03. If 1: 9 scale model of this spillway is to be constructed, determine model dimensions, head over spillway model and the model discharge. If model experiences a force of 7500 N, determine force on the prototype.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5

UNIT-IV

7.	a)	Define open channel flow and compare with flow in closed conduit flow.	7 Marks	L4	CO5	PO1 PO2 PO10
	b)	A trapezoidal channel having the side slope equal to 60° with the horizontal and laid on a slope of 1 in 750, carries a discharge of 10 m3/s. Find the width at the base and depth of flow for most economical section. Take the value of Chezy's resistance co-efficient C = 66.	7 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO10
		(OR)				
8.	a)	Discuss on open channel flow for non-uniform flow.	7 Marks	L2	CO5	PO1 PO10
	b)	A trapezoidal channel has side slopes of 1 horizontal to 2 vertical and the slope of its bed is 1 in 2500. Determine the optimum dimensions of the channel if it is to carry water at 0.5 m3/s. Take Chezy's constant as 70.	7 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO10

UNIT-V

9.	a)	A Pelton wheel is to be designed for: Shaft Power = 11572 kW; Head = 350 M; Speed = 700 rpm; Overall efficiency = 88 %; Jet diameter is not to exceed one-sixth of the wheel diameter. Determine: i) the wheel diameter, ii) The no of jets required, iii) Diameter of the jet.	7 Marks	L6	CO6	PO1 PO2 PO3 PO4 PO5
	b)	A centrifugal pump delivers water against a net head of 14.5 meters and a design speed of 1000 rpm. The vanes are curved at the back to an angle of 30^0 with the periphery. The impeller diameter is 300 mm and the outlet width is 50 mm. determine the discharge of the pump if the manometric efficiency is 95%.	7 Marks	L4	CO6	PO1 PO2 PO5

(OR)

10.	a)	A Francis turbine with an overall efficiency of 75% is required to produce 148.25 kW power. It is working under a head of 7.62 m. the peripheral velocity = $0.26\sqrt{(2gH)}$ and the radial velocity of flow at inlet is = $0.96\sqrt{(2gH)}$. The wheel runs at 150 rpm and the hydraulic losses in the turbine are 22% of the available energy. Assuming the radial discharge, determine: i) the guide blade angle, ii) the wheel vane angle at inlet, iii) diameter of the wheel at the inlet and iv) width of the wheel at inlet.	7 Marks	L6	CO6	PO1 PO2 PO3 PO4 PO10
	b)	A single-actring reciprocating pump, running at 50 r.p.m., delivers 0.01 m^3/s of water. The diameter of the piston is 200 mm and stroke length 400 mm. Determine : i) The theoritical discharge of the pump, ii) Co-efficient of discharge, and iii) Slip and the percentage slip of the pump.	7 Marks	L4	CO6	PO1 PO2 PO4 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

MECHANICS OF SOLIDS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		A cantilever beam of span 6 m is subjected to uniformly distributed load of 3 kN/m for the entire run. Also point loads of intensity 10 kN, 5 kN and 3 kN act at a distance of 2 m, 4 m and 6 m from the fixed end. Determine the shear force and bending moments at the salient points. Draw SFD and BMD.	14 Marks	L4	CO1	PO1 PO2 PO4 PO10
		(OR)				
2.	a)	Determine the maximum shear force and bending moment of a simply supported beam subjected to uniformly distributed load for the entire spam. Draw SFD and BMD.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
	b)	A simply supported beam of span 6 m is subjected to two point loads of intensity 10 kN acting 2 m from either ends. Analyze the given beam and draw SFD and BMD.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		UNIT-II				
3.	a)	A vertical post 3 m high, support a lateral load, P = 15 kN at its upper end. i) If the allowable stress for wood = 14 MPa, determine the diameter d_1. ii) If the allowable stress for aluminum tube = 40 MPa and $t = d_2/6$ determine the outer diameter d_2.	7 Marks	L6	CO2	PO1 PO2 PO3 PO4
	b)	A beam of channel section 120 mm x 60 mm has uniform thickness of 15 mm. Draw the diagram showing the distribution of shear stress for the vertical section where the shearing force is 50 kN. Also find the ratio between maximum and mean shear stress.	7 Marks	L4	CO2	PO1 PO2 PO4 PO10
		(OR)				
4.		A square chimney 24 m high, has an opening of 1.25 m x 1.25 m inside. The external dimensions are 2.5 m x 2.5 m. The horizontal intensity of wind pressure is 1.3kN/m^2 and the specific weight of masonry is 22 kN/m^3. Calculate the maximum and minimum stress intensities at the base of the chimney. Take coefficient of wind resistance, k=1.	14 Marks	L4	CO3	PO1 PO2
		UNIT-III				
5.	a)	A solid shaft of 200 mm diameter has the same cross section area as that of the hollow shaft of the same material with inside diameter of 150 mm. Find the ratio of the power transmitted by the two shafts at the same speed.	7 Marks	L4	CO4	PO1 PO2 PO4
	b)	If a solid shaft of 100 mm diameter transmits 110 kW at 200 rpm then, find the maximum intensity of shear stress induced and the	7 Marks	L4	CO4	PO1 PO2

angle of twist for a length of 6 m. Take C=$8x10^4$ N/mm^2.

(OR)

6.	a)	A closed coil helical spring has mean diameter of 75 mm and spring constant of 80 kN/m. It has 8 coils. What is the suitable diameter of spring wire if maximum shear stress is not to exceed 250 MN/m^2? Modulus of rigidity of the spring wire material is 80 GN/m^2. What is the maximum axial load the spring can carry?	7 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO6
	b)	An open coiled helical spring made from wire of circular cross section is required to carry a load of 120 N. Wire diameter is 8 mm and mean coil radius is 48 mm. If the helix angle of spring is 30° and the number of turns is 12, calculate. i) Axial deflection ii) Angular rotation of free end with respect to the fixed end of the spring. Take C= 80 GN/m^2 and E= 200 GN/m^2.	7 Marks	L4	CO4	PO1 PO2 PO4 PO6

UNIT-IV

7.	a)	Derive the expression for stresses on an inclined plane of a block subjected to normal stresses and shear stresses along two planes at right angles.	7 Marks	L4	CO5	PO1 PO2 PO10
	b)	At a point in a bracket the stresses on two mutually perpendicular planes are 120 N/mm^2 (tensile) and 20 N/mm^2 (tensile). The shear stress across these planes is 20 N/mm^2. Determine the direction and magnitude of principal stresses using graphical method.	7 Marks	L4	CO5	PO1 PO2 PO6 PO10

(OR)

8.		In a material the principal stresses are 60 MN/m^2, 48 MN/m^2 and -36 MN/m^2, calculate. i) Total Strain Energy ii) Volumetric Strain Energy iii) Shear Strain Energy iv) Factor of safety on the total strain energy criterion if the material yields at 120 MN/m^2. Take E= 200 GN/m^2 and Poisson's ratio= 0.3	14 Marks	L4	CO5	PO1 PO2 PO6 PO10

UNIT-V

9.		A built-up I beam with flanges having a width of 30 cm and a depth of 5 cm and web having a width of 2 cm and a depth of 100 cm is simply supported at its ends. Compute its length given when it is subjected to a load of 40 kN per meter length, it deflects by 1 cm. Find out the safe load, if this beam is used as a column with both ends fixed. Assume a factor of safety of 4. Use Euler's formula E = 210 GN/m^2.	14 Marks	L4	CO6	PO1 PO2 PO5 PO6

(OR)

10.		From the following data, determine thickness of cast-iron column: Length of column = 6 meters External diameter = 200 mm Load = 500 kN Factor of safety = 6 Assume fixed ends and ultimate compressive stress and constant for hinged ends as 570 MN/m^2 and 1/1600 respectively.	14 Marks	L4	CO6	PO1 PO2 PO5 PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SURVEYING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	How do surveying influence on environment and sustainability? Are surveys ethical?	7 Marks	L4	CO1	PO1 PO2 PO7 PO8
	b)	What is ranging? Write the different methods for ranging out the survey line.	7 Marks	L2	CO1	PO1 PO5
		(OR)				
2.	a)	Distinguish between Prismatic compass and Surveyor's compass.	6 Marks	L4	CO1	PO1 PO2 PO5
	b)	Write a short note on: i) Meridian ii) Variations in magnetic declination	8 Marks	L2	CO1	PO1

UNIT-II

3.	a)	What is two point problem and three point problem in plane table surveying? Explain their methods.	6 Marks	L2	CO1	PO1 PO5 PO10
	b)	The following readings were taken with a level and 4 m staff. Draw up a level book page and reduce the levels by height of instrument method. 0.585, 1.010, 1.735, 3.295, 3.775, 0.350, 1.300, 1.795, 2.575, 3.375, 3.895, 1.735, 0.635, 1.605 m. The instrument was shifted after fifth and eleventh readings. Take RL of first point as 136.440 m.	8 Marks	L4	CO2	PO1 PO2 PO4
		(OR)				
4.	a)	Describe the temporary adjustments of dumpy level.	6 Marks	L2	CO2	PO1
	b)	Write the uses and characteristics of contour maps with neat sketches.	8 Marks	L2	CO2	PO1 PO10

UNIT-III

5.	a)	Describe the process of permanent adjustment of a transit theodolite.	7 Marks	L2	CO3	PO1
	b)	Explain the difference between tangential and stadia tacheometry. How will you determine the stadia constants?	7 Marks	L4	CO3	PO1 PO2 PO5
		(OR)				

6.	a)	What is Gale's table? Describe the characteristics of this table.	6 Marks	L2	CO3	PO1
	b)	Stadia readings were taken with a theodolite on a vertical staff with the telescope inclined at an angle of depression of $3^0 30'$. The staff readings were 2.990, 2.055 and 1.120 m. The reduced level of the staff station is 100.00 m, and the height of instrument is 1.40 m. What is the reduced level of the ground at the instrument? Take constants as 100 and 0.	8 Marks	L4	CO3	PO1 PO2 PO4 PO10

UNIT-IV

7.	a)	What are different types of curves? Explain them briefly.	6 Marks	L2	CO5	PO1 PO10
	b)	Problem the areas enclosed by the contours in the lake are as follows: Calculate the volume of water between the contours 270 m and 290 m by i) Trapezoidal formula ii) Prismoidal formula	8 Marks	L4	CO4	PO1 PO2 PO4 PO5

Contour (m)	270	275	280	285	290
Area (m^2)	2050	8400	16300	24600	31500

(OR)

8.	a)	How will you work out the area of plot by the method of geometrical figures and by the application of formulae?	6 Marks	L4	CO4	PO1 PO2 PO10
	b)	Two tangents intersect at a chainage of 25.33 m, the deflection angle being 36^0. Calculate all the necessary data for setting out a circular curve of radius 20 m by the Rankine's method. Take a peg interval of 2 m.	8 Marks	L6	CO5	PO1 PO2 PO3 PO10

UNIT-V

9.	a)	Write short note on the following: i) Electronic theodolite ii) Digital levels and iii) Total station.	8 Marks	L2	CO6	PO1 PO5
	b)	How to calculate the stockpile volume in drone surveying.	6 Marks	L4	CO6	PO1 PO2 PO12

(OR)

10.	a)	What is the working principle of drone surveying? Compare the benefits of drones in surveying with other surveying instruments.	7 Marks	L4	CO6	PO1 PO2 PO12
	b)	List out the types of drone surveying. Explain them in detail.	7 Marks	L2	CO6	PO1 PO5 PO12

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May– 2024

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	State and explain Coulomb's law in vector form.	7 Marks	L2	CO1	PO1
	b)	Calculate the total flux leaving the cubical surface formed by the six planes x, y, z = ± 5 when i) Two point charges, 0.1 μC at A(1, -2, 3) and 0.5 μC at B(-1, 2, -2). ii) A uniform line charge of 5 μC/m at x=-2, y=3.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Define potential gradient and obtain the relation between electric field intensity and potential.	7 Marks	L3	CO1	PO1
	b)	A charge, Q = 10 nC is at the origin in free space. If the x-component of electric field intensity is to be zero at the point (3, 1, 1), then what charge, Q_t should be kept at the point (2,0,0)?	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	State and explain Ohms law in point form.	7 Marks	L2	CO2	PO1
	b)	Find the total current in outward direction from a cube of 1m, with one corner at the origin, and the edges parallel to the coordinate axes, if $\bar{J} = 2x^2\,\bar{a}x + 2xy^3\,\bar{a}_y + 2xy\bar{a}_z\ A/m^2$.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	List the properties of conductors and dielectric materials.	7 Marks	L2	CO2	PO1
	b)	An electric dipole located at the origin in free space has a moment $\bar{p} = \left(4\bar{a}_x + 3\bar{a}_y + 2\bar{a}_z\right) nCm$. Determine: i) Potential, V at point Q(1,2,3). ii) Electric field intensity at Q(4, 20°,0°).	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	State and prove Ampere's circuital law in point form.	7 Marks	L2	CO3	PO1
	b)	Using ampere's law compute $\vec{H}$ in the cylindrical region 0 < ρ < 0.5m, the current density is $\vec{J} = 4.5e^{-2\rho}\,\vec{a}_z\ A/m^2$ and zero elsewhere.	7 Marks	L3	CO3	PO5
		(OR)				
6.		Derive Maxwell's *III* and *IV* equations, and elucidate the significance of their point and integral form.	14 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Derive an expression for force between two straight long parallel current carrying conductors. What will be the nature of force if the current is carrying in the same direction and opposite directions?	7 Marks	L2	CO3	PO1

	b)	Determine the force per metre length between two parallel wires A and B separated by 10 cm in air and carrying currents of 20A, i) In the same direction and ii) In the opposite direction.	7 Marks	L3	CO3	PO2
		(OR)				
8.	a)	Plot the variation of magnetic field due to two conductors each of radius *R* meters and spaced *d* meters. One conductor carries a current +I amperes and the other -I amperes.	8 Marks	L2	CO3	PO1
	b)	What is the maximum torque on a square loop of 1000 turns in a field of uniform flux density in 10 Tesla? The loop has 10cm sides and carries a current of 3A.	6 Marks	L3	CO3	PO2
		UNIT-V				
9.	a)	Explain the significance and applications of Maxwell's equations in electromagnetic fields.	7 Marks	L3	CO4	PO5
	b)	Given $\vec{B} = \left(0.5\vec{a}_x + 0.6\vec{a}_y - 0.3\vec{a}_z\right)\cos(5000t)$ Tesla and a filamentary loop with its corners at (2, 3, 0) m, (2, -3, 0) m, (-2, -3, 0) m and (-2, 3, 0) m. Find the emf developed in the loop.	7 Marks	L3	CO4	PO2
		(OR)				
10.	a)	Write four Maxwell's equations in point form and in integral form for time varying fields. Explain the significance of each equation.	7 Marks	L2	CO4	PO1
	b)	A parallel plate capacitor with plate area of 5 cm^2 and plate separation of 3 mm has a voltage 50 sin 10^3t Volts applied to its plate. Calculate displacement current density. Assume $\varepsilon=2\varepsilon_0$.	7 Marks	L3	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ELECTRICAL MACHINES - I

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the construction of DC generator in detail.	7 Marks	L2	CO1	PO1
	b)	A long-shunt compound generator delivers a load current of 52 A at 500 V and has armature, series field and shunt field resistances of 0.05 Ω, 0.03 Ω and 200 Ω respectively. Calculate the generated voltage and the armature current. Allow 1 V per brush for contact drop.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Explain the various losses in a DC machine and also derive the condition for maximum efficiency of a DC generator.	7 Marks	L2	CO1	PO1
	b)	The hysteresis and eddy current losses in a DC machine running at 1100 rpm are 250 W and 100 W respectively. If the flux remains constant, at what speed will be total iron losses be halved?	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Explain the process of commutation and various methods of improving Commutation for sustainable operation of DC machines.	7 Marks	L2	CO2	PO7
	b)	An 8-pole generator has an output of 180 A at 500 V, the wave-connected armature has 1280 conductors, 160 commutator segments. If the brushes are advanced 4-segments from the no-load neutral axis, estimate the armature demagnetizing and cross-magnetizing ampere-turns per pole.	7 Marks	L3	CO2	PO4
		(OR)				
4.	a)	Derive the expressions for Demagnetising AT per Pole and Cross-magnetising AT per pole.	7 Marks	L2	CO2	PO1
	b)	The magnetization characteristic for a 4-pole, 115 V, 1000 rpm shunt generator is as follows :	7 Marks	L3	CO2	PO2

Field current (A)	0	0.5	1	1.5	2	2.5	3
O.C. voltage (V)	5	50	85	102	112	116	120

Armature is lap-connected with 144 conductors.
Field resistance is 45 ohms. Determine:
i) Voltage, the machine will build up at no load.
ii) The critical resistance.
iii) The speed at which the machine just fails to excite.

UNIT-III

5.	a)	Explain the significance of back EMF of a DC motor. Derive the torque equation of a DC motor.	7 Marks	L2	CO3	PO1

	b)	A 4-pole DC series motor has 940 wave-connected armature conductors. At a certain load the flux per pole is 34.8 mWb and the total mechanical torque developed is 205 N-m. Calculate the line current taken by the motor and the speed at which it will run with an applied voltage of 500 V. Take total armature resistance as 3 Ω.	7 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Select and discuss suitable technique for controlling speed of DC shunt motor at above and below the rated speed.	7 Marks	L2	CO3	PO5
	b)	A 250 volt DC shunt motor has armature resistance of 0.25 Ohm, on load it takes an armature current of 50 A and runs at 750 rpm. If the flux of motor is reduced by 10% without changing the load torque, find the new speed of the motor.	7 Marks	L3	CO3	PO4
		UNIT-IV				
7.	a)	Derive an expression for the emf induced in a transformer winding. Show that emf per turn in primary is equal to emf per turn in the secondary.	7 Marks	L2	CO4	PO1
	b)	A 100 kVA, 2000/200 V, 50 Hz single phase transformer has an impedance drop of 10% and resistance drop of 7%. Calculate the i) regulation at full load 0.8 pf lagging and ii) value of pf at which regulation is zero.	7 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Discuss the effect of variations of frequency and voltage on iron loss. How will you minimize the hysteresis and eddy current loss that occur in a practical transformer?	7 Marks	L3	CO4	PO7
	b)	A residential apartment arranged an 800 kVA transformer for feeding power to their residents. It has core loss of 1.45 kW and full load copper loss of 7.5 kW. Calculate the all-day efficiency if the transformer operates on the following duty cycle:	7 Marks	L3	CO4	PO2

Time duration	Load details
6 hours	500 kW @ 0.8 pf lag
4 hours	700 kW @ 0.9 pf lag
4 hours	300 kW @ 0.95 pf lag
10 hours	No Load

		UNIT-V				
9.	a)	What is meant by Scott connection of transformers? Explain its significance in conversion of a three phase supply in to two phase supply.	7 Marks	L2	CO4	PO1
	b)	An ideal 3-phase step down transformer connected in delta/star delivers power to a balanced 3-phase load of 100 kVA at 0.85 pf. The input line voltage is 33 kV and the turn's ratio of transformer (phase to phase) is 10. Determine the line voltages, line currents, phase voltages and phase currents on both primary and secondary sides.	7 Marks	L3	CO4	PO2
		(OR)				
10.	a)	Describe four possible ways of connections of 3-phase transformers with relevant relations amongst voltages and currents on both HV and LV sides.	7 Marks	L2	CO4	PO1
	b)	State the different applications of tap-changing transformer. What is meant by no-load tap changing and on-load tap changing? Explain in detail.	7 Marks	L4	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SIGNALS AND NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

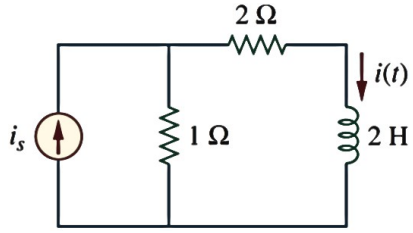
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	A continuous signal is defined for all t>o as: $x(t) = 3u(t) - 2u(t-2) - u(t-3)$. Determine $x\left(-t/4\right)$ and $x(2t+1)$ on the signal *x(t)*.	7 Marks	L3	CO1	PO2
	b)	Check whether the system given by $y[n] = 2n^2 u[n] + nu[n-4] + 0.5$ is i) Linear or Nonlinear ii) Time variant or Time invariant.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Investigate whether the signal $x(t) = u(t) - u(t-1)$ is energy signal or power signal.	7 Marks	L3	CO1	PO2
	b)	Determine whether the system $y[n] = x[2n]u[n+1]$ is i) Memoryless ii) Causal iii) Linear s iv) Time-invariant.	7 Marks	L4	CO1	PO2

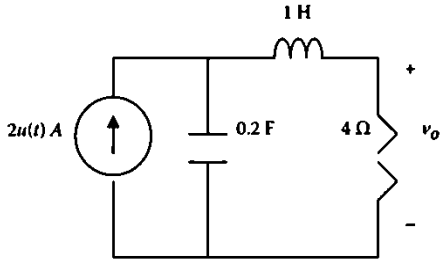
UNIT-II

3.	a)	Distinguish between Fourier series and Fourier transforms.	6 Marks	L2	CO2	PO1
	b)	For the periodic signal represented by $x(t) = 4 + 2\cos 3t + 3\sin 4t$ determine the Fourier coefficients and the total average power.	8 Marks	L3	CO2	PO5
		(OR)				
4.	a)	State necessary and sufficient conditions for the existence of the Fourier series of a signal.	6 Marks	L2	CO2	PO1
	b)	Find *i(t)* in the circuit shown in the figure, given that the input current is expressed as $i_s(t) = 1 + \sum_{n=1}^{\infty} \frac{1}{n^2} \cos 3nt\ A$.	8 Marks	L3	CO2	PO5



UNIT-III

5.	a)	Find $v_o(t)$ in the circuit shown in figure using Laplace transforms.	7 Marks	L3	CO2	PO5



	b)	Determine the transfer function and impulse response for the system described by: $y[n] - 2y[n-1] - 3y[n-2] = x[n-1]$.	7 Marks	L3	CO2	PO5

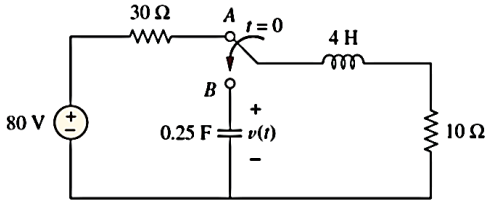
(OR)

6.	a)	Determine the initial and final values of $f(t)$, if it exist, given that: $F(s) = \frac{5s^2 + 3}{s^3 + 4s^2 + 6}$.	7 Marks	L3	CO2	PO5
	b)	Determine the z-transform and its ROC for the following discrete signal $x[n] = -u[-n-1] + \left(\frac{1}{2}\right)^n u[n]$.	7 Marks	L3	CO2	PO5

UNIT-IV

7.	a)	What is the significance of time constant of R-L circuit? What are the different ways of defining time constant?	6 Marks	L2	CO3	PO1
	b)	A Sinusoidal Voltage of $V(t) = 12\sin 8t$ Volts is applied at t = 0 to a RL series of R= 4Ω and L = 1 H. By Laplace transform method determine the circuit current I (t). Assume zero initial condition.	8 Marks	L3	CO3	PO5

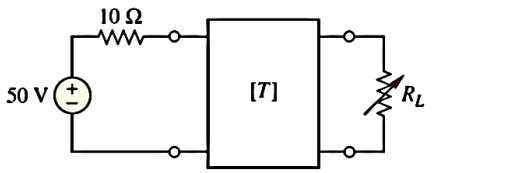
(OR)

8.		The switch in figure moves from position *A* to position *B* at t=0. Let initial conditions $v(0) = 0$, find $v(t)$ for t>0 using Laplace transforms. 	14 Marks	L3	CO3	PO5

UNIT-V

9.		Express ABCD parameters in terms of impedance parameters for a generalized network.	14 Marks	L3	CO4	PO1

(OR)

10.	a)	Design a two-port T-Network whose *z* parameters are defined by: $Z = \begin{bmatrix} 6 & 4 \\ 4 & 6 \end{bmatrix}$ Ohms.	6 Marks	L4	CO4	PO3
	b)	The ABCD parameters of the two-port network shown in figure are $T = \begin{bmatrix} 4 & 20\Omega \\ 0.1S & 2 \end{bmatrix}$ .The output port is connected to a variable load for maximum power transfer. Find R_L and the maximum power transferred. 	8 Marks	L4	CO4	PO7

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ENGINEERING THERMODYNAMICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss exact and inexact differentials.	7 Marks	L2	CO1	PO1
	b)	Determine the heat transfer and its direction for a system in which a perfect gas having molecular weight of 6 is compressed from 101.3 kPa, 20^0C to a pressure of 600 kPa following the law $pV^{1.3}$ = const. Take the specific heat at constant pressure of gas as 1.7 kJ/kg.K.	7 Marks	L3	CO1	PO1 PO2
		(OR)				
2.	a)	Discuss the First Law of Thermodynamics applied to a process for a closed system.	7 Marks	L2	CO1	PO1 PO2
	b)	Two streams of air, one at 1 bar, 27^0C and velocity of 30 m/s and the other at bar, 227^0C and velocity of 50 m/s mix in equal proportion in a chamber from which heat at the rate of 100kJ/kg is removed. The mixture is then passed through an adiabatic nozzle. Find the velocity of the stream issuing out of the nozzle. The temperature of the air leaving the nozzle is 27^0C and its Cp = 1.005 kJ/kgK .	7 Marks	L3	CO1	PO1 PO2 PO3

UNIT-II

3.	a)	State and prove Carnot's theorem.	7 Marks	L2	CO1	PO1
	b)	A heat engine drives a heat pump. The heat delivered by the heat engine as well as by the pump is used to heat the water circulating through the heat radiators of a building. The efficiency of the heat engine is 27% and the coefficient of performance of heat pump is 4. Calculate the ratio of heat transferred to the circulating water to the heat taken by the heat Engine.	7 Marks	L3	CO1	PO1 PO2 PO3
		(OR)				
4.	a)	Define Kelvin–Planck and Clausius statements. Prove that violation one Statement leads to a violation of the other Statement.	7 Marks	L2	CO1	PO1
	b)	1 kg of ice at -10^0C is exposed to the atmosphere which is at 25^0C. The ice melts and comes in contact with the atmosphere. i) Determine the entropy increase of the universe, ii) What is the minimum amount of work necessary to convert the water back into ice at 10^0C? Cp of ice is 2.093 kJ/kgK and the latent heat of fusion of ice is 333 kJ/kg.	7 Marks	L3	CO1	PO1 PO2

UNIT-III

5.	a)	With neat sketch explain psychrometric chart.	5 Marks	L2	CO2	PO1 PO2 PO3
	b)	A closed vessel of 0.2 cubic meter contains steam at 1 Mpa and temperature of 250 deg C. If the vessel is cooled so that pressure falls to 350kPa. Determine the final temperature, heat transfer and change in entropy during the process.	9 Marks	L3	CO2	PO1 PO2

(OR)

6.		Steam at 10 bar and 0.95 dryness is available. Determine the final condition of steam in each of the following operations : i) 160 kJ of heat is removed at constant pressure ; ii) It is cooled at constant volume till the temperature inside falls to 140°C. iii) Steam expands isentropically in a steam turbine developing 300 kJ of work per kg of steam when the exit pressure of steam is 0.5 bar.	14 Marks	L3	CO1	PO1 PO2

UNIT-IV

7.	a)	What is compressibility factor? What does it signify? What is its value for an ideal gas at critical point?	7 Marks	L2	CO3	PO1 PO2
	b)	A vessel of 0.03 m^3 capacity contains gas at 3.5 bar pressure and 35°C temperature. Determine the mass of the gas in the vessel. If the pressure of this gas is increased to 10.5 bar while the volume remains constant, what will be the temperature of the gas ?	7 Marks	L3	CO3	PO1 PO2

(OR)

8.	a)	Explain the Dalon's law of partial pressures for mixture of gases.	6 Marks	L2	CO3	PO1
	b)	Following is the gravimetric analysis of air: Oxygen-23.14%, Nitogen-75.53%, Argon-1.28%, Carbon dioxide-0.05% Calculate analysis by volume and the partial pressure of each constituent when total pressure is 1bar.	8 Marks	L3	CO3	PO1 PO2

UNIT-V

9.	a)	Derive an expression for the thermal efficiency of Otto Cycle and draw P-V and T- S diagrams.	7 Marks	L3	CO4	PO1 PO2 PO10
	b)	The swept volume of a diesel engine working on dual cycle is 0.0053 m3 and clearance volume is 0.00035 m3. The maximum pressure is 65 bar. Fuel injection ends at 5 per cent of the stroke. The temperature and pressure at the start of the compression are 80°C and 0.9 bar. Determine the air standard efficiency of the cycle. Take γ for air = 1.4.	7 Marks	L3	CO4	PO1 PO2

(OR)

10.	a)	Derive an expression for the thermal efficiency of stirling cycle and draw P-V & T- S diagrams.	8 Marks	L3	CO4	PO1 PO2 PO10
	b)	The efficiency of an Otto cycle is 60% and γ=1.5, what is the compression ratio?	6 Marks	L3	CO4	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

KINEMATICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

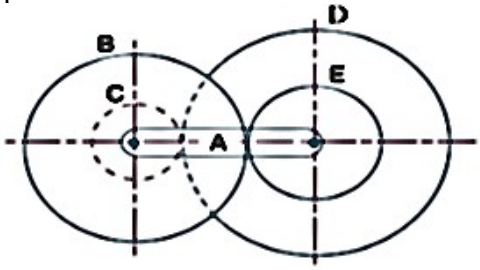
1.	a)	Define 'Machine' and 'Mechanism'. How are these different from each other?	7 Marks	L2	CO1	PO1
	b)	Explain completely, partially and incompletely constrained motion of a kinematic pair with examples.	7 Marks	L1	CO1	PO1
		(OR)				
2.		Describe three practical applications of a Quadric cycle chain.	14 Marks	L2	CO1	PO1 PO2 PO3

UNIT-II

3.		Give a neat sketch of the straight line motion 'Hart mechanism.' Prove that it produces an exact straight line motion.	14 Marks	L3	CO2	PO1 PO2
		(OR)				
4.	a)	Derive the condition for correct steering.	7 Marks	L3	CO3	PO1 PO2 PO3
	b)	With a neat sketch explain about the approximate straight line motion mechanisms of Tchebicheff's and Robert mechanisms.	7 Marks	L2	CO2	PO1 PO2

UNIT-III

5.	a)	State and prove the law of gearing.	7 Marks	L3	CO4	PO1 PO2 PO3
	b)	A pinion having 30 teeth drives a gear having 80 teeth. The profile of the gears is involute with 20° pressure angle, 12 mm module and 10 mm addendum. Find the length of path of contact, arc of contact and the contact ratio.	7 Marks	L2	CO4	PO1 PO2 PO3
		(OR)				
6.		In a reverted epicyclic gear train, the arm A carries two gears B and C and a compound gear D - E. The gear B meshes with gear E and the gear C meshes with gear D. The number of teeth on gears B, C and D are 75, 30 and 90 respectively. Find the speed and direction of gear C when gear B is fixed and the arm A makes 100 r.p.m. clockwise.	14 Marks	L4	CO4	PO1 PO2 PO3



UNIT-IV

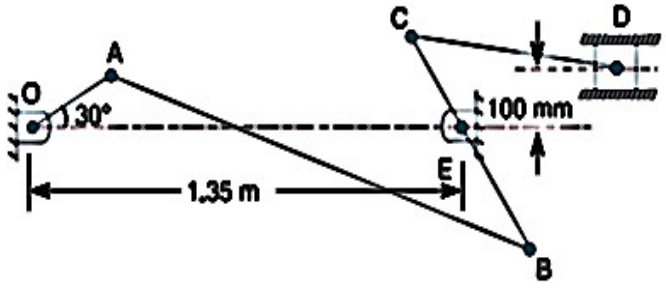
7.	A cam drives a flat reciprocating follower in the following manner: During first 120° rotation of the cam, follower moves outwards through a distance of 20 mm with simple harmonic motion. The follower dwells during next 30° of cam rotation. During next 120° of cam rotation, the follower moves inwards with simple harmonic motion. The follower dwells for the next 90° of cam rotation. The minimum radius of the cam is 25 mm. Draw the profile of the cam.	14 Marks	L3	CO5	PO1 PO2 PO3 PO10

(OR)

8.	A cam is to give the following motion to a knife-edged follower: i) To raise the follower through 30 mm with equal uniform acceleration and deceleration during 1200 rotation of cam. ii) Dwell for next 300 of cam rotation. iii) To lower the follower with simple harmonic motion during next 900 rotation of the cam. iv) Dwell for the rest of cam rotation. The cam has a minimum radius of 30 mm and rotates at a uniform speed of 800 rpm. Draw the profile of the cam if the line of stroke of the follower passes through the axis of the cam shaft. Also, draw the displacement, velocity and acceleration diagrams for the motion of the follower for one complete revolution of the cam indicating the maximum values.	14 Marks	L4	CO5	PO1 PO2 PO3 PO10

UNIT-V

9.	A mechanism, as shown in Fig., has the following dimensions: OA = 200 mm; AB = 1.5 m; BC = 600 mm; CD = 500 mm and BE = 400 mm. Locate all the instantaneous centers. If crank OA rotates uniformly at 120 r.p.m. clockwise, find 1. The velocity of B, C and D, 2. The angular velocity of the links AB, BC and CD.	14 Marks	L4	CO6	PO1 PO2 PO3 PO10



(OR)

10.	PQRS is a four bar chain with link PS fixed. The lengths of the links are PQ= 62.5 mm; QR = 175 mm; RS = 112.5 mm; and PS = 200 mm. The crank PQ rotates at 10 rad/s clockwise. Draw the velocity and acceleration diagram when angle QPS = 60° and Q and R lie on the same side of PS. Find the angular velocity and angular acceleration of links QR and RS.	14 Marks	L4	CO6	PO1 PO2 PO3 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

STRENGTH OF MATERIALS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain clearly the different types of stresses and strains.	7 Marks	L2	CO1	PO1
	b)	A brass bar having a cross-sectional area of 1000 mm^2 is subjected to axial forces as shown in fig 1. Find the total change in length of the bar. Take E = 1.05 x 10^5 N/mm^2.	7 Marks	L3	CO1	PO1 PO2 PO3 PO4

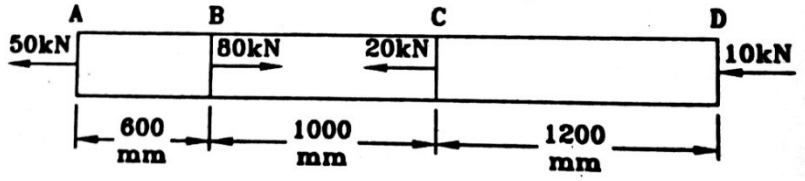

Fig.1

(OR)

2.		A compound tube consists of a steel tube 140 mm internal diameter and 160 mm external diameter and an outer brass tube 160 mm internal diameter and 180 mm external diameter. The two tubes are of the same length. The compound tube carries an axial load of 900 kN. Find the stresses and the load carried by each tube and the amount it shortens. Length of each tube is 140 mm. Take E for steel as 2x10^5 N/mm^2 and for brass as 1 x 10^5 N/mm^2.	14 Marks	L3	CO1	PO1 PO2

UNIT-II

3.		Draw BM and SF diagrams for the beam shown in fig 2, indicating the values at all salient points.	14 Marks	L3	CO2	PO1 PO2 PO3

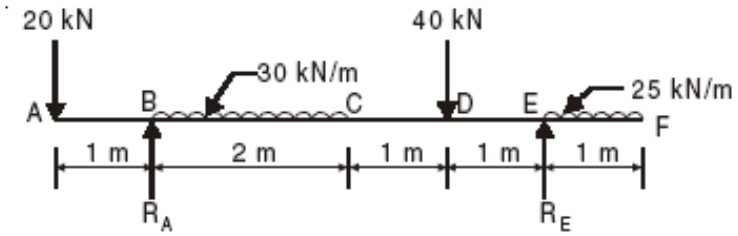

Fig.2

(OR)

4.	a)	What are sagging and hogging bending moments? Explain.	7 Marks	L2	CO2	PO1
	b)	A beam AB 10 m long is simply supported at its ends A and B. It carries a uniformly distributed load of 20 kN/m for a distance of 5 m from the left end A and a concentrated load of 40 kN at a distance of 2 m from the right end B. Draw S.F. and B.M. diagram for the beam. Also find the position and magnitude of maximum bending moment.	7 Marks	L3	CO2	PO1 PO2 PO3

UNIT-III

5.	A steel shaft ABCD having a total of 2400 mm is contributed by three different sections as follows. The portion AB is hollow having outside and inside diameters 80 mm and 50 mm respectively. BC is solid and 80 mm diameter. CD is also solid and 70 mm diameter. If the angle of twist is same for each section, determine the length of each portion and the total angle of twist. Maximum permissible shear stress is 50 MPa and shear modulus 0.82 x 10^5 MPa.	14 Marks	L3	CO2	PO1 PO2 PO3

(OR)

6.	An 'I' section beam consists of two flanges 150 x 20 mm and a web of 310 x 10 mm. Find the magnitude of maximum shear stress when it is subjected to a shear force of 40 kN and draw the shear stress distribution diagram over the depth of the section.	14 Marks	L3	CO2	PO1 PO2

UNIT-IV

7.	A flexible shaft consists of a 0.20-in-diameter steel wire encased in a stationary tube that fits closely enough to impose a frictional torque of 5 N-m. Determine the maximum length of the shaft if the shearing stress is not to exceed 20 ksi. What will be the angular deformation of one end relative to the other end? G = 12 × 10^6 psi.	14 Marks	L3	CO3	PO1 PO2 PO3 PO4

(OR)

8.	A rectangular block of material is subjected to a tensile stress of 100 MN/m^2 on one plane and a tensile stress of 50 MN/m^2 on a plane at right angles, together with the shear stresses of 60 MN/m^2 on the same planes. Find: i) The magnitude of the principal stresses. ii) The directions of the principal planes. iii) The magnitude of greatest shear stress.	14 Marks	L3	CO3	PO1 PO2 PO3 PO4

UNIT-V

9.	For the simply supported beam shown in fig 3. Find: i) The slope at each end, ii) deflection at C and D, and iii) Maximum deflection. Take E= 200 kN/mm^2 and I = 6.50 x10^8 mm^4	14 Marks	L3	CO4	PO1 PO2 PO3

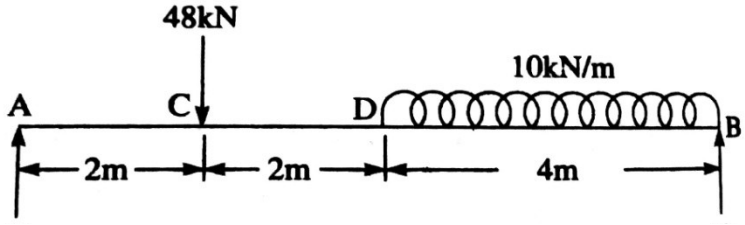

Fig.3

(OR)

10.	a)	Formulate the expressions for slope and deflection at end and mid points of a simply supported beam subjected to uniformly distributed load over entire span.	7 Marks	L2	CO4	PO1 PO2
	b)	A beam of length 6 m is simply supported at the ends and carries two point loads of 48 kN and 40 kN at a distance of 1 m and 3 m respectively from the left support. Compute the slope and deflection under each load. Assume EI = 17000 kN–m^2.	7 Marks	L3	CO4	PO1 PO2 PO3 PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

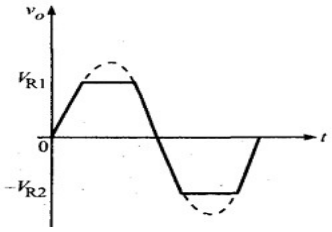
ELECTRONIC DEVICES AND CIRCUITS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Develop a clipper circuit which produces the following output and Assume the input applied voltage is 30VP-P, VR1=5V,VR2=-5V and assume Diode is Ideal. 	7 Marks	L2	CO1	PO2
	b)	Prove that a low pass circuit acts as an integrator. Derive an expression for the output voltage levels under steady state conditions of a low pass circuit excited by a ramp input.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Derive the Stability factors of the following biasing circuits: i) fixed bias ii) fixed bias with resistor Rr in series with emitter and reference ground Derive the (S) for the above circuits.	7 Marks	L2	CO2	PO2
	b)	Design a self bias circuit and obtain the expression for the stability factor. Discuss the advantages and disadvantages of self biasing.	7 Marks	L4	CO2	PO3
		UNIT-II				
3.	a)	Derive expression for S for collector to base bias of CE amplifier with neat sketch and explain it's operation.	7 Marks	L1	CO2	PO2
	b)	Discuss the need for biasing a transistor and illustrate the DC load line analysis of BJT.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Design a base bias circuit with n-p-n transistor when the operating point is at I_C=1mA, $V_{CE=}$24V, β=60, $V_{CE(Sat)}$=0V, $I_{C(cut\ off)}$=0mA and V_{CC}=36V.	7 Marks	L4	CO2	PO3
	b)	Derive the expression for stability factor for voltage divider bias of a transistor circuit.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.		Assess CC transistor amplifier circuit using h-parameters and derive expressions for the current gain, voltage gain, input impedance and output admittance.	14 Marks	L4	CO3	PO2
		(OR)				
6.	a)	Explain CB amplifier with exact and approximate analysis.	7 Marks	L4	CO3	PO2
	b)	Discuss the advantages of H-parameter analysis.	7 Marks	L1	CO3	PO1

UNIT-IV

7.		Explain the construction, operation and the characteristics of N-Channel JFET with the help of neat diagrams and also compare it with BJT.	14 Marks	L1	CO4	PO1
		(OR)				
8.	a)	A Common Source FET amplifier circuit with un bypassed RS has the following circuit parameters: R_d = 15K, R_S = 0.5K, Rg = 1M, r_d = 5K, g_m= 5mS and V_{DD} = 20 V. Determine A_V & R_O.	8 Marks	L4	CO4	PO2
	b)	With the help of neat diagram explain the voltage divider biasing method for FET.	6 Marks	L1	CO4	PO1

UNIT-V

9.	a)	Explain the operation and characteristics of varactor diode with neat diagram.	7 Marks	L1	CO5	PO1
	b)	For a certain UJT Relaxation oscillator, the resistance is 10KΩ, the capacitance is 0.1 μF. The valley potential is 1.5V when V_{BB}=20V. Assuming diode cut-in voltage of 0.7V and standoff ratio as 0.6, calculate the frequency of oscillations.	7 Marks	L3	CO5	PO2
		(OR)				
10.	a)	Explain the application of a UJT as a relaxation oscillator.	7 Marks	L1	CO5	PO6
	b)	Compare Varactor diode and Schottky Barrier diodes.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SIGNALS AND SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is a Dirac delta function? Give the properties.	4 Marks	L1	CO1	PO1
	b)	Test if the following signals are periodic or not. If so, find the fundamental Period. i) $x_1(t)= e^{j10t}$. ii) $x_2(t)= \cos(\pi/3\ t) + \sin(\pi/5\ t)$.	10 Marks	L2	CO1	PO1

(OR)

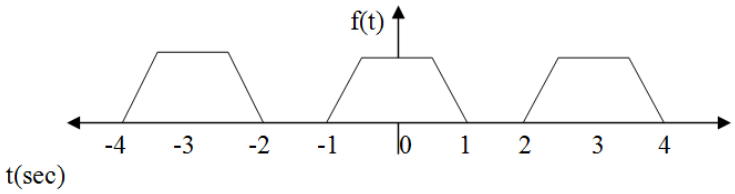
2.	a)	Assess the importance of convolution. Find the response of a system for the given sequences x(n) = {1,0, -1,2,1} &h (n) = {1,2, -1,2}.	9 Marks	L2	CO1	PO2
	b)	Derive the relation between power and RMS value of a sinusoidal signal.	5 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Determine exponential fourier series representation for the output of full wave rectifier with T=1sec.	4 Marks	L3	CO2	PO5
	b)	Explain how input and output signals are related to impulse response of LTI system.	10 Marks	L2	CO2	PO2

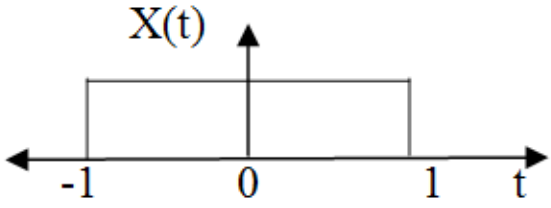
(OR)

4.		Apply exponential Fourier series and plot the magnitude and phase spectrum for the triangular waveform shown in figure.	14 Marks	L3	CO2	PO5



UNIT-III

5.	a)	Using appropriate method find the correlation of the rectangular pulse given below with itself.	9 Marks	L2	CO3	PO2



	b)	State and prove Parseval's theorem	5 Marks	L2	CO3	PO2

(OR)

6.	a)	Explain how convolution, auto-correlation and cross-correlation extracts signals from noisy environments with relevant mathematical expressions.	9 Marks	L2	CO3	PO6
	b)	State the properties of cross correlation function.	5 Marks	L1	CO3	PO1

UNIT-IV

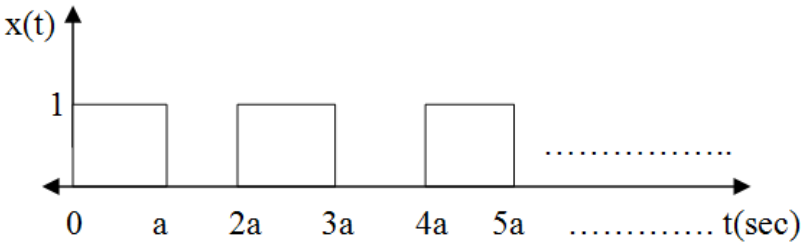
7.		Explain why over sampling is resorted to in certain applications. How does it help?	14 Marks	L2	CO4	PO2

(OR)

8.	a)	Discuss the effects of under-sampling and over-sampling with relevant practical examples.	7 Marks	L1	CO5	PO1
	b)	Explain the role of sampling in analog to digital converters with relevant figures.	7 Marks	L1	CO5	PO1

UNIT-V

9.	a)	State and prove the time shifting and time integration property of Laplace transform	5 Marks	L2	CO5	PO2
	b)	Find the Laplace transform of the following waveform.	9 Marks	L3	CO5	PO5



(OR)

10.	a)	Discuss briefly about the properties of ROC of Z-Tranform.	5 Marks	L2	CO5	PO2
	b)	Determine the inverse Z-transform of the following function.	9 Marks	L3	CO5	PO5

$$X(z) = \frac{4z^2 - 2z}{z^3 - 5z^2 + 8z - 4}.$$

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SWITCHING THEORY AND LOGIC DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Perform the following decimal subtractions in BCD by the 9's complement method. i) 58.5-18.8 ii) 823.6-123.9	9 Marks	L2	CO1	PO1
	b)	Find 2's complement of -42.62 in 12-bit form.	5 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Reduce Minimize the expression $F = \left(\overline{AB + \overline{BC}}\right)\left(\overline{B} + AC\right)$.	7 Marks	L2	CO1	PO1
	b)	Implement the X-NOR function using. i) NAND logic ii) NOR logic	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Deduce the expression in universal logic for the expression, $F = \pi M(2,5,9.10.12,13)$	7 Marks	L4	CO1	PO2
	b)	Implement $F = \Sigma m(2,5,9.10.12,13)$ using 8x1 mux.	7 Marks	L4	CO1	PO2
		(OR)				
4.	a)	Design a full-adder using i) only NAND gates ii) only NOR gates.	7 Marks	L3	CO1	PO2
	b)	Simplify the following function using Tabular method. $F(A, B, C, D) = \Sigma m(0,1,2,3,4,10,11,12)$.	7 Marks	L4	CO1	PO2

UNIT-III

5.	a)	Realize the function "F" using MUX. $F(P,Q,R,S)=(0,1,3,4,8,9,15)$.	7 Marks	L4	CO2	PO4
	b)	Explain the working of BCD to seven segment display decoder.	7 Marks	L1	CO2	PO1
		(OR)				
6.	a)	Implement a 16-line to 1-line multiplexer using 4-line to 1-line Multiplexer.	7 Marks	L4	CO2	PO6
	b)	Design a 16 x 1 MUX by modifying the 4 x 16 decoder.	7 Marks	L4	CO2	PO3

UNIT-IV

7.	a)	Explain the working of Master/Slave JK FF.	7 Marks	L1	CO2	PO1
	b)	Compare Asynchronous and Synchronous Counter with neat sketches.	7 Marks	L2	CO2	PO2
		(OR)				
8.	a)	Assess how ring counter will act as a Johnson counter.	7 Marks	L2	CO2	PO7
	b)	Convert a J-K flip-flop in to i) SR flip-flop ii) T flip-flop iii) D flip-flop	7 Marks	L2	CO2	PO2

UNIT-V

9.	a)	Design a combinational circuit using a PROM. The circuit accepts a 3-bit binary number and generates its equivalent XS-3 code.	7 Marks	L4	CO3	PO7
	b)	Analyze the capabilities and limitations of finite state machines with aid of neat sketches.	7 Marks	L2	CO3	PO2
		(OR)				
10.	a)	Implement the following two Boolean functions using PLA. $F_1(A,B,C)=\sum m(1,2,4)$ $F_2(A,B,C)=\sum m(3,4,6,7)$	7 Marks	L3	CO4	PO2
	b)	Select 2-bit binary input to PROM and generate square of the binary input.	7 Marks	L2	CO3	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

COMPUTER ORGANIZATION

[Computer Science and Engineering, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Business Systems, Computer Science and Engineering (Cyber Security), Computer Science and Engineering (Artificial Intelligence & Machine Learning)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Perform the following number base conversions. i) $(55)_8$ = (_____)$_2$ ii) $(62)_{10}$ = (_____)$_8$ iii) $(5A)_{16}$ = (_____)$_{10}$	7 Marks	L3	CO1	PO2
	b)	Design a 4-bit binary adder-cum-subtractor circuit using Full-Adders.	7 Marks	L4	CO3	PO3
		(OR)				
2.	a)	Design a 2 x 3 Array Multiplier. Draw the logic diagram and explain.	7 Marks	L4	CO1	PO3
	b)	What is register transfer logic language? Explain few RTL statements for arithmetic micro operations.	7 Marks	L2	CO2	PO1

UNIT-II

3.		An instruction is stored at location 300 with its address field at location 301. The address field has the value 400. A processor register R1 contains the number 200. Evaluate the effective address if the addressing mode of the instruction is. i) Direct. ii) Immediate. iii) Relative. iv) Register Indirect. v) Index with R1 as the Index Register.	14 Marks	L3	CO2	PO2
		(OR)				
4.	a)	What are the phases of an Instruction Cycle? Draw the flow chart for initial configuration of an Instruction Cycle.	7 Marks	L2	CO2	PO1
	b)	Explain in detail common bus system with the help of a neat sketch.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Define the following: i) Micro Operation ii) Control Word iii) Control memory iv) Micro Program v) Micro Instruction	7 Marks	L2	CO2	PO1
	b)	Compare the basic advantage of using Interrupt-Initiated data transfer over transfer under program control without an interrupt?	7 Marks	L4	CO4	PO2

(OR)

6.	a)	Why Input-Output interface is needed in a computer? Explain the working of Input-Output Interface unit with an example.	7 Marks	L4	CO2	PO2
	b)	Discuss with the help of a neat diagram, the typical configuration that supports the use of PCI express (PCIe).	7 Marks	L3	CO4	PO1

UNIT-IV

7.	a)	Design a 2M x 8 DRAM chip. Draw neat diagram of its internal organization.	7 Marks	L4	CO3	PO3
	b)	Compare and contrast various mapping techniques of cache memory.	7 Marks	L2	CO2	PO1

(OR)

8.	a)	Distinguish between synchronous and asynchronous DRAM.	7 Marks	L3	CO4	PO2
	b)	How many 128 x 8 RAM chips are needed to provide a memory capacity of 2048 bytes? And how many lines of the address bus must be used to access 2048 bytes of memory? How many of these lines will be common to all chips? How many lines must be decoded for the line select?	7 Marks	L3	CO2	PO2

UNIT-V

9.	a)	Consider 2 processors P0 and P1. Consider memory module with 8 words. Design a Binary Tree Multistage Switching Network to connect processors with memory using 2x2 switches.	7 Marks	L3	CO2	PO2
	b)	Discuss the characteristics of multiprocessors.	7 Marks	L2	CO2	PO1

(OR)

10.	a)	Discuss in detail the software performance issues in multicore computers.	7 Marks	L2	CO2	PO1
	b)	Compare serial and parallel arbitration procedures.	7 Marks	L4	CO4	PO2

CODE No.: 20BT31201 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SOFTWARE ENGINEERING

[Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	List and Explain about Agile principles in software engineering.	7 Marks	L1	CO1	PO1
	b)	Distinguish between Scrum and Dynamic System Development Method in Agile Modeling.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Inspect between management myth and customer myth.	7 Marks	L2	CO1	PO2
	b)	Explain Extreme Programming (XP) in Software Process.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.		Discuss how an engineer responsible for drawing up a system requirements specification might keep track of the relationships between functional and non-functional requirements.	14 Marks	L3	CO2	PO5
		(OR)				
4.	a)	What is the purpose of the interaction model for a WebApp?	7 Marks	L1	CO2	PO1
	b)	How is SRS for a development project arrived at? What minimum features are required to be present in a good SRS?	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Develop a sequence diagram showing the interactions involved when a student registers for a course in a university. Courses may have limited enrollment, so the registration process must include checks that places are available. Assume that the student accesses an electronic course catalog to find out about available courses.	7 Marks	L3	CO3	PO3
	b)	Discuss the metrics for improving Software quality?	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	List and explain two metrics which are used to measure the software in detail. Discuss clearly the advantages and disadvantages of these metrics.	7 Marks	L1	CO3	PO1
	b)	Design a model for home automation system with class Diagram.	7 Marks	L3	CO3	PO3
		UNIT-IV				
7.	a)	Differentiate white box and black box testing.	7 Marks	L2	CO4	PO2
	b)	Explain the use of drivers and stubs in unit testing.	7 Marks	L1	CO4	PO1
		(OR)				
8.	a)	Discuss in detail about software testing strategies.	7 Marks	L1	CO4	PO1
	b)	Explain in detail about any one control structure testing.	7 Marks	L1	CO4	PO1
		UNIT-V				
9.		A formal technical review is effective only if everyone has prepared in advance. Assume you are the review leader; how do you recognize a review participant who has not prepared.	14 Marks	L3	CO5	PO5
		(OR)				
10.		Explain the Software Reengineering process model with its activities.	14 Marks	L1	CO5	PO1

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CODE No.: 20BT31501 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

OPERATING SYSTEMS

[Information Technology, Computer Science and Engineering (IoT), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss the functionality of Multi-Processor scheduling.	7 Marks	L1	CO1	PO1
	b)	Give an example to illustrate how system calls are used.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Discuss about Process control block and threads.	7 Marks	L1	CO1	PO1
	b)	Discuss about priority and round robin scheduling algorithms.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.	a)	How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail.	10 Marks	L3	CO2	PO2
	b)	Compare and contrast process and threads.	4 Marks	L4	CO1	PO3
		(OR)				
4.	a)	List and explain deadlock necessary conditions with examples.	7 Marks	L2	CO2	PO2
	b)	Mention some classical problems of synchronization and Explain dinning-philosophers problem.	7 Marks	L3	CO2	PO3
		UNIT-III				
5.	a)	Consider the following page reference string: 7,0,1,2,0,3,0,4,2,3,0,3,1,2,0. How many page faults would occur for the optimal page replacement and LRU algorithms, assuming three frames and all frames are initially empty.	10 Marks	L4	CO3	PO3
	b)	What is Belady's Anomaly? Explain with an Example.	4 Marks	L3	CO4	PO3
		(OR)				
6.	a)	Discuss various issues involved in selecting appropriate disk scheduling algorithm.	9 Marks	L4	CO3	PO4
	b)	Illustrate contiguous memory allocation concept.	5 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	What is directory? Write short on Directory implementation.	7 Marks	L2	CO4	PO2
	b)	Explain about DMA?	7 Marks	L1	CO4	PO2
		(OR)				
8.	a)	What is file structure? How file structure is supported by different operating systems?	7 Marks	L3	CO4	PO3
	b)	Explain about Memory – mapped I/O.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Discuss the strengths and weakness of implementing an access matrix using access list that are associated with objects.	7 Marks	L3	CO5	PO3
	b)	Write about Symmetric Encryption.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	What is system security? Explain user authentication.	7 Marks	L2	CO5	PO2
	b)	Give a brief note on I/O mode data transfers.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

COMPUTER NETWORKS

[Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What networks are used in the computer labs in your organization? Describe network type topology and switching methods used there.	7 Marks	L2	CO1	PO3
	b)	Elucidate the social issues of networks applications.	7 Marks	L2	CO5	PO8
		(OR)				
2.	a)	Identify the key issues for network support layers.	7 Marks	L2	CO1	PO1
	b)	Explain service primitives in connection-oriented service.	7 Marks	L1	CO1	PO1

UNIT-II

3.	a)	The message 11001001 is to be transmitted using CRC error detection algorithm. Assuming the CRC polynomial to be $x^3 + 1$, determine the message that should be transmitted. If the second left most bit is corrupted, show that it is detected by the receiver.	7 Marks	L2	CO3	PO4
	b)	Mention the limitations of bridges and switches.	7 Marks	L1	CO1	PO1
		(OR)				
4.	a)	Discuss in detail about on Go back N ARQ sliding window protocol.	7 Marks	L1	CO3	PO1
	b)	Explain CSMA and protocols with Collision detection and Avoidance.	7 Marks	L1	CO1	PO3

UNIT-III

5.	a)	Explain Internet Protocol with the neat block diagram of IPv6 header format.	7 Marks	L3	CO5	PO8
	b)	A router with IPV4 address 123.45.21.12 and Ethernet physical address 23:45: BA: 00:67: CD has received a packet for a host destination with IP address 124.10.78.10. Show the entries in the ARP request packet sent by the router**.** Assume no subnetting.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Distinguish between ARP and RARP Protocols	7 Marks	L1	CO1	PO1
	b)	Elucidate congestion control algorithms in detail	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Evaluate TCP congestion control mechanisms.	7 Marks	L3	CO3	PO1
	b)	What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?	7 Marks	L3	CO3	PO1
		(OR)				
8.	a)	A client uses UDP to send data to server. The data length is 16 bytes. Calculate the efficiency of this transmission at the UDP level(ration of useful bytes to total bytes)	7 Marks	L3	CO3	PO2
	b)	Elucidate the following Timers in TCP. i) Retransmission Time Out ii) Persistence Timer	7 Marks	L1	CO1	PO1

UNIT-V

9.	a)	Determine which of the following are FQDN and which is are PQDN. i) mil. ii) edu. iii) xxx.yyy.net iv) zzz.yyy.xxx.edu	7 Marks	L2	CO4	PO6
	b)	Explain World Wide Web architecture.	7 Marks	L2	CO1	PO1
		(OR)				
10.	a)	Explain Hyper Text Transfer Protocol request and response messages in detail.	7 Marks	L2	CO4	PO1
	b)	What are the duties of FTP protocol?	7 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What are the basic operations that are performed on list data structure? With example explain the concepts.	7 Marks	L1	CO1	PO1
	b)	State the difference between Arrays and Linked Lists. List out the areas in which Data Structures are applied extensively. Distinguish between Linear and Non-Linear Data Structures.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Write the find routine for array and linked list implementation in Java.	7 Marks	L3	CO1	PO2
	b)	A list that has no end and no beginning. What is this list called? Write a code to check this kind of list.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Describe about Stack using arrays in detail.	7 Marks	L1	CO1	PO1
	b)	Briefly explain the operations of Queue with example.	7 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Give a routine for push and pop operations on stacks using linked list with an example. Describe the function to examine whether the Stack is Full or Empty.	7 Marks	L3	CO1	PO3
	b)	To store the customer order information in a drive-in burger place. (Customers keep on coming and they have to get their correct food at the payment/food collection window if the order is simple and takes less time). Find the suitable data structure to manipulate the data in an efficient way.	7 Marks	L4	CO4	PO3
		UNIT-III				
5.	a)	Sketch a Binary Tree and various methods in which a binary tree can be represented**.**	7 Marks	L2	CO2	PO1
	b)	Discuss about one height balanced tree and its operations with an example.	7 Marks	L2	CO2	PO1
		(OR)				
6.	a)	Brief on the process of finding maximum and minimum values in a binary search tree.	7 Marks	L2	CO2	PO1
	b)	Explain how deletion can take place in AVL Tree?	7 Marks	L2	CO2	PO2

UNIT-IV

7.	a)	Examine the performance of linear search with a routine and an example.	7 Marks	L3	CO3	PO1
	b)	Sort the given integers using merge sort: 35, 12, 14, 9, 15, 45, 32, 95, 40, 5.	7 Marks	L3	CO3	PO2
		(OR)				
8.	a)	Using binary search, search the number 26 from the list of numbers and give the steps. 10, 7, 17, 26, 32, 9	7 Marks	L3	CO3	PO2
	b)	Give a procedure for heap sort and analyze its complexity.	7 Marks	L4	CO3	PO2

UNIT-V

9.	a)	Discuss a routine for Breadth first Search on a graph.	7 Marks	L2	CO2	PO2
	b)	List the applications of graph. Compare directed and undirected graph What are the various ways of representing a graph.	7 Marks	L2	CO2	PO1
		(OR)				
10.	a)	How open addressing can be used to resolve collision in hashing? Explain with example.	7 Marks	L2	CO2	PO2
	b)	To design a printed circuit board with the minimum number of traces, write an algorithm to establish connections between pins and explain it with example.	7 Marks	L3	CO4	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

OPERATING SYSTEMS

[Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the various types of system calls with an example for each.	7 Marks	L2	CO1	PO1
	b)	Write short notes on: i) Multilevel Queue Scheduling. ii) Multilevel Feedback Queue Scheduling.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain the issues related to logical implementation of inter process communication in message passing systems.	7 Marks	L2	CO1	PO2
	b)	Find out Waiting time, Average waiting time and Turn Around Time for each process using (time slice : 3). i) RR Algorithm ii) FCFS Processes : P1 P2 P3 Burst Time: 24 3 3	7 Marks	L3	CO1	PO5

UNIT-II

3.	a)	By using semaphores, explain how mutual exclusion is achieved for the producer and consumer processes in Bounded Buffer Problem?	7 Marks	L2	CO2	PO5
	b)	Give the syntax and specify the need of monitors. Discuss the ways of resuming a process in a monitor.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	With illustrations, Explain the way of deadlock detection in a system having several instances of a resource type.	7 Marks	L2	CO3	PO2
	b)	Explain preempt able and non-preempt able resource with an example.	7 Marks	L2	CO3	PO2

UNIT-III

5.	a)	Distinguish between demand paging and simple paging with an example?	7 Marks	L2	CO4	PO2
	b)	Consider the following page reference string: 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 How many page faults would occur for the optimal page replacement algorithm, assuming three frames and all frames are initially empty.	7 Marks	L3	CO4	PO3
		(OR)				
6.	a)	What are the various disk space allocation methods? Explain any two in detail.	7 Marks	L3	CO4	PO3
	b)	State and explain the FCFS and SSTF disk scheduling with an example.	7 Marks	L2	CO4	PO2

UNIT-IV

7.	a)	Discuss about the linear list and hash table data structures to implement a directory.	7 Marks	L1	CO5	PO2
	b)	Write a short note on: i) File path ii) File Attributes iii) File Operations	7 Marks	L2	CO5	PO1
		(OR)				
8.	a)	With proper diagrams, illustrate the allocation methods in file system implementation.	7 Marks	L2	CO5	PO2
	b)	Explain the data structures supported by kernel I/O subsystem.	7 Marks	L2	CO6	PO2

UNIT-V

9.	a)	Explain different ways of implementing access matrix effectively.	7 Marks	L2	CO6	PO1
	b)	Explain in brief about Access control list.	7 Marks	L2	CO6	PO1
		(OR)				
10.	a)	Analyze why simple password protection is the most common authentication scheme in use today and discuss the weakness inherent in the password protection scheme.	7 Marks	L4	CO6	PO4
	b)	Explain the terms 'WORMS' and 'VIRUSES' with reference to system threats.	7 Marks	L2	CO6	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

SOFTWARE ENGINEERING

[Computer Science and Engineering, Computer Science and Engineering (IoT), Computer Science and Engineering (CS)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Demonstrate umbrella activities of a Software process.	7 Marks	L2	CO1	PO2
	b)	Explain in detail about the layers involved in Unified Process model.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Compare and Contrast between Agile Modeling and Agile Unified Process.	7 Marks	L2	CO1	PO2
	b)	List and explain three examples of software projects that would be amenable to the incremental model. Be specific.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Define Requirement Engineering. Categorize seven distinction tasks to fulfill the needs of the project.	7 Marks	L1	CO2	PO1
	b)	What are the five things checked and validated under requirement validation sub-process of Requirement Engineering?	7 Marks	L3	CO2	PO3
		(OR)				
4.		Suppose as a system analyst you are given the task of writing SRS for clock Room Application of railway. This system should allow the passengers to book room on the Internet by paying a fixed fee. i) Design the Use Case for booking a room and accepting payment from credit card. ii) Organize the requirements in SRS Room booking Wise and Report Wise.	14 Marks	L3	CO2	PO3

UNIT-III

5.	a)	Distinguish between Activity diagram and State machine diagram.	7 Marks	L2	CO3	PO2
	b)	Describe interaction diagrams of UML in detail.	7 Marks	L1	CO3	PO1
		(OR)				
6.		Explain the need for software measures and describe various metrics.	14 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Analyze white box and black box testing.	5 Marks	L2	CO4	PO2
	b)	Explain the use of drivers and stubs in unit testing.	5 Marks	L1	CO4	PO1
	c)	Identify the importance of validation test criteria.	4 Marks	L3	CO4	PO2

(OR)

8.	a)	Analyze who perform the validation test—the software developer or the software user? Justify.	7 Marks	L2	CO4	PO2
	b)	Is unit testing possible or even desirable in all life cycle phases of a software development? Justify with examples.	7 Marks	L3	CO4	PO2

UNIT-V

9.	a)	Propose RMMM plan for "Staff Inexperienced" risk while developing a software project.	7 Marks	L3	CO5	PO5
	b)	Explain about Software Reliability.	7 Marks	L1	CO5	PO1

(OR)

10.	a)	Compare and Contrast between McCall's quality factor and ISO 9126 Quality factor in Software Quality Factors.	7 Marks	L2	CO5	PO2
	b)	Distinguish between forward engineering and reverse engineering.	7 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Classify various types of precipitation and explain the factors affecting precipitation.	7 Marks	L4	CO1	PO1,2
	b)	The normal annual rainfall at the stations A, B, C and D in a basin are 80.97, 67.59, 76.28 and 92.01 cm respectively. In the year 1975, the station D was inoperative and the stations A, B and C recorded annual precipitations of 91.11, 75.23 and 79.89 cm respectively. Estimate the rainfall at station D in that year.	7 Marks	L4	CO1	PO1, 4
		(OR)				
2.	a)	Distinguish Simpson's rain gauge and tipping bucket rain gauge.	7 Marks	L4	CO1	PO1,2
	b)	There are four rain gauge stations existing in the catchment of a river. The annual rainfall values at these stations are 800, 620, 400 and 540 mm respectively. Determine the optimum number of rain gauges if it is desired to limit the error in the mean value of rainfall in the catchment to 10%. How many more gauges will then be required to be installed.	7 Marks	L4	CO1	PO1, 4
		UNIT-II				
3.	a)	Explain the various methods used to estimate evaporation.	7 Marks	L2	CO2	PO1
	b)	A Reservoir with average surface spread of 4.8 sq. km in the first week of November has the surface temperature of 30^{o}C and relative humidity of 40%. Wind velocity measured at 3.0 m above the ground is 18 kmph. The mean barometer reading is 760 mm of Hg. Calculate the average evaporation loss from the reservoir in mm/day and the total depth and volume of evaporation loss in the first week of November. Use Both Meyer's and Rohwer's equation. Take saturation vapour pressure as 31.81 mm of Hg.	7 Marks	L4	CO2	PO1, 5
		(OR)				
4.	a)	A 6 hr storm produced rainfall intensities of 7, 18, 25, 12, 10 and 3 mm/hr in successive one hour intervals over a basin of 800 sq. km. The resulting runoff is observed to be 2640 hect-meter, determine Φ for the basin.	7 Marks	L4	CO2	PO1, 4
	b)	Explain briefly about the method of calculating infiltration using Green Ampt infiltration equation.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Classify zones of groundwater with a neat sketch. Explain different saturated formations occurred.	7 Marks	L4	CO3	PO1

	b)	A tube well fully penetrates in a confined aquifer of thickness 30 m with coefficient of permeability 38 m/day. Determine the radius of well if yield required is 40 lit/sec under a drawdown of 4 m.	7 Marks	L4	CO3	PO1, 2
		(OR)				
6.	a)	Derive an expression to determine the rate of flow through unconfined aquifer using Theim's equation.	7 Marks	L4	CO3	PO1
	b)	Explain saline water intrusion with a neat sketch.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.		Given below are observed flows from a storm of 6-h duration on a stream with a catchment area of 500 sq.km. Assuming zero base flow and derive the ordinates of 6–h unit hydrograph.	14 Marks	L4	CO4	PO1, 3

Time(h)	0	6	12	18	24	36	42	48	54
Observed Flow (cumec)	0	100	250	200	150	100	70	50	0

(OR)

8. Flood frequency computations for the river Chambal at Gandhi sagar by using Gumbel's method yielded the following results: Estimate the flood magnitude in this river with a return period of 500 years. — 14 Marks | L6 | CO5 | PO1, 4

Return Period T (Years)	Peak Flood (cumec)
50	40809
100	46300

UNIT-V

9.	a)	Discuss universal soil loss equation and its importance.	7 Marks	L2	CO6	PO1
	b)	How will you determine the quantity of silt deposited in a reservoir?	7 Marks	L4	CO6	PO1
		(OR)				
10.	a)	List out various factors affecting Universal Soil Loss Equation.	7 Marks	L4	CO6	PO1
	b)	Explain how sedimentation in a reservoir can be controlled.	7 Marks	L2	CO6	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ENVIRONMENTAL ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Enumerate the types of water demand with the amount of water quantity required as per CPHEEO manual.	7 Marks	L2	CO1	PO1
	b)	Find the settling velocity of a discrete particle in water. The diameter and specific gravity of the particle is 3 x 10^{-3} cm and 1.65 respectively. Kinematic viscosity of water at 20°C = 1.01 x 10^{-2} cm^2/sec.	7 Marks	L4	CO1	PO1 PO2

(OR)

2.	a)	Discuss about the factors influencing site selection for the construction of intake structure.	7 Marks	L2	CO1	PO1
	b)	Forecast population for the year 2031 if a town had population for the past five decades as follows (Assume suitable method considering increase of population in the past).	7 Marks	L4	CO1	PO1 PO2

Year	1981	1991	2001	2011	2021
Population	30986	36789	45879	60000	90000

UNIT-II

3.	a)	Differentiate coagulation and flocculation?	7 Marks	L4	CO2	PO1
	b)	Calculate the amount of a chemical in kilogram per day that should be added to water for treatment, when the flow is 38 MLD and the dosage determined through jar testing is 11 mg/L of alum.	7 Marks	L6	CO2	PO1 PO2

(OR)

4.	a)	Compile and compare the different types of layouts of water distribution systems with a neat sketch.	7 Marks	L4	CO2	PO1
	b)	A circular sedimentation tank fitted with standard mechanical sludge removal equipment is to handle 3.5 MLD of raw water. If the detention period of the tank is 4.5 hr. and the depth of the tank is 3 m, calculate the diameter of the tank?	7 Marks	L6	CO2	PO1 PO2

UNIT-III

5.	a)	Analyze de-oxygenation and re-oxygenation processes in the stream of water flow with neat sketch.	7 Marks	L4	CO3	PO1 PO2
	b)	In an experimental study BOD_5 of a wastewater sample found to be 500 mg/L at 20°C. If k = 0.23/day at 20°C, calculate BOD_5 and ultimate BOD at 25°C and compose inference for the change.	7 Marks	L4	CO3	PO1 PO2

(OR)

6.	a)	Explain the advantages and disadvantages of partially separate sewerage system over the other systems.	7 Marks	L2	CO3	PO1
	b)	Design a sewer for a maximum discharge of 750 L/s running half full. Consider Manning's rugosity coefficient n = 0.012, and gradient of sewer S = 0.0001.	7 Marks	L6	CO3	PO1

UNIT-IV

7.		Design a single stage Bio-tower (super rate trickling filter) for the following data: Average wastewater flow = 400 m^3/d, Influent BOD = 170 mg/L, BOD removal in primary treatment = 30%, Effluent BOD required = 20 mg/L, Filter depth = 4.0 m; Recycle ratio R/Q = 1.7, Pilot plant studies using synthetic packing have shown a removal rate constant K = 2.26 per day at 20^0 C, and n = 0.5. The winter wastewater temperature = 15^0 C. Provide minimum two filters in parallel.	14 Marks	L6	CO4	PO1 PO2
		(OR)				
8.	a)	What is meant by attached growth process? How is it different from other processes? Analyze.	7 Marks	L4	CO4	PO1
	b)	Compile the merits and demerits of trickling filter over the activated sludge process.	7 Marks	L4	CO4	PO1

UNIT-V

9.	a)	Discuss the requirements for the good house drainage system.	7 Marks	L2	CO5	PO1
	b)	Determine the dimension of channel for a maximum wastewater flow of 25,000m^3/d in which a flow-through velocity of 0.27 M/s will be maintained. If the settling velocity for particles is found to range from 0.020 to 0.027 M/s, depending on their shape factor. (Consider Depth = 1.5×width).	7 Marks	L6	CO5	PO1
		(OR)				
10.		Design a septic tank for an apartment having 5 stories and in each story 4 flats. Assume the average family members in each flat 5 members and the water requirement for each one as per the codal provision is 150 liters per capita per day. Draw a neat sketch of it with the obtained dimensions.	14 Marks	L6	CO5	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

SOIL MECHANICS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the clay minerals? How does clay adsorb water? Explain.	7 Marks	L2	CO1	PO1 PO10
	b)	The mass of a moist sample collected from the field is 645g, and its oven dry mass is 405.76g. If G = 2.68 and the void ratio of the soil in the field is 0.83, determine i) moist density in the field, ii) dry density in the field, iii) amount of water to be added per m^3 of soil in the field for saturation, and iv) saturated density.	7 Marks	L4	CO1	PO1 PO2 PO4
		(OR)				
2.	a)	Define and explain: Liquid limit; Plastic limit; Shrinkage limit; and Plasticity index. Briefly describe the procedure to determine the liquid limit of a soil by Casagrande's method	7 Marks	L3	CO1	PO1 PO5 PO8
	b)	Atterberg's limits of a clay sample are, liquid limit = 59%, plastic limit = 43% and natural moisture content = 51%. Determine i) liquidity index ii) consistency index iii) plasticity index.	7 Marks	L4	CO1	PO1 PO2 PO8

UNIT-II

3.	a)	Discuss the factors affecting the permeability of soils. State the limitations of Darcy's law.	7 Marks	L1	CO2	PO1
	b)	In a constant head permeameter test, the following observations were taken. Distance between piezometer tappings = 15cm, difference of water levels in piezometers = 40 cm, diameter of the test sample = 5cm, quantity of water collected = 500ml, duration of the test = 900sec. Determine the coefficient of permeability of the soil. If the dry mass of the 15cm long sample is 486g and specific gravity of the solids is 2.65, calculate the seepage velocity of water during the test.	7 Marks	L4	CO2	PO1 PO2 PO4 PO8
		(OR)				
4.	a)	Explain the phenomena of quick sand condition. Discuss the ill effects of quick sand condition on built environment.	7 Marks	L1	CO2	PO1 PO6 PO7
	b)	The water table in a deposit of sand 8m thick is at a depth of 3 m below the ground surface. Above the water table, the sand is saturated with capillary water. The bulk density of sand is 19.62 kN/m^3. Calculate the effective pressure at 1 m, 3 m, and 8 m below the ground surface and effective pressure over the depth of 8m.	7 Marks	L4	CO2	PO1 PO2 PO4 PO10

UNIT-III

5.	a)	Write approximate methods of calculating vertical stress distribution in soil, with neat sketches.	7 Marks	L2	CO3	PO1 PO5 PO10
	b)	A point load of 500 kN due to a monument acts on the ground surface. Calculate the vertical pressures at point 5m directly below the load and at a distance of 4m from the load. Assume $\mu = 0$. Use i) Boussinesq's analysis ii) Westergaard's analysis.	7 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO10
		(OR)				
6.	a)	Explain about field compaction quality control, in detail. Discuss about the latest compaction equipment.	7 Marks	L3	CO3	PO1 PO5 PO6 PO7 PO8 PO10 PO12
	b)	There are two borrow areas A and B which have soils with void ratios of 0.80 and 0.70 respectively. The in-place water content is 20% and 15% respectively. The fill at the end of construction will have a total volume of 10000m^3, bulk density of 2 Mg/m^3 and a placement water content of 22%. Determine the volume of the soil required to be excavated from both areas. Take G=2.65. If the cost of excavation of soil and transportation is Rs. 200/100m^3 for area A and Rs. 220/100m^3 for area B, which of the borrow area is more economical?	7 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO11

UNIT-IV

7.	a)	What is the time factor? How it is related to the average degree of consolidation? Describe a suitable procedure for determining preconsolidation pressure.	7 Marks	L3	CO4	PO1 PO5 PO10
	b)	A 24 mm thick undisturbed sample of saturated clay is tested in the laboratory with drainage allowed on both faces. The sample reaches 50% degree of consolidation in 45 minutes. If the clay layer from which the sample was obtained is 4.8 m thick and is free to drain at both of its faces, calculate the time required for the clay layer to undergo the same degree of consolidation. What would have been the time of consolidation if the clay layer has only single drainage? Assume uniform distribution of consolidating pressure.	7 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO7
		(OR)				
8.	a)	State the assumptions made in Terzaghi's theory of one dimensional consolidation. List the curve fitting methods to determine the coefficient of consolidation and explain in brief.	7 Marks	L2	CO4	PO1 PO5 PO8 PO10
	b)	There is clay layer 8m thick with a layer of sand on either side. An undisturbed sample 2.5cm thick of the clay when tested in the laboratory required 25 minutes to reach 50% consolidation (T_v = 0.20). It is proposed to construct a building at the above site. Estimate the time required for 90% consolidation to take place (T_v = 0.85).	7 Marks	L4	CO4	PO1 PO2 PO4 PO6 PO7

UNIT-V

9.	a)	Discuss unconfined compression test with neat sketch as per IS Code. Is this test can be used of c-ϕ soils? Explain. In an unconfined compression test, a sample of 7.5 cm long and 3.5 cm in diameter fails under a load of 90 N at 10% strain. Compute the unconfined compressive strength and shear strength of the sample.	7 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO8 PO10
	b)	A series of three consolidated undrained test were conducted on an identical clay specimen of 50mm diameter and height of 120 mm. Deviator load at failure 'P_f', confining pressure 'σ_3' and pore water pressure 'U' recorded are presented below. Determine total and effective strength parameters either by analytical or Mohr Circle method.	7 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO8 PO10

Trial No.	P_f (N)	σ_3 (kN/m^2)	U (kN/m^2)
1	100	510	-65
2	200	720	-10
3	300	1120	80

(OR)

10.	a)	Discuss the shear strength characteristics of cohesive soils. Is shear strength of soil affects the safety of substructure? Explain.	7 Marks	L4	CO5	PO1 PO2 PO6 PO7 PO10
	b)	In an in-siut vane shear test on a saturated clay, a torque of 35Nm was required to shear the soil. The diamter of the vane was 50 mm and length 100mm. Calculate the undrained shear strength of the clay. The vane was then rotated rapidly to cause remoulding of the soil. The torque required to shear the soil in the remoulded state was 5Nm. Determine the sensitivity of the clay.	7 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO8 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

STRUCTURAL ANALYSIS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Derive the expression for slope and deflection of a simply supported beam of span 'l' carrying a point load at mid-span.	7 Marks	L4	CO1	PO1 PO2 PO10
	b)	A steel cantilever of 2.5 m carries a point load W kN at its free end. The moment of inertia of the section of a cantilever is 9900 cm^4. If the deflection at free end is not to exceed 0.75 cm, then what must be the value of "W". Take E = 210 GN/m^2.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		(OR)				
2.	a)	Determine the slope and deflection at the free end of a cantilever beam of length 'l' subjected to a uniformly varying load of 'w/m' at the fixed end and 'zero' at the free end.	7 Marks	L4	CO1	PO1 PO2 PO10
	b)	A wooden beam 150 mm wide and 250 mm deep has a span of 4metres. Determine the load that can be placed at its centre to cause the beam a deflection of 2 mm. Take E = 6 x 10^6 kN/m^2.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10

UNIT-II

3.		Find the vertical deflection of joint B in the truss loaded as shown in Fig.1. The cross-sectional area of the members in mm^2 is shown in brackets. Take E = 200kN/mm^2.	14 Marks	L4	CO2	PO1 PO2 PO4 PO10

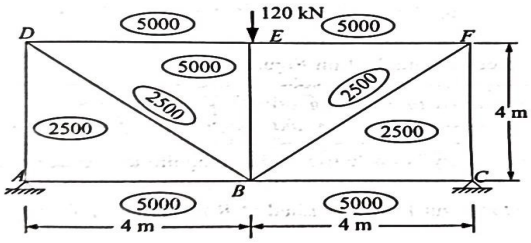

Fig.1

(OR)

4.		Analyze a fixed beam AB of span 'l' carrying uniformly distributed load w per unit length throughout its span. Draw the shear force and bending moment diagrams.	14 Marks	L4	CO2	PO1 PO2 PO10

UNIT-III

5.		For the continuous loaded beam ABCD shown in the Fig.2, find: i) Moments at the supports ii) Reactions at the supports Draw the B.M. and S.F. diagrams also.	14 Marks	L4	CO3	PO1 PO2 PO4 PO10

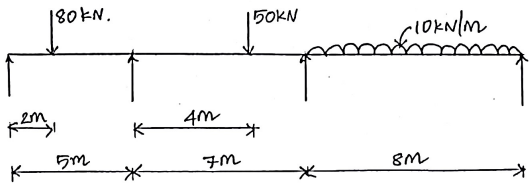

Fig.2

(OR)

6.	Analyse the continuous beam shown in Fig.3 by slope deflection method and draw the bending moment diagram.	14 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO10

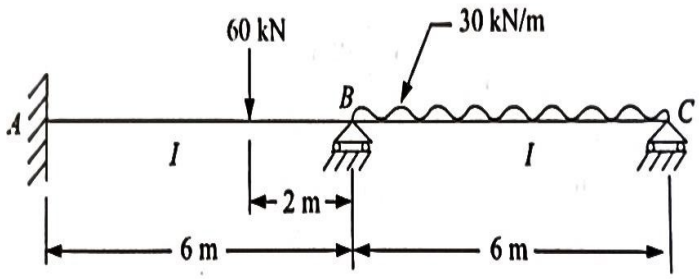

Fig.3

UNIT-IV

7.	Analyse the continuous beam shown in Fig.4 by moment distribution method, if support B sinks by 12 mm. Given that $E = 200$ kN/mm^2 and $I = 20 \times 10^6$ mm^4.	14 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO10

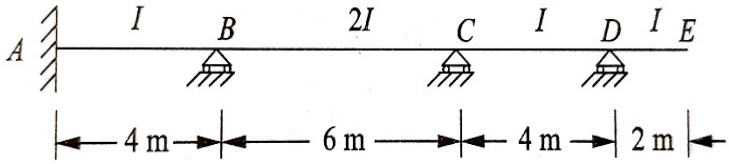

Fig.4

(OR)

8.	Analyze the continuous beam shown in Fig.5 by Kani's method and draw bending moment diagram.	14 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO10

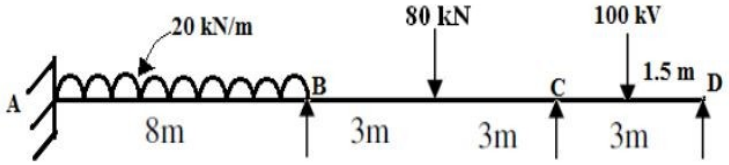

Fig.5

UNIT-V

9.	A uniformly distributed load of 50 kN/m of 6 m length crosses a girder of span 40 m from left to right. With the help of influence lines, determine the values of shear force and bending moment at a point 12 m from the left support, when the head of the load is 16 m from the left support.	14 Marks	L4	CO4	PO1 PO2 PO4 PO10

(OR)

10.	a)	Write the assumptions for evaluation fully plastic moment.	4 Marks	L4	CO5	PO1 PO2
	b)	A T-section consists of a flange 150x10mm and a web of 140x10mm. The section modulus of the T-section is 54600mm3 This section is used as a simply supported beam of 4m span and carries a UDL of 25kN/m on the whole span. Determine the shape factor of the beam and also calculate the collapse load for the beam. Assume yield stress as 250 Mpa.	10 Marks	L4	CO5	PO1 PO2 PO4 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

DIGITAL ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the duality theorem and find the duals for the following function. $F = \left[\left(\overline{ab}\right)a\right]\left[\left(\overline{ab}\right)b\right]$.	7 Marks	L3	CO1	PO1
	b)	Prove the following using Boolean algebra. i) y'z' + w'x'z' + w'xyz' + wyz' = z' ii) ABC + A'B'C + A'BC +ABC' + A'B'C' = A'B' + B(A + C).	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Simplify the Boolean function using K-map in POS and SOP forms. F=∏M(0,2,4,7,8,10,12,16,18,20,24,25,26,27,28)	7 Marks	L3	CO1	PO5
	b)	Implement the following logical expression using AND-OR-INVERTER gates and also using only NAND gates for a digital data processing application. F= A + BC'(D' + BE')	7 Marks	L3	CO1	PO5
		UNIT-II				
3.	a)	Illustrate Four bit magnitude comparator with an example.	7 Marks	L2	CO2	PO2
	b)	Explain with the suitable example how a multiplexer is used to implement the Boolean function.	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Demonstrate a Half subtractor. Design a full subtractor circuit optimally using two half subtractor circuits.	7 Marks	L3	CO2	PO3
	b)	Implement the Boolean function: F(A,B,C,D)=∑m(0,1,3,4,8,9,15) using 8:1 Mux.	7 Marks	L3	CO2	PO5
		UNIT-III				
5.	a)	Describe race-around problem in JK Flip-flop. Explain how it is eliminated in Master slave JK Flip –Flop?	7 Marks	L2	CO3	PO2
	b)	Design Mod-6 Counter using D Flip-Flops.	7 Marks	L4	CO3	PO3
		(OR)				
6.	a)	Illustrate and explain a 4-bit ring counter.	7 Marks	L2	CO3	PO1
	b)	Design a 3-bit down asynchronous counter using JK-flip-flops.	7 Marks	L4	CO3	PO3
		UNIT-IV				
7.	a)	Explain the capabilities and limitations of finite state machines.	7 Marks	L2	CO4	PO1
	b)	Distinguish Moore and Mealy machines.	7 Marks	L2	CO4	PO1

(OR)

8.	Minimize sequential machine represented by the state table shown below using merger table	14 Marks	L4	CO4	PO5

Table

Present State	Next State , Z	
	X=0	X=1
A	B,1	H,1
B	F,1	D,1
C	D,0	E,1
D	C,0	E,1
E	D,1	C,1
F	C,1	C,1
G	C,1	D,1
H	C,0	A,1

UNIT-V

9.	Design a combinational using a PROM. The circuit accepts 3-bit binary number and generates its equivalent gray code.	14 Marks	L3	CO5	PO3

(OR)

10.	Show the step-by-step multiplication process using Booth algorithm for +15 and -13 which are binary. Assume 5-bit registers that hold signed numbers. The multiplicand is +15 and the multiplier is -13.	14 Marks	L3	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ELECTRICAL MACHINES-II

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Induction motor is also known as a generalized transformer. Justify.	7 Marks	L2	CO1	PO2
	b)	Discuss the factors that affecting the sustainability of three phase induction machine.	7 Marks	L3	CO1	PO7
		(OR)				
2.	a)	The rotor of a slip ring induction motor is connected to an ac source, whereas its stator winding is short circuited. If rotating magnetic field produced by rotor winding rotates clockwise, explain the direction in which the rotor must revolve.	6 Marks	L2	CO1	PO2
	b)	A 3-phase squirrel cage induction motor has a starting torque of 150% and a maximum torque of 300% with respect to rated torque at rated voltage and frequency. Neglect the stator resistance and rotational losses. Calculate the value of slip at maximum torque.	8 Marks	L2	CO1	PO4
		UNIT-II				
3.	a)	Identify the speed control methods used to control three phase induction motor beyond its rated speed and discuss those methods briefly.	7 Marks	L2	CO1	PO5
	b)	Give the applications of both self-excited and external excited induction generators.	7 Marks	L1	CO1	PO6
		(OR)				
4.	a)	Give the applications of both induction motors and induction generators.	6 Marks	L2	CO1	PO6
	b)	The speed of a 4-pole induction motor is controlled by varying the supply frequency while maintaining the ratio of supply voltage to frequency constant. At rated frequency of 50 Hz and rated voltage of 400 V its speed is 1440 rpm. Find the speed at 30 Hz. If the load torque is constant.	8 Marks	L2	CO1	PO4
		UNIT-III				
5.	a)	Explain the effect of armature reaction on the terminal voltage of an alternator at i) UPF ii) ZPF lagging and iii) ZPF leading loads. Draw the relevant phasor diagrams.	8 Marks	L1	CO2	PO1
	b)	A 3-phase, 8-pole, 750 rpm star connected alternator has 72 slots on the armature. Each slot has 12 conductors and winding is short pitched by 2 slots. Find the induced emf between lines, given the flux per pole is 0.06 Wb.	6 Marks	L2	CO2	PO4

(OR)

6.	a)	Explain the effect of harmonics on the operation and sustainability of synchronous generator.	7 Marks	L2	CO2	PO7
	b)	A 3 phase star connected salient pole alternator supplies a current of 10A having phase angle of 20^0 lagging at 400V. Find the load angle and components of armature current, if X_d=10 Ω/ph and X_q = 6.5 Ω/ph. Assume armature resistance is negligible.	7 Marks	L3	CO2	PO4
		UNIT-IV				
7.	a)	Derive an expression for the synchronizing power between the two alternators connected in parallel.	7 Marks	L2	CO3	PO1
	b)	A 3000kVA, 6 pole alternator runs at 1000rpm on 3.3 kV bus bars. The synchronous reactance is 25%.Calculate the synchronizing power and torque per mechanical degree of displacement when the alternator is supplying full load at 0.8 pf lag.	7 Marks	L3	CO3	PO4
		(OR)				
8.	a)	Analyze the influence of varying excitation on the power factor, armature current and load angle of a synchronous generator connected to an infinite bus.	7 Marks	L4	CO3	PO2
	b)	Two identical 2 MVA alternators operate in parallel. The governor of first machine is such that the frequency drops uniformly from 50 Hz on no-load to 47.5 Hz on full-load. The corresponding uniform speed drop of second machine is 50Hz to 48 Hz. How will they share a load of 3 MW.	7 Marks	L3	CO3	PO4
		UNIT-V				
9.	a)	Explain the different methods of starting 3-phase synchronous motors.	7 Marks	L1	CO4	PO1
	b)	A factory has an average load of 300 kW at a power factor of 0.6 lagging. A synchronous motor with an efficiency of 88% is used to raise the combined power factor to 0.9 lagging and at the same time supply a mechanical load of 60kW. Calculate i) total load kVA. ii) kVA capacity of the synchronous motor.	7 Marks	L3	CO4	PO4
		(OR)				
10.	a)	Develop the power circles for a cylindrical rotor synchronous motor. Show that efficiency of maximum power output is equal to 50%.	7 Marks	L2	CO4	PO2
	b)	How the synchronous motor can be used in a cement industry for power factor improvement to avoid penalty factor in their electricity bill.	7 Marks	L3	CO4	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	A basic d'Arsonval movement with a full scale reading of 50 µA and an internal resistance of 1800 Ω is available. It is to be converted into a 0-1 V, 0-10 V, 0-50 V and 0-150 V. Design multi range voltmeter using individual multipliers for each range. Calculate the value of individual multipliers.	8 Marks	L4	CO1	PO3
	b)	Discuss in detail the reasons behind the designing of scale of PMMC instruments is uniform and the scale of MI instruments are non-uniform used in the laboratory and industrial applications.	6 Marks	L3	COI	PO1
		(OR)				
2.	a)	Describe in detail the various errors that occur in the moving iron instruments and suggest the suitable compensation techniques to eliminate the errors.	8 Marks	L4	CO1	PO5
	b)	List the advantages and disadvantages of moving coil and moving iron instruments.	6 Marks	L3	CO1	PO1
		UNIT-II				
3.	a)	Explain in detail the construction and working principle of three phase Electrodynamometer type power factor meter with a neat sketch.	7 Marks	L3	CO2	PO1
	b)	A wattmeter has a current coil of 0.08Ω resistance and pressure coil of 8000Ω resistance. Calculate the percentage error if the wattmeter is so connected that. i) The current coil is on the load side. ii) The Pressure coil on the load side. If the load takes 30 A at a voltage of 220 V and 0.85 p.f in each case.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Describe in detail about the considerable modifications are made in the UPF wattmeter is converted into the LPF wattmeter.	6 Marks	L3	CO2	PO1
	b)	Enumerate the sources of errors in single phase induction type energy meters and suggest the suitable compensations techniques are used to minimize them.	8 Marks	L3	CO2	PO1
		UNIT-III				
5.	a)	Define the term standardization and describe in detail the construction and working principle of Crompton potentiometer with neat sketch.	7 Marks	L2	CO3	PO1
	b)	Calibrate the PMMC ammeter, voltmeter and also measurement of unknown resistance used in laboratories and industrial applications using DC potentiometers.	7 Marks	L4	CO3	PO6
		(OR)				

6.	a)	Describe the construction and working of a polar type potentiometer. How it is standardized and writes the function of the transfer instrument and the phase shift transformer used in it?	7 Marks	L3	CO3	PO1
	b)	Describe in detail the construction and working principle of Potential Transformer with a neat sketch.	7 Marks	L2	CO3	PO1

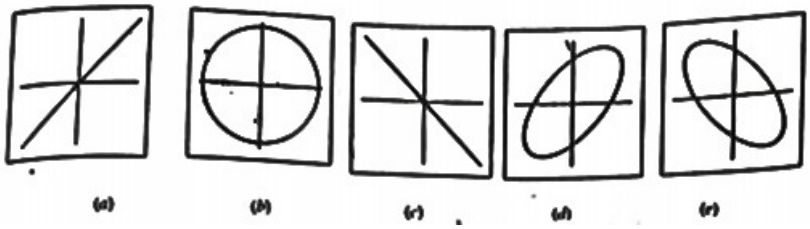
UNIT-IV

7.	a)	Explain the working of Wheatstone bridge used for measurement of medium resistances also derive conditions for balance, with its limitations.	7 Marks	L3	CO4	PO1
	b)	A kelvin bridge is balanced with the following constants: Outer ratio arms : 100Ω and 1000Ω Inner ratio arms : 99.92Ω and 1000.6Ω Resistance of link is 0.1Ω and standard resistance is 0.00377Ω Calculate the value of unknown resistance.	7 Marks	L3	CO4	PO4

(OR)

8.	a)	List the various ac bridges are used for the measurement of unknown capacitance. Describe in detail the working of low voltage Schering bridge and also the equations foe capacitance and dissipation factor.	7 Marks	L3	CO4	PO1
	b)	List the various ac bridges are used for the measurement of unknown inductance and select the suitable bridge which is used for the determination unknown Inductance of a low 'Q' coils.	7 Marks	L3	CO4	PO1

UNIT-V

9.	a)	A sinusoidal input is applied to the vertical input of an oscilloscope starting at t=0. The following Lissajous patterns are obtained when a sinusoidal input is applied to the horizontal terminals. Find the phase shift between vertical and horizontal inputs. 	7 Marks	L2	CO5	PO2
	b)	Describe in detail the working of Digital frequency meter with neat block diagram, which is used in laboratory and industrial applications.	7 Marks	L3	CO5	PO6

(OR)

10.		Describe in detail about digital storage oscilloscope and also list its applications.	14 Marks	L2	CO5	PO1

CODE No.: 20BT40301 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April-2024

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Describe with a neat sketch a cone clutch and deduce an equation for the total torque transmitted.	6 Marks	L2	CO1	PO1 PO2
	b)	A conical friction clutch is used to transmit 90 kW at 1500 r.p.m. The semicone angle is 20º and the coefficient of friction is 0.2. If the mean diameter of the bearing surface is 375 mm and the intensity of normal pressure is not to exceed 0.25 N/mm^2 , find the dimensions of the conical bearing surface and the axial load required.	8 Marks	L3	CO1	PO1 PO2 PO3 PO6
		(OR)				
2.	a)	Distinguish between brakes and dynamometers	6 Marks	L2	CO1	PO1
	b)	A simple band brake is operated by a lever of length 500 mm. The brake drum has a diameter of 500 mm and the brake band embraces 5/8 of the circumference. One end of the band is attached to the fulcrum of the lever while the other end is attached to a pin on the lever 100 mm from the fulcrum. If the effort applied to the end of the lever is 2 kN and the coefficient of friction is 0.25, find the maximum braking torque on the drum.	8 Marks	L3	CO1	PO1 PO2 PO4 PO6
		UNIT-II				
3.	a)	Write a short note on gyroscope.	6 Marks	L1	CO2	PO1
	b)	The turbine rotor of a ship has a mass of 3500 kg. It has a radius of gyration of 0.45 m and a speed of 3000 r.p.m. clockwise when looking from stern. Determine the gyroscopic couple and its effect upon the ship: i) when the ship is steering to the left on a curve of 100 m radius at a speed of 36 km/h. ii) when the ship is pitching in a simple harmonic motion, the bow falling with its maximum velocity. The period of pitching is 40 seconds and the total angular displacement between the two extreme positions of pitching is 12 degrees.	8 Marks	L3	CO2	PO1 PO2 PO4 PO6
		(OR)				
4.	a)	Differentiate between fly wheel and governor	7 Marks	L1	CO3	PO1
	b)	The turning moment diagram for a multicylinder engine has been drawn to a scale 1 mm = 600 N-m vertically and 1 mm = 3° horizontally. The intercepted areas between the output torque curve and the mean resistance line, taken in order from one end, are as follows : + 52, – 124, + 92, – 140, + 85, – 72 and + 107 mm2 , when the engine is running at a speed of 600 r.p.m. If the total fluctuation of speed is not to exceed ± 1.5% of the mean, find the necessary mass of the flywheel of radius 0.5 m	7 Marks	L3	CO3	PO1 PO2 PO4 PO6

UNIT-III

5.	a)	What are the functions of a governor? Classify mechanical governors?	4 Marks	L1	CO4	PO1 PO2
	b)	The lengths of the upper and lower arms of a Porter governor are 200mm and 250mm respectively. Both the arms are pivoted on the axis of the rotation. The central load is 150N, the weight of each ball is 20N and the friction of the sleeve together with the resistance of the operating gears is equivalent to a force of 30N at the sleeve. If the limiting inclinations of the upper arms to the vertical are 30^0 and 40^0, determine the range of speed of the governor.	10 Marks	L3	CO4	PO1 PO2 PO6
		(OR)				
6.		The arms of a Hartnell governor are of equal length. When the sleeve is in the mid position, the masses rotate in a circle of diameter 200mm (the arms are vertical in the mid-position). Neglecting friction, the equilibrium speed for this position is 300 rpm. Maximum variation of speed, taking friction into account, is to be ± 5% of the mid-position speed for a maximum sleeve / movement of 25 mm. The sleeve mass is 5 kg and the friction at the sleeve is 30 N.Assuming that the power of the governor is sufficient to overcome the friction by 1 % change of speed on each side of the mid-position, find (neglecting obliquity effect of arms). i) The mass of each rotating ball ii) The spring stiffness iii) The initial compression of the spring.	14 Marks	L3	CO4	PO1 PO2 PO6

UNIT-IV

7.	A,B,C and D are four masses carried by a rotating shaft at radii 100mm, 150mm, 150mm and 200mm respectively. The planes in which masses rotate are spaced at 500mm apart and the magnitude of the masses, B, C and D are 9Kg, 5Kg and 4Kg respectively. Find the required mass A and the relative angular settings of the 4 masses so that the shaft shall be in complete balance.	14 Marks	L3	CO5	PO1 PO2 PO6
	(OR)				
8.	A single cylinder horizontal engine runs at 120 r.p.m. The length of stroke is 400 mm. The mass of the revolving parts assumed concentrated at the crank pin is 100 kg and mass of reciprocating parts is 150 kg. Determine the magnitude of the balancing mass required to be placed opposite to the crank at a radius of 150mm which is equivalent to all the revolving and 2/3 rd of the reciprocating masses. If the crank turns 300 from the inner dead centre, find the magnitude of the unbalanced force due to the balancing mass.	14 Marks	L4	CO5	PO1 PO2 PO6

UNIT-V

9.	A shaft 1.5 m long, supported in flexible bearings at the ends carries two wheels each of 50 kg mass. One wheel is situated at the center of the shaft and the other at a distance of 375 mm from the center towards left. The shaft is hollow of external diameter 75 mm and internal diameter 40 mm. The density of the shaft material is 7700 kg/m3 and its modulus of elasticity is 200 GN/m2. Find the lowest whirling speed of the shaft, taking into account the mass of the shaft.	14 Marks	L3	CO6	PO1 PO2 PO6
	(OR)				
10.	A machine has a mass of 100 kg and unbalanced reciprocating parts of mass 2 kg which move through a vertical stroke of 80 mm with simple harmonic motion. The machine is mounted on four springs, symmetrically arranged with respect to center of mass, in such a	14 Marks	L3	CO6	PO1 PO2 PO6

way that the machine has one degree of freedom and can undergo vertical displacements only. Neglecting damping, calculate the combined stiffness of the spring in order that the force transmitted to the foundation is 1 / 25 th of the applied force, when the speed of rotation of machine crank shaft is 1000 r.p.m. When the machine is actually supported on the springs, it is found that the damping reduces the amplitude of successive free vibrations by 25%. Find: 1. the force transmitted to foundation at 1000 r.p.m., 2. the force transmitted to the foundation at resonance, and 3. the amplitude of the forced vibration of the machine at resonance.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

FLUID MECHANICS AND MACHINES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Define viscosity and write down different types of fluids.	6 Marks	L1	CO1	PO1
	b)	A plate 0.025 mm distance from a fixed plate, moves at 60 cm/sec and requires a force of 2 N per unit area i.e., 2 N/m^2 to maintain this speed. Determine the fluid viscosity between the plates.	8 Marks	L3	CO1	PO1 PO2
		(OR)				
2.		A differential manometer is connected at the two points A and B of two pipes as shown in figure. The pipe A contains a liquid of sp.gr =1.5 while pipe B contains a liquid of sp. gravity = 0.9. The pressure at A and B are 1 Kgf/cm^2 and 1.80 Kgf/cm^2 respectively. Find the difference in mercury level in the differential manometer.	14 Marks	L3	CO1	PO1 PO2
		UNIT-II				
3.		State the momentum equation. How will you apply momentum equation for determining the force exerted by a flowing liquid in a pipe bend?	14 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Explain the following fluid patterns. i) Path line ii) Stream line iii) Streak line	6 Marks	L2	CO2	PO1
	b)	A 30 cm diameter pipe, conveying water, branches into two pipes of diameters 20cm and 15cm respectively .if the average velocity in the pipe 30cm diameter is 2.5 m/sec, find the discharge in these pipe. Also determine the velocity in 15 cm pipe if the average velocity in 20 cm diameter pipe is 2m/sec.	8 Marks	L3	CO2	PO1 PO2
		UNIT-III				
5.	a)	Why is the flow in the boundary layer analysed on the principles of viscous flow theory?	7 Marks	L2	CO3	PO1
	b)	Define boundary layer and explain the fundamental causes of its existence.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Derive an expression for head loss through pipes due to friction.	7 Marks	L3	CO3	PO1
	b)	An old water supply distribution pipe of 250 mm diameter of a city is to be replaced by two parallel pipes of smaller equal diameter having equal lengths and identical friction factor values. Find out the new diameter required.	7 Marks	L3	CO3	PO1 PO2

UNIT-IV

7.		A 75 mm diameter jet having a velocity of 30 m/s strikes a flat plate, the normal of which is inclined at 450 to the axis of the jet. Find the normal pressure on the plate : i) When the plate is stationary, and ii) When the plate is moving with a velocity of 15 m/s and away from the jet. Also determine the power and efficiency of the jet when the plate is moving.	14 Marks	L2	CO4	PO1 PO2
		(OR)				
8.	a)	What is governing of turbines? With a neat sketch explain, how is it achieved?	6 Marks	L2	CO4	PO1 PO2
	b)	A Pelton wheel is to be designed for the following specifications: Shaft power = 11,772 kW; Head = 380 m; Speed = 750 r.p.m.; Overall efficiency = 86%; Jet diameter is not exceed one-sixth of the wheel diameter. Determine: i) The wheel diameter, ii) the number of jets required, and iii) Diameter of the jet. Take Kv =0.98 and Ku= 0.46	8 Marks	L3	CO4	PO1 PO2 PO3

UNIT-V

9.	a)	What is air vessel? Describe the function of the air vessel for reciprocating pumps.	6 Marks	L2	CO5	PO1
	b)	A single-acting reciprocating pump has a plunger diameter of 250 mm and stroke of 450 mm and it is driven with S.H.M. at 60 r.p.m. the length and diameter of delivery pipe are 60 m and 100 mm respectively. Determine the power saved in overcoming friction in the delivery pipe by fitting an air vessel on the delivery side of the pump. Assume friction factor = 0.01.	8 Marks	L3	CO5	PO1 PO2 PO3
		(OR)				
10.		A centrifugal pump has the following characteristics: Outer diameter of impeller = 800 mm; Width of impeller vanes at outlet = 100 mm; Angle of impeller vanes at outlet = 400. The impeller runs at 550 r.p.m. and delivers 0.98 m^3 of water per second under an effective head of 35 m. A 500 kW motor is used to drive the pump. Determine the manometric, mechanical and overall efficiencies of the pump. Assume water enters the impeller vanes radially at inlet.	14 Marks	L3	CO5	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

THERMAL ENGINEERING-I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the differences between Two stroke engine and Four stroke Engine?	7 Marks	L3	CO1	PO1
	b)	Explain the working principle of four stroke C.I engine and draw its valve timing diagram.	7 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	Explain the phenomenon of knocking in C.I. engine and S.I engine.	7 Marks	L2	CO1	PO1 PO2
	b)	Define combustion and Discuss the factors affecting delay period in C.I engine.	7 Marks	L2	CO1	PO1 PO2

UNIT-II

3.	a)	A gasoline engine working on four- stroke develops a brake power of 20.9 kW. A Morse test was conducted on this engine and the brake power (kW) obtained when each cylinder was made in operative by short circuiting the spark plug are 14.9, 14.3, 14.8 and 14.5 respectively. The test was conducted at constant speed. Find the indicated power, mechanical efficiency and brake mean effective pressure when all the cylinders are firing. The bore of the engine is 75mm and the stroke is 90 mm. The engine is running at 3000 rpm.	8 Marks	L3	CO1	PO1 PO2 PO3
	b)	Explain the brake power measurement of IC engine by using rope brake dynamometer.	6 Marks	L2	CO1	PO1 PO2
		(OR)				
4.	a)	List out the methods available for finding frictional power of an engine and explain Williams' line method.	6 Marks	L3	CO1	PO1 PO2
	b)	A two-cylinder four stroke engine runs at 240 rpm developing a torque of 5 KN-m. The bore and stroke of cylinder are 30 cm and 60 cm respectively. Engine runs with gaseous fuel having calorific value of 16.8 MJ/m^3. The gas and air mixture is supplied in proportion of 1:7 by volume. The volumetric efficiency is 0.85. Determine: i) The brake power. ii) The mean piston speed in m/s. iii) The brake mean effective pressure. iv) The brake thermal efficiency.	8 Marks	L3	CO1	PO1 PO2 PO3

UNIT-III

5.	a)	Compare the relative advantages and disadvantages of gas turbines and IC engines.	6 Marks	L2	CO2	PO1 PO2
	b)	Find the required air-fuel ratio in a gas turbine whose turbine and compressor efficiencies are 85% and 80%, respectively. Maximum cycle temperature is 875°C. The working fluid can be taken as air (C_p = 1.0 kJ/kg K, γ = 1.4) which enters the compressor at 1 bar and 27°C. The pressure ratio is 4. The fuel used has calorific value of 42000 kJ/kg. There is a loss of 10% of calorific value in the combustion chamber.	8 Marks	L3	CO2	PO1 PO2 PO3
		(OR)				
6.	a)	Discuss the principle of operation of Pulse Jet Engine with a neat sketch.	7 Marks	L2	CO2	PO1 PO2
	b)	Discuss the working of turbo prop engine with a neat sketch.	7 Marks	L2	CO2	PO1
		UNIT-IV				
7.	a)	What is the function of a compressor and Explain Rotary type air compressors?	6 Marks	L2	CO3	PO1
	b)	A single stage single acting air compressor delivers 14 m^3 of free air from 1 bar to 7 bar. The speed of the compressor is 300 r.p.m. Assuming the compression and expansion is $pV^{1.35}$ = constant and clearance is 5% of the swept volume, find the diameter and stroke of the compressor. Take stroke length is 1.5 times the bore diameter.	8 Marks	L3	CO3	PO1 PO2 PO3
		(OR)				
8.	a)	Derive an expression for minimum work required for two stage reciprocating air compressor with perfect inter-cooling and neglect clearance volume.	7 Marks	L3	CO3	PO1 PO2
	b)	Describe the working principle of two stage reciprocating air compressor with a neat sketch.	7 Marks	L2	CO3	PO1 PO2
		UNIT-V				
9.	a)	Explain the modified Rankine cycle with P-V and T-S diagrams.	6 Marks	L2	CO4	PO1 PO2
	b)	A basic steam power plant works on ideal Rankine cycle between 35 bar and 0.04 bar. The initial condition of steam being 0.85 dry and flow rate 15 kg/s determine: i) Work required for pumping ii) Work done by the turbine and iii) Cycle efficiency.	8 Marks	L3	CO4	PO1 PO2 PO3
		(OR)				
10.	a)	Discuss about the concept of cogeneration.	6 Marks	L2	CO4	PO1
	b)	A simple Rankine cycle works between pressure 30 bar and 0.45 bar, the initial conditions of steam being dry saturated. Calculate the cycle efficiency, work ratio and specific steam consumption rate.	8 Marks	L3	CO4	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April-2024

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the principle of ring modulator to produce DSBSC signal and why this ring modulator is known as double balanced modulator.	7 Marks	L2	CO1	PO2
	b)	Explain the generation of AM wave using Square law Modulator.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	The output power of an AM transmitter is 1KW when sinusoidal signal modulated to a depth of 75%. Calculate the power in each side band when the modulation depth is reduced to 25%.	7 Marks	L3	CO1	PO4
	b)	Derive the Time Domain expression of SSBS waveform.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Find the bandwidth and modulation index of a single tone modulated FM signal described by. $S(t)=10\cos[2\Pi10^8t+8\sin(2\Pi10^3t)]$.	7 Marks	L3	CO1	PO4
	b)	Derive the expression for NBFM if message is m(t) and carrier is $A_c\cos\omega_c t$. Draw the corresponding phasor diagram of NBFM and compare it with AM wave.	7 Marks	L1	CO1	PO2
		(OR)				
4.	a)	Explain generation FM using direct method.	7 Marks	L1	CO1	PO1
	b)	Explain the operation of limiter circuit in FM demodulation.	7 Marks	L1	CO1	PO2
		UNIT-III				
5.		Derive the expression of SNR & Figure of merit for AM?	14 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Discuss the role of pre-emphasis and de-emphasis in the improvement of noise immunity in FM.	7 Marks	L2	CO2	PO2
	b)	Prove that the figure of merit of AM system for single stone modulation with 100% modulation is 1/3.	7 Marks	L2	CO2	PO1
		UNIT-IV				
7.		Classify radio transmitters based on the type of modulation and Service involved.	14 Marks	L1	CO3	PO1
		(OR)				
8.	a)	What is image frequency rejection ratio and what is its importance, explain how to reduce the affects cause by Image Frequency.	7 Marks	L2	CO3	PO2
	b)	Consider standard IF frequency. Determine the Image frequency and its rejection ratio, in a broadcast super heterodyne receiver tuning at 1200 kHz having no RF amplifier. The loaded Q of the antenna coupling circuit is 100.	7 Marks	L4	CO3	PO3

UNIT-V

9.	a)	Write short notes on the following: i) Single polarity PAM ii) Double polarity PAM	7 Marks	L1	CO4	PO1
	b)	List out the applications of pulse Modulation techniques.	7 Marks	L1	CO4	PO1
		(OR)				
10.		Define and distinguish between PTM and PAM schemes. Sketch and explain their waveform for a single tone sinusoidal input signal.	14 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

ELECTRONIC CIRCUIT ANALYSIS AND DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Design Two stage RC coupled amplifier to meet the following specifications A_v = 400, S=3, V_{cc}=12V, I_c=1.6 MarksA, f_L =50Hz and R_s =500Ω. Assume data wherever necessary.	9 Marks	L4	CO1	PO3
	b)	Discuss the different types of coupling schemes used in multistage amplifiers.	5 Marks	L1	CO1	PO6
		(OR)				
2.	a)	Recall the circuit diagram of a two-stage RC coupled amplifier and show its frequency response.	7 Marks	L1	CO1	PO1
	b)	For a CE-CC two stage amplifier, the transistor parameters at the corresponding Q-point are h_{ie} =2k, h_{fe} =50, hoe =25μA/v and h_{re} =6 ×10-4. Find input and output impedances, individual and overall voltage gain and current gains with and without sources.	7 Marks	L3	CO1	PO4
		UNIT-II				
3.	a)	Explain briefly about the small signal equivalent circuit of an emitter follower at high frequency.	7 Marks	L2	CO2	PO1
	b)	Define f_β and f_T . Develop the relation between f_β and f_T.	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Construct an expressions for hybrid-π resistances r_{ce} and r_{bb}' of a transistor.	7 Marks	L2	CO2	PO2
	b)	A transistor amplifier in CE configuration is operated at High frequency with the following specifications f_T= 6 MHz; gm = 0.04; h_{fe} = 50; r_{bb}'= 100 ohm ; Rs= 500 ohm; Cb'c = 120pf; R_L = 100 Ω. Estimate the Voltage gain, upper 3dB frequency and gain bandwidth product.	7 Marks	L3	CO2	PO4
		UNIT-III				
5.	a)	Explain the basic concept of feedback with neat diagram and assess the effects of negative feedback.	7 Marks	L2	CO3	PO1
	b)	Assess the input and output impedances for voltage shunt and current shunt feedback amplifiers.	7 Marks	L2	CO3	PO2
		(OR)				
6.	a)	Assess the input and output impedances for voltage series and current series feedback amplifiers.	9 Marks	L2	CO3	PO2
	b)	Design an amplifier by determining the values of open loop gain A and feedback ratio β with a voltage gain with feedback is 100. If the gain without feedback changes by 20% and the gain with feedback should not vary more than 2%.	5 Marks	L4	CO3	PO3

UNIT-IV

7.	a)	Perform analysis to obtain the expression for frequency of oscillations and minimum gain required for sustained oscillations of RC phase shift Oscillator.	9 Marks	L2	CO3	PO3
	b)	Compare RC and LC oscillators.	5 Marks	L2	CO3	PO2
		(OR)				
8.	a)	State the Barkhausen's criterion for Oscillations.	6 Marks	L1	CO3	PO1
	b)	A Hartley oscillator is designed with L1= 20 μH; L2= 2 mH. Determine range of capacitances if frequency is varied between 950 KHz and 2050 kHz.	8 Marks	L4	CO3	PO3

UNIT-V

9.	a)	Design a class- B push pull power amplifier to obtain a maximum efficiency of 78.5% with neat circuit diagram and relevant expressions which is used in audio amplifiers.	7 Marks	L2	CO4	PO1
	b)	Write the advantages and disadvantages of Transformer coupled Class-A amplifier.	7 Marks	L2	CO4	PO2
		(OR)				
10.	a)	Explain the concept of single tuned transistor amplifier by deriving the current gain expression and sketch the gain versus frequency plot also.	7 Marks	L2	CO4	PO2
	b)	A tuned circuit has resonance frequency of 800 KHz and a band width of 10 KHz. What is the value of its Q-factor?	7 Marks	L3	CO4	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Show the functional schematic of 555 timer for Monostable multivibrator and describe in detail.	7 Marks	L1	CO1	PO8
	b)	Analyze the principle of operation of 565 PLL with the help of block diagram.	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Develop an instrumentation amplifier for a gain of 200 to amplify a low voltage ECG / EEG signals taken from the patient with a neat circuit diagram and derive the expression for a voltage gain.	7 Marks	L3	CO1	PO6
	b)	Analyze log amplifier how it produces an output that is proportional to the logarithm of the applied input using an op-amp and derive the expression for output voltage.	7 Marks	L3	CO1	PO4
		UNIT-II				
3.	a)	Derive the expressions for gain magnitude and phase angle and draw the frequency response for the First- order low pass Butterworth filter.	8 Marks	L2	CO2	PO2
	b)	Design a low pass filter at a cut off frequency of 1KHz with a pass band gain of 2.	6 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Suggest a DAC to overcome the deficiencies of weighted resistor type DAC. Explain the conversion procedure in R-2R ladder type DAC.	7 Marks	L2	CO3	PO8
	b)	A 12-bit D to A converter has a full-scale range of 15 volts. Its maximum differential linearity error is ± 1/2 LSB. i) What is the percentage resolution? ii) What are the minimum and maximum possible values of the increment in its output voltage?	7 Marks	L4	CO3	PO8
		UNIT-III				
5.	a)	Identify and summarize the types of delays that can be specified in a Procedural assignment statement using an example.	7 Marks	L1	CO4	PO1
	b)	Develop Verilog HDL code for a full adder design containing two half adders and one OR gate.	7 Marks	L3	CO4	PO2
		(OR)				
6.	a)	Assess the performance of case and if statements in Verilog HDL program.	7 Marks	L2	CO4	PO2
	b)	List out differences between Tasks and Functions in Verilog HDL.	7 Marks	L1	CO4	PO1

UNIT-IV

7.	a)	Draw the IC diagram of the 74x999 adder and explain its operation.	7 Marks	L1	CO5	PO1
	b)	Analyze the concept of a simple floating-point encoder and its Verilog code in any modelling style.	7 Marks	L2	CO5	PO2

(OR)

8.	a)	Explain about Comparator and analyze a 16-bit comparator using 74×85 IC's and Write its Verilog HDL program.	7 Marks	L3	CO5	PO2
	b)	Write a Verilog code for full subtractor using gate-level modelling.	7 Marks	L1	CO5	PO6

UNIT-V

9.	a)	Examine the process to convert a D- flip-flop to J-K flip-flop. Write dataflow style Verilog HDL program.	7 Marks	L3	CO5	PO3
	b)	Design a 4-bit binary synchronous counter using IC 74×74. Write Verilog HDL program for this logic. Using gate level modelling.	7 Marks	L3	CO5	PO6

(OR)

10.	a)	What is the difference between ring counter and Johnson counter?	7 Marks	L1	CO5	PO1
	b)	Analyze a self-correcting 4 bit, 4 state ring counter with a single circulating 1 using 74x194 IC.	7 Marks	L3	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss about Bernoulli's Trails with relevant examples.	7 Marks	L2	CO1	PO1
	b)	A box contains 4 white, 5 red and 6 black balls. Two balls are drawn at random, and then what is the probability that the two balls are black balls.	7 Marks	L4	CO1	PO2
		(OR)				
2.	a)	Discuss and derive how probability of any event defined on a sample space can be expressed in terms of conditional probabilities.	8 Marks	L4	CO1	PO2
	b)	A missile can be accidentally launched if two relays A and B both have failed. The probabilities of A and B failing are known to be 0.01 and 0.03 respectively. It is also known that B is more likely to fail (probability 0.06) if A failed. i) What is the probability of an accidental missile launch? ii) What is the probability that A will fail if B has failed?	6 Marks	L4	CO1	PO4

UNIT-II

3.	a)	Define Random variable and list the conditions for the function to be a random variable.	6 Marks	L2	CO2	PO1
	b)	Determine whether the following is a valid distribution function. $F_x(x) = 1 - e^{(-x/2)}$ for x=0 $= 0$ elsewhere.	8 Marks	L4	CO2	PO4
		(OR)				
4.	a)	Explain the process of transforming one random variable X into a new random variable Y.	7 Marks	L2	CO2	PO1
	b)	Differentiate between moments about the origin and central moments with appropriate mathematical expressions.	7 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Gaussian Random Variables X and Y have first and second order moments. $m_{10} = -1.1,\ m_{20} = 1.16, m_{01} = 1.5, m_{20} = 2.89, R_{xy} = -1.724.$ i) Find the C_{xy} and ρ. ii) Write expression for Jointly Gaussian Density function.	7 Marks	L3	CO2	PO4
	b)	Distinguish between point conditioning and interval conditioning.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Define Marginal density function. Find the Marginal density functions of below joint density function. $f_{xy}(x,y) = ½ [u(x)u(y)e^{-x/3}e^{-y/4}]$.	7 Marks	L2	CO2	PO1
	b)	Briefly explain joint central moments with appropriate examples.	7 Marks	L2	CO2	PO1

UNIT-IV

7.	a)	Given a random process by $X(t) = ACOS(\pi t)$, where A is Gaussian random variable with zero mean and variance $\sigma \frac{2}{x}$. i) Find the density function of X (0). ii) Is X(t) stationary in any sense.	7 Marks	L4	CO3	PO4
	b)	Distinguish between: i) Deterministic and non-deterministic process. ii) Stationary and non-stationary random process.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Derive the autocorrelation output of LTI system.	7 Marks	L2	CO3	PO2
	b)	Relate cross correlation function and cross power spectrum.	7 Marks	L2	CO3	PO2

UNIT-V

9.	a)	Determine: i) Noise figure for an equivalent noise temperature of 75K and 60° C. ii) Equivalent noise temperature for a noise figure of 6dB.	7 Marks	L2	CO4	PO4
	b)	An amplifier has a bandwidth of 500KHz, and an input resistance of 50 Ω. When a $0.5x10^{-6}$ V input signal level is applied to the amplifier input under matched condition, the output SNR=10dB. Determine the noise figure of the amplifier.	7 Marks	L3	CO4	PO4
		(OR)				
10.	a)	Classify noise and explain thermal noise in detail for stochastic processes.	7 Marks	L2	CO4	PO1
	b)	Show that the overall noise figure for cascaded linear devices is the signal $F = F1 + \frac{F_2 - 1}{G_1} + \frac{F_3 - 1}{G_1 G_2} + \frac{F_4 - 1}{G_1 G_2 G_3} + ...$	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

MICROCONTROLLER AND INTERFACING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Write the differences between Von-Neumann architecture and Harvard architecture.	7 Marks	L1	CO1	PO1
	b)	What are the advantages of RISC and CISC processor architecture?	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	What is an Embedded system and write the applications.	7 Marks	L1	CO1	PO1
	b)	Explain the role of CPU in a Computer system.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.		Discuss interfacing of external EPROM and RAM with the microcontroller.	14 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Write about Register Organization of 8051.	7 Marks	L2	CO2	PO1
	b)	Compare various members of 8051 families.	7 Marks	L1	CO2	PO1
		UNIT-III				
5.		Explain about Arithmetic instructions in 8051 with examples.	14 Marks	L2	CO2	PO2
		(OR)				
6.		Explain following instructions. i) XCHD A, R1 ii) MOVC A,@A+DPTR iii) MOV A, 50H iv) MOV R7,#50H v) MOV 50H ,#50H	14 Marks	L2	CO2	PO2
		UNIT-IV				
7.		Explain the operation of timer in mode 1. Discuss programming steps to generate time delay using mode 1.	14 Marks	L4	CO3	PO3
		(OR)				
8.	a)	List the interrupts available in the 8051 Microcontroller. Explain interrupt enable (IE) SFR and Interrupt priority (IP) SFR.	7 Marks	L2	CO3	PO1
	b)	Explain different mode for serial communication for 8051 Microcontroller.	7 Marks	L3	CO3	PO6
		UNIT-V				
9.		Sketch and explain interfacing diagram of DAC with 8051 Microcontroller. Write program to generate sine wave at the output of DAC.	14 Marks	L4	CO4	PO8
		(OR)				
10.		Sketch and explain interfacing of LCD with 8051 Microcontroller. Write a program to display “EC Department” on LDC.	14 Marks	L4	CO4	PO4

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CODE No.: 20BT40441 SVEC-20

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April-2024

ANALOG ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Analyze the upper 3dB frequency for high frequency current gain with resistive load, with necessary circuits.	7 Marks	L2	CO1	PO2
	b)	Demonstrate the different types of coupling schemes used in multistage amplifiers.	7 Marks	L2	CO1	PO6
		(OR)				
2.	a)	Analyze a two stage RC coupled amplifier with the help of circuit diagram.	7 Marks	L1	CO1	PO1
	b)	With the Help of Circuit diagram develop an expression for the effect of bypass capacitor on low frequency.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Define voltage series feedback amplifier, Derive the input and output resistances of voltage series feedback amplifier with neat sketch.	7 Marks	L4	CO2	PO1
	b)	With appropriate BJT circuit explain voltage shunt feedback amplifier and Derive its gain.	7 Marks	L4	CO2	PO5
		(OR)				
4.	a)	What is feedback amplifies? Classify types of feedback amplifiers.	7 Marks	L3	CO2	PO4
	b)	Implement Voltage-Shunt feedback concept for a CE amplifier and show $R_{if} = \frac{Ri}{1 + Ri\beta}$.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Derive the generalized form of an LC oscillator.	5 Marks	L1	CO2	PO1
	b)	Derive the Expressions for frequency of oscillation of Colpitt's oscillator and explain its working.	9 Marks	L3	CO2	PO2
		(OR)				
6.	a)	Implement a Audio frequency oscillator by using conventional passive components like R and C. and derive its frequency of oscillations.	7 Marks	L3	CO2	PO5
	b)	Derive the frequency of oscillation of a crystal oscillator.	7 Marks	L2	CO2	PO2
		UNIT-IV				
7.	a)	State the merits of push pull configuration? Describe the operation of class B transformer coupled push pull amplifier.	7 Marks	L1	CO3	PO1
	b)	Select a power amplifier to get an efficiency of 25%.explain it.	7 Marks	L1	CO3	PO1
		(OR)				
8.	a)	Derive an expression for the efficiency of series fed Class-A power amplifiers.	7 Marks	L3	CO3	PO2
	b)	Select an appropriate technique to get Minimum distortion in a power amplifiers, compromising with efficiency.	7 Marks	L3	CO3	PO4

UNIT-V

9.	a)	Explain the working of Astable multivibrator using 555 timer.	7 Marks	L2	CO4	PO1
	b)	Derive the transfer function for second order HPF, and also plot its frequency response.	7 Marks	L3	CO4	PO2
		(OR)				
10.	a)	Design a first order low pass filter with low cut off frequency 1KHz.	7 Marks	L3	CO4	PO3
	b)	Illustrate the functional schematic of 555-Timer and describe in detail how this IC can be used to realize a Monostable multivibrator.	7 Marks	L2	CO4	PO8

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

DATABASE MANAGEMENT SYSTEMS

[Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence & Machine Learning, Computer Science and Engineering (IoT), Computer Science and Engineering (Cyber Security), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Differentiate the file system versus data base system with respect to storage, access and security.	7 Marks	L4	CO1	PO2
	b)	Describe the notational conventions used in ER Model. Construct ER model for Library management System.	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	Describe data models, database languages and database architecture in detail.	7 Marks	L2	CO1	PO1
	b)	Consider the following information about the database: Professors have an SSN, a name, an age, a rank and a research specialty. Projects have a project number, a sponsor name, a starting date, an ending date and a budget. Graduate students have an SSN, a name, an age, and a degree program. Each project is managed by one professor. Each project is worked on by one or more professors. Professors can manage and/or work on multiple projects. Each project is worked on by one or more graduate students. When graduate students work on a project, a professor must supervise their work in the project .Graduate students can work on multiple projects, in which case they will have supervisor for each one. Departments have a department number, a department number and a main office. Departments have a professor who runs the department. Professors work in one or more departments. Design and draw an ER diagram that captures the information about the university.	7 Marks	L3	CO1	PO3

UNIT-II

3.	a)	List and explain about relational algebra operators with examples.	7 Marks	L2	CO2	PO1
	b)	Classify different types of constraints used in relational model.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Define view in SQL? How it is identified? Explain with an example.	7 Marks	L2	CO2	PO1

	b)	Consider the following Schema: Suppliers(sid:integer, sname : string , address : string) Parts(pid : integer, pname : string colo r: string) Catalog(sid : integer, pid : integer, cost : real) Write the queries in relational algebra and SQL to find the Sid's of suppliers who supply some red part and some green part.	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Explain about types of nested queries, aggregate operators and null values with examples.	7 Marks	L2	CO3	PO2
	b)	What do you understand by PL/SQL cursors? Explain its types.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Explain the difference between triggers versus integrity constraints. Describe when you would use triggers over integrity constraints and vice versa.	7 Marks	L2	CO3	PO2
	b)	Show the necessary steps to compile an embedded SQL program.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Given R(A,B,C,D,E) with the set of FD's, F{AB->CD, ABC->E, C->A}. i) Find any two candidate keys of R. ii) What is the normal form of R? Justify.	7 Marks	L3	CO4	PO4
	b)	List the ACID properties of transaction and Explain the usefulness of each.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Illustrate Multi values dependencies and fourth normal form with the examples.	7 Marks	L2	CO4	PO1
	b)	Draw and explain Transaction state transition diagram and illustrate how to test the serializability.	7 Marks	L2	CO4	PO3
		UNIT-V				
9.	a)	Describe Two-Phase Locking protocol and explain about various types of Two-Phase Locking.	7 Marks	L2	CO5	PO2
	b)	State and explain various file organization methods. Give Suitable examples to each of them.	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Discuss in detail about Multiple Granularity.	7 Marks	L2	CO5	PO1
	b)	Explain Indexed sequential access method in detail.	7 Marks	L2	CO5	PO2

CODE No.: 20BT41501 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering,]

Time: 3 hours **Max. Marks: 70**

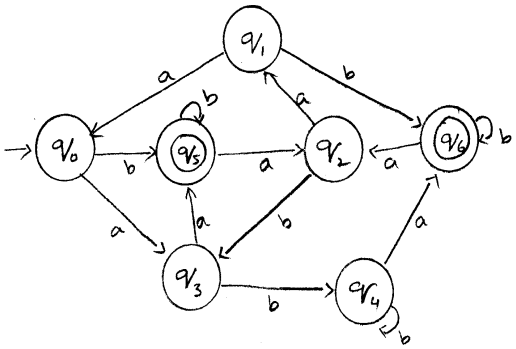
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

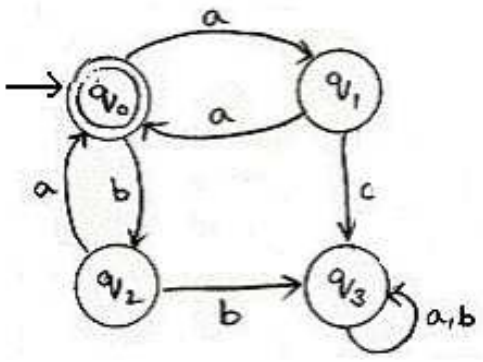
1.	a)	Write short notes on applications of automata theory?	7 Marks	L2	CO1	PO1
	b)	Design a Deterministic Finite Automation accepting the language given over the alphabet {0, 1}. L = {the set of all strings such that every block of five consecutive contain at least two 0's}.	7 Marks	L4	CO1	PO3
		(OR)				
2.	a)	How a Non deterministic finite state automaton (NFA) differs from a Deterministic finite state automaton (DFA).	7 Marks	L4	CO1	PO2
	b)	Draw DFA which accepts even number of a's and even number of b's over the alphabet {a, b}.	7 Marks	L3	CO1	PO3

UNIT-II

3.	a)	Minimize the Finite automation given below and show both the given and the reduced one are equivalent.	7 Marks	L4	CO2	PO5



	b)	Briefly explain Closure properties of regular languages.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Define regular expression and prove every regular expression can be represented by an NFA with epsilon transitions.	7 Marks	L2	CO3	PO1
	b)	Construct the regular expression accepted by following finite automaton:	7 Marks	L4	CO3	PO3



UNIT-III

5.	a)	Show that the grammar is ambiguous. S→aSbS|bSaS|Є	7 Marks	L3	CO4	PO4
	b)	Construct a CFG for the language L = $a^n b 2^n$ where n>=1.	7 Marks	L3	CO4	PO3
		(OR)				
6.		Convert the following grammar to Chomsky Greibach normal form. S→ABA→BS|b B→SB|a	14 Marks	L3	CO4	PO2

UNIT-IV

7.	a)	Design a PDA for accepting a language {L= an b 2n | n >=1}.	7 Marks	L4	CO1	PO3
	b)	Show that the language $L_1=\{0^n1^m \mid n=m \text{ and } n\geq 1\}$ is deterministic context free language.	7 Marks	L4	CO6	PO2
		(OR)				
8.	a)	Design a PDA for accepting a language {anb2n | n>=1}.	7 Marks	L4	CO6	PO4
	b)	Construct PDA for the given CFG, and test whether 0104 is acceptable by this PDA. S → 0BB B → 0S | 1S | 0	7 Marks	L4	CO6	PO3

UNIT-V

9.	a)	Define Turing machine and explain its model.	7 Marks	L2	CO5	PO1
	b)	Design Turing machine for the language L={wЄ{a,b,c}*|w contains equal number of a's, b's and c's}.	7 Marks	L4	CO5	PO3
		(OR)				
10.	a)	Explain the programming techniques of turing machine.	7 Marks	L2	CO5	PO1
	b)	Explain Universal Turing machine and Show that the universal language is recursively enumerable but not recursive.	7 Marks	L4	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

COMPUTATIONAL STATISTICS

[Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss how Cross tabulation and scatter diagrams are used for understanding the relationship between two variables?	6 Marks	L4	CO1	PO2
	b)	Consider the following frequency distribution.	8 Marks	L3	CO1	PO3

Class	Frequency
10-19	10
20-29	14
30-39	17
40-49	7
50-59	2

Construct a cumulative frequency distribution and a cumulative relative frequency distribution.

(OR)

2.	a)	Consider a sample with data values of 10, 20, 12, 17, and 16. Compute the z-score for each of the five observations.	7 Marks	L3	CO1	PO4
	b)	Suppose the data have a bell-shaped distribution with a mean of 30 and a standard deviation of 5. Use the empirical rule to determine the percentage of data within each of the following ranges. i) 20 to 40 ii) 15 to 45 iii) 25 to 35	7 Marks	L3	CO1	PO3

UNIT-II

3.	a)	Determine how the null and alternative hypotheses should be formulated.	6 Marks	L4	CO2	PO2
	b)	Consider the following hypothesis test $H_o : \mu \leq 80$ $H_o : \mu < 80$ A sample of 100 is used and the population standard deviation is 12. Compute the p-value and state your conclusion for each of the following sample results. Use $\alpha = 0.01$. i) $\bar{x} = 78.5$ ii) $\bar{x} = 77$	8 Marks	L3	CO2	PO4

(OR)

4.	a)	The following data were obtained for a randomized block design involving five treatments and three blocks: SST = 430, SSTR = 310, SSBL = 85. Set up the ANOVA table and test for any significant differences. Use $\alpha = 0.05$.	7 Marks	L3	CO3	PO5
	b)	Discuss factorial experiment in detail.	7 Marks	L2	CO3	PO1

UNIT-III

5.	a)	Given are five observations collected in a regression study on two variables x_i: 2, 6, 9, 13, 20 y_i: 7, 18, 9, 26, 23 i) Develop the estimated regression equation for these data. ii) Use the estimated regression equation to predict the value of y when x = 4.	7 Marks	L4	CO4	PO3
	b)	x_i: 1, 2, 3, 4, 5 y_i: 3, 7, 5, 11, 14 The estimated regression equation for these data is $\hat{y}$ = 0.20 + 2.60x. Compute SSE, SST, and SSR	7 Marks	L3	CO4	PO3

(OR)

6.	a)	Discuss about the model assumptions in conducting a simple linear regression analysis.	8 Marks	L2	CO4	PO1
	b)	Explain correlation coefficient in detail.	6 Marks	L2	CO4	PO1

UNIT-IV

7.	a)	Describe the Estimation Process in Multiple Linear Regression	7 Marks	L2	CO4	PO1
	b)	The estimated regression equation based on 10 observations is given as: $= 29.1270 + 0.5906x_1 + 0.4980x_2$ Develop a point estimate of the mean value of y when $x_1 = 180$ and $x_2 = 310$.	7 Marks	L4	CO4	PO3

(OR)

8.	a)	Discuss how multiple coefficient of determination provides a measure of the goodness of fit for the estimated multiple regression equation.	7 Marks	L4	CO4	PO2
	b)	Explain Testing for Significance in multiple regression analysis.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Discuss the components of Time series in forecasting with an example.	8 Marks	L2	CO5	PO1
	b)	Explain exponential smoothing model in detail.	6 Marks	L2	CO5	PO1

(OR)

10.	a)	Discuss about various qualitative forecasting techniques in detail.	7 Marks	L2	CO5	PO1
	b)	Discuss briefly about Mann-Whitney-Wilcoxon test.	7 Marks	L2	CO6	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2024

COMPUTER NETWORKS

[Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Computer Science and Design, Computer Science and Engineering (Data Science), Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	With a neat diagram explain Internet architecture.	7 Marks	L2	CO1	PO1
	b)	Compare 4-Layer TCP/IP Model and 7-Layer OSI Model.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Summarize the features of wired transmission media.	7 Marks	L2	CO1	PO2
	b)	Assess the impact of wireless transmission media in the context of network applications.	7 Marks	L4	CO4	PO6
		UNIT-II				
3.	a)	What is the remainder obtained by dividing x^7+x^5+1 by the generator Polynomial X^3+1?	7 Marks	L3	CO3	PO3
	b)	Write short notes on Utopian simplex Protocol in data link layer.	7 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Describe one-bit sliding window protocol with an example.	7 Marks	L2	CO3	PO4
	b)	Briefly describe the differences between store-and-forward and cut-through switches.	7 Marks	L3	CO1	PO2
		UNIT-III				
5.	a)	Suppose all of the interfaces in each of three subnets are required to have the prefix 223.1.17/24. Also suppose that Subnet 1 is required to support at least 60 interfaces, Subnet 2 is to support at least 90 interfaces, and Subnet 3 is to support at least 12 interfaces. Provide three network addresses that satisfy these constraints.	7 Marks	L3	CO2	PO2
	b)	Compare IPV4 and IPV6 protocols.	7 Marks	L3	CO5	PO8
		(OR)				
6.	a)	Apply distance vector routing algorithm to compute shortest path routing.	7 Marks	L3	CO2	PO2
	b)	Write short notes on OSPF and BGP protocols.	7 Marks	L1	CO1	PO1
		UNIT-IV				
7.	a)	Explain why the client issues an active open for the control connection and a passive open for the data connection.	7 Marks	L2	CO3	PO2
	b)	Elaborate TCP Congestion Control mechanisms. Differentiate these mechanisms.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Sketch the state transition diagram of TCP connection establishment, data transfer and termination and explain it.	7 Marks	L2	CO3	PO2
	b)	Summarize the functions of Real-time Transport control protocol.	7 Marks	L1	CO1	PO1

UNIT-V

9.	a)	Tabulate the various HTTP request operations.	7 Marks	L2	CO4	PO6
	b)	Discuss the working of email in detail with an example.	7 Marks	L1	CO4	PO6
		(OR)				
10.	a)	Briefly explain the Domain Name Service protocol with an example.	7 Marks	L4	CO4	PO6
	b)	When user clicks a hyperlink, what are the steps that occur between the user's click and the page being displayed?	7 Marks	L1	CO1	PO2

CODE No.: 16BT50305 SVEC-16

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations, May - 2024

THERMAL ENGINEERING – II
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Explain the effect of operating variables on the performance of Rankine cycle.	CO2	7 Marks
	b)	Consider a steam power plant operating on the ideal reheat Rankine cycle. Steam enters the high-Pressure turbine at 15 MPa and 600^{0}C and is condensed in the condenser at a pressure of 10 kPa. If the moisture content of the steam at the exit of the low-pressure turbine is not to exceeds 10.4 percent, determine i) The pressure at which the steam should be reheated and ii) The thermal efficiency of the cycle. Assume the steam is reheated to the inlet temperature of the high-pressure turbine.	CO2, CO5	7 Marks

(OR)

2	a)	How are the boilers classified? Explain the working of Benson Boiler.	CO1	7 Marks
	b)	What are the various mountings of the boiler? Explain the function and working of fusible plug and spring loaded safety valve.	CO1	7 Marks

UNIT-II

3	a)	Define and explain Equivalent evaporation from and at 100^{0}C and Explain the various terms that are considered in the heat balance of boiler unit.	CO4	7 Marks
	b)	The following data pertains to trial on a boiler conducted for 6 hours: Boiler heating surface = 90.95 m^2, Total water evaporated = 22750 kg, Total fuel fired = 3520 kg. Calculate i) Fuel fired/m^2 grate area and fuel fired per hour, ii) Evaporation/m^2 heating surface and equivalent evaporation if feed water temperature is 45^{0}C and the steam produced is dry saturated at 8 bar absolute pressure, and iii) Boiler efficiency if the coal used has a calorific value of 32.5MJ/kg.	CO2, CO3	7 Marks

(OR)

4	a)	Name the various methods for producing draught in a boiler and Obtain an expression for draught produced in mm of water column when the discharge is maximum.	CO2, CO3	7 Marks
	b)	A chimney of 1.8m diameter fitted with a certain thermal power plant produces a draught equal to 18mm water column. The mean temperature of flue gases is 270^{0}C and the boiler house temperature is 32^{0}C. If the flue gases formed per kg of fuel burnt are 22, make calculations for the mass of flue gases passing through the chimney.	CO2, CO3	7 Marks

UNIT-III

5	a)	What are the different types of nozzles? Explain the effect of friction in the nozzle.	CO3	5 Marks
	b)	Steam enters a convergent-divergent nozzle at 2 MPa and 400^0C with a negligible velocity and mass-flow rate of 2.5 kg/s and it exits a t a pressure of 300 kPa. The flow is isentropic between the nozzle entrance and throat and overall nozzle efficiency is 93 percent. Determine i) throat, and (ii) exit areas.	CO2	9 Marks

(OR)

6	a)	Explain the working of Delaval impulse steam turbine and velocity compounding of steam turbine.	CO1	7 Marks
	b)	In a single stage impulse turbine, steam leaves the nozzle with a velocity of 1000m/s inclined at an angle of 20^0 to the plane of rotation. The mean blade speed is 400m/s and the blades are symmetrical. Neglect the effect of friction in the blade passages and taking mass flow rate of steam as 0.75 kg/s, determine i) Blade angles, ii) Axial thrust, iii) Tangential force on the blades, iv) Diagram power and v) Diagram efficiency.	CO2, CO3	7 Marks

UNIT-IV

7	a)	Derive the condition for maximum efficiency for reaction turbine.	CO1	7 Marks
	b)	A parson reaction turbine running at 400rpm with 50% reaction develops 75 kW per kg of the steam. The exit angle of the blade is 20^0 and the steam velocity is 1.4 times the blade velocity. Determine i) Blade velocity, and ii) blade inlet angle.	CO2, CO3	7 Marks

(OR)

8	a)	Classify steam condensers and explain the effect of air leakage in condenser.	CO1	7 Marks
	b)	During trial on a steam condenser the following observations were recorded, Condenser vacuum = 680mm of Hg, Barometer reading = 764 mm of Hg, Mean condenser temperature = 36.2^0C, Hotwell temperature=30^0C, condensate formed per hour =1780 kg, Inlet temperature of cooling water = 20^0C, outlet temperature of cooling water=32^0C, quantity of cooling water circulated = 1250 kg/min. Determine i) Condenser vacuum corrected to standard barometer, ii) Vacuum efficiency, iii) Condenser efficiency, and iv) Condition of the steam entering the condenser. Assume R for air 0.287 Kj/kg.K and specific heat of water=4.186 kJ/kg.K.	CO2, CO3	7 Marks

UNIT-V

9	a)	Sketch the neat diagram of regenerative gas turbine plant and deduce and expression for its thermal efficiency.	CO1	7 Marks
	b)	Air enters the gas turbine plant at 95 kPa, 5^0C. The compression is adiabatic with an efficiency of 70% and pressure ratio of 5. The regenerative effectiveness is 60%. The turbine inlet conditions are 475 kPa, 850^0C. the expansion in turbine is also adiabatic with an efficiency of 70%. The power output of the plant is 1500kW. Calculate i) Mass flow rate of air through the plant, and ii) The irreversibility (kJ/Kg) or the turbine expansion.	CO2, CO3	7 Marks

(OR)

10	a)	What are the principles of Jet and rocket propulsion? Explain the working of ramjet engine with the help of a neat sketch.	CO1	7 Marks
	b)	A turbojet engine aircraft flies with a velocity of 260 m/s at an altitude where the air is at 35 kPa and -40^0C. The compressor has a pressure ratio of 10 and the temperature of the gases at the turbine inlet 1095^0C. The air enters the compressor at a rate of 8.5 kg/s. Using the cold air-standard assumption. Determine i) Temperature and the pressure of the gases at the turbine exit, ii) Velocity of the gases at the nozzle exit, and iii) Propulsive efficiency of the cycle.	CO2, CO3	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-19) Supplementary Examinations, May – 2024

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Check the following system described with difference equations for linearity, shift invariance, stability and causality: $y(n) = x(n).+x(n-1)$.	6 Marks	L3	CO1	PO2
	b)	Classify discrete time signals with examples.	6 Marks	L2	CO1	PO1
		(OR)				
2.		Determine the unit step response of the system whose difference equation is given by. $y(n) - 0.7\,y(n-1)+0.12\,y(n-2) = x(n-1) + x(n-2)$, if $y(-1) = y(-2) =1$	12 Marks	L3	CO1	PO4
		UNIT-II				
3.	a)	State and prove any two properties of DFT.	6 Marks	L2	CO2	PO1
	b)	Derive the expressions for Power density spectrum of periodic signals and energy density spectrum of aperiodic signals.	6 Marks	L3	CO2	PO2
		(OR)				
4.		Apply decimation in time algorithm and compute the DFT of the following sequence: $x(n)=\{1,1,1,1,1,1,1,1\}$.	12 Marks	L3	CO2	PO5
		UNIT-III				
5.	a)	Compare the characteristics of butter worth and chebyshev approximations.	4 Marks	L2	CO3	PO2
	b)	Design an analog Butterworth Low pass Filter for the following specifications. $0.9 \le \lvert H(j\Omega)\rvert \le 1$ for $0 \le \Omega \le 0.2\pi$ $\lvert H(j\Omega)\rvert \le 0.2$ for $0.4\pi \le \Omega \le \pi$	8 Marks	L4	CO3	PO3
		(OR)				
6.	a)	Convert the analog filter into digital filter whose system function is $H(s) = \frac{(s+0.2)}{(s+0.2)^2+9}$ using impulse invariant method. Assume sampling period T=1 sec.	8 Marks	L3	CO3	PO5
	b)	Derive an expression for order of the butter worth analog prototype filter.	4 Marks	L3	CO3	PO2

UNIT-IV

7.	a)	Design Low pass FIR filter for the desired frequency response $Hd(e^{jw}) = \begin{cases} e^{-j2w} & -\pi/4 \le \omega \le \pi/4 \\ 0 & \pi/4 \le \lvert\omega\rvert \le \pi \end{cases}$ using Rectangular window when N=5.	7 Marks	L4	CO3	PO3
	b)	Distinguish FIR and IIR filters.	5 Marks	L2	CO3	PO2
		(OR)				
8.		Design FIR low pass filter with the frequency response for N=11 using hanning window. $H_d(e^{j\omega}) = 1 \quad \pi/4 \le \lvert\omega\rvert \le \pi$ $= 0 \quad \lvert\omega\rvert < \pi/4$	12 Marks	L4	CO3	PO3

UNIT-V

9.		Discuss different addressing modes used in programmable Digital signal processor.	12 Marks	L2	CO4	PO1
		(OR)				
10.	a)	How higher throughput is obtained using VLIW architecture. Explain with suitable examples.	7 Marks	L2	CO4	PO2
	b)	List the relative merits and demerits of RISC and CISC processors.	5 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

CONSTITUTION OF INDIA

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	Discuss the historical factors that contributed to the need for a written constitution in India and explain the significance of adopting a constitution after independence.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Trace the evolution of the Indian Constitution from its initial ideas to the final adoption.	14 Marks	L2	CO1	PO1
	UNIT-II				
3.	Describe the composition and functions of the Indian Parliament. How does the Parliament play a crucial role in the legislative process and the functioning of democracy in India?	14 Marks	L2	CO1	PO1
	(OR)				
4.	Explain the dual nature of the Indian Parliament, comprising the Lok Sabha and the Rajya Sabha. Discuss their respective roles, powers, and significance in the legislative framework.	14 Marks	L2	CO1	PO1
	UNIT-III				
5.	Discuss the powers and functions of Governors in the Indian federal structure. How do they act as a bridge between the Centre and the States, ensuring the smooth functioning of the constitutional machinery?	14 Marks	L1	CO2	PO2
	(OR)				
6.	Describe the powers and functions of Chief Ministers in Indian states. How do they lead the state governments, make executive decisions, and work within the constitutional framework to fulfill the aspirations of the people?	14 Marks	L1	CO2	PO2
	UNIT-IV				
7.	Elaborate on the limitations placed on Fundamental Rights, including reasonable restrictions and the suspension of certain rights during emergencies.	14 Marks	L1	CO2	PO2
	(OR)				
8.	Explain the concept of Judicial Review in the context of the Indian Constitution. How does the power of judicial review empower the judiciary to ensure the constitutionality of laws and executive actions?	14 Marks	L1	CO2	PO2
	UNIT-V				
9.	Discuss the evolution of India's foreign policy since independence.	14 Marks	L2	CO2	PO1
	(OR)				
10.	Explain the significance of the United Nations (UNO) in shaping India's foreign policy.	14 Marks	L2	CO2	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

PERSONALITY DEVELOPMENT

[Computer Science and Engineering , Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Design, Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		"Good leadership qualities are the outcome of different types of personality traits." Illustrate.	14 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Analyze the three structures of personality according to Sigmund Freud.	7 Marks	L4	CO1	PO2
	b)	Compare and contrast the attributes of personality traits of 'Helpers', 'Achievers', and 'Romantics'	7 Marks	L4	CO1	PO1
		UNIT-II				
3.		"Self-improvement begins with visualizing your future". Discuss.	14 Marks	L2	CO2	PO1
		(OR)				
4.	a)	The feedback may not always be what you want to hear. Explain.	7 Marks	L2	CO2	PO1
	b)	Identify the ways to build self-esteem.	7 Marks	L3	CO2	PO1
		UNIT-III				
5.		"There are several ways to improve attitude." Apply the ways to improve attitude.	14 Marks	L3	CO3	PO5
		(OR)				
6.	a)	Illustrate the differences between "Behaviour and Attitude".	7 Marks	L2	CO3	PO1
	b)	Categorize a few steps to overcome negative attitudes.	7 Marks	L4	CO3	PO1
		UNIT-IV				
7.		Analyze the most needful personal qualities to work well under the supervision of: i) Laissez-Faire Leader ii) Democratic Leader	14 Marks	L4	CO4	PO9
		(OR)				
8.	a)	List out a few positive traits to acquire for better communication and relationship in detail.	7 Marks	L1	CO4	PO10
	b)	"Gossip distracts workers, wastes valuable work time, causes anxiety, and can result in hurtful results". Illustrate with examples.	7 Marks	L2	CO4	PO10

UNIT-V

9.		"Decision-making process needs certain methods". Illustrate.	14 Marks	L2	CO5	PO1
		(OR)				
10.	a)	List four techniques for reducing stress with examples.	7 Marks	L1	CO5	PO5
	b)	"It is important to balance life and work". Explain.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

LIFE SKILLS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	Write a note on measurement of attitude with each component related to it?	14 Marks	L1	CO1	PO1 PO2
	(OR)				
2.	What are the ways to changing the attitude of a person? Explain each way with necessary examples.	14 Marks	L2	CO1	PO1 PO2
	UNIT-II				
3.	Explain the various ways/approaches of overcoming one's weakness?	14 Marks	L1	CO2	PO1 PO2
	(OR)				
4.	Name of the Elements of attitude in interpersonal relationships and explain in detail.	14 Marks	L2	CO2	PO1 PO2
	UNIT-III				
5.	Explain the effective Cross-Cultural Communication Strategies?	14 Marks	L2	CO3	PO1 PO2
	(OR)				
6.	What are the potential hotspots in cross-cultural communication?	14 Marks	L2	CO3	PO1 PO2
	UNIT-IV				
7.	What are the 5 basic categories of ways of thinking? Explain them in detail.	14 Marks	L2	CO4	PO1 PO2
	(OR)				
8.	Explain the importance and significance of understanding the problem and root cause analysis.	14 Marks	L2	CO4	PO1 PO2
	UNIT-V				
9.	What are the different types of delivery presentation? Explain their importance in improving presentation.	14 Marks	L1	CO5	PO1
	(OR)				
10.	What are the guidelines of delivering an effective presentation? Present an example.	14 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ORGANIZATIONAL BEHAVIOR

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Explain the nature and importance of organizational behavior.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Discuss the emerging issues in Organizational behavior.	14 Marks	L2	CO1	PO1

UNIT-II

3.	Demonstrate the role of brain and mind in individual behavior.	14 Marks	L3	CO2	PO1
	(OR)				
4.	Examine the importance of determinants of personality.	14 Marks	L4	CO2	PO9

UNIT-III

5.	Sketch in detail the process of inter personal perception.	14 Marks	L3	CO3	PO9
	(OR)				
6.	Interpret the stages of group development.	14 Marks	L3	CO3	PO9

UNIT-IV

7.	Classify the new directions for leadership.	14 Marks	L2	CO4	PO2
	(OR)				
8.	"Manipulate the principal leadership styles usually adopted in management". What is the process of effective leadership?	14 Marks	L3	CO4	PO1

UNIT-V

9.	Execute the process of organizational Development.	14 Marks	L3	CO5	PO12
	(OR)				
10.	Sketch out the factors influencing change.	14 Marks	L3	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Define Business Economics and explain its nature and scope.	14 Marks	L2	CO1	PO1
	(OR)				
2.	What is meant by the Law of Demand? Explain exemptions of law of demand and changes in demand with graphs.	14 Marks	L2	CO1	PO2

UNIT-II

3.	Discuss "Production Function" and explain the classification of Factors of Production.	14 Marks	L2	CO2	PO2
	(OR)				
4.	Contrast between: i) Opportunity Costs Vs Outlay Costs ii) Separable Costs Vs Joint Costs.	14 Marks	L4	CO2	PO2

UNIT-III

5.	Describe different types of monopolies.	14 Marks	L2	CO3	PO2
	(OR)				
6.	What is perfect competition? Explain pricing under perfect competition.	14 Marks	L2	CO3	PO11

UNIT-IV

7.	Define "Accountancy". Discuss the accounting concepts.	14 Marks	L2	CO4	PO1
	(OR)				
8.	Journalise the following transactions in the books of Mr. Ramu. Jan. 1 Mr. Ramu commenced a business with Rs. 1,10,000/- Jan. 4 Goods sold to Manoj Rs.18, 200/- Jan. 9 Cash withdrawn from bank for office use Rs. 2,500/- Jan. 10 Bought furniture for Rs. 20,400/- Jan. 18 Cash received formRani Rs. 22,200/- Jan. 21 Rent paid to Anand Rs. 3,400/- Jan. 24 Cash deposited into Bank Rs. 21,300/- Jan. 31 Commission paid through cheque Rs. 1,570/-	14 Marks	L4	CO4	PO11

UNIT-V

9.	Sketch a "Balance Sheet". Elucidate various elements of Balance Sheet.	14 Marks	L3	CO5	PO10

(OR)

10.	The following Trial Balance is extracted from the books of Mr. Rajesh as on March 31, 2007. PrepareTrading and Profit and Loss account for the year ended 31.3.2007 and a Balance Sheet as on that date:	14 Marks	L4	CO5	PO11

Drawings	72,000	Capital	3,00,000
Buildings	60,000	12% Bank Loan	60,000
Furniture and fittings	30,000	Sales	4,50,000
Motor Van	1,00,000	Commission	20,000
Interest on Bank loan	3,600	Creditors	80,000
Purchases	2,50,000		
Opening Stock	1,00,000		
Establishment Exp	50,000		
Wages	8,000		
Insurance	4,000		
Debtors	1,52,400		
Cash at Bank	80,000		
	8,90,000		**8,90,000**

Adjustments:

i) Closing stock was Rs. 2, 28,000/-

ii) Outstanding wages Rs. 4,000/- and Prepaid Insurance Rs.2,200/-

iii) Depreciate buildings @ 5%, Furniture @ 15% and Motor Van @ 20%.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

RURAL TECHNOLOGY

[Computer Science and Engineering , Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the role and functions of NABARD in rural development.	7 Marks	L4	CO1	PO1 PO2 PO4 PO6 PO7
	b)	Describe the objectives of CSIR.	7 Marks	L2	CO1	PO1
		(OR)				
2.		Assume you are currently serving as the Panchayat President. Discuss how you would develop the backward villages in your panchayat region and the schemes that you implement proposed by the Government of India for the benefit of the rural community.	14 Marks	4	CO1	PO1 PO2 PO4 PO6 PO7 PO8
		UNIT-II				
3.		Explain the process of converting solar energy and the AC-powered solar water pumping system with a clear sketch.	14 Marks	L4	CO2	PO1 PO2 PO6 PO7
		(OR)				
4.	a)	What is biogas? Explain how one can process and generate biogas using locally available raw materials as an alternative for conventional cooking fuel.	7 Marks	L4	CO2	PO1 PO2 PO5 PO6 PO7
	b)	Explain briefly waste management techniques that can be adopted in rural areas. Also draw a flow chart for waste minimization technique.	7 Marks	L3	CO2	P01 PO5 PO6 PO7 PO10
		UNIT-III				
5.	a)	Report the latest developments in building construction technologies that are feasible to implement in rural India.	7 Marks	L2	CO3	PO1 PO5 PO6 PO12
	b)	Discuss cultivation and processing techniques of mushroom cultivation.	7 Marks	L2	CO3	PO1 PO5 PO6

(OR)

6.		Explore the possibilities of implementing food and agro based technologies in rural areas which will harness profits for rural community.	14 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO6

UNIT-IV

7.	a)	Recognize the need for water conservation. Explain about rain water harvesting techniques in detail.	7 Marks	L4	CO4	PO1 PO2 PO5 PO6 PO7
	b)	What is meant by apiculture? Explain opportunities present in apiculture.	7 Marks	L2	CO4	PO1 PO5

(OR)

8.		Compare the benefits of bio-fertilizers over conventional fertilizers used in agricultural practice. How would the bio fertilizers reap the benefits in agricultural practice?	14 Marks	L4	CO4	PO1 PO2 PO6 PO7

UNIT-V

9.	a)	Explain in detail the role of information technology and its usage in day to day life in rural community	7 Marks	L2	CO5	PO1 PO5 PO6
	b)	Explain the role of corporate companies working on corporate social responsibilities according to the guidelines prescribed by GoI.	7 Marks	L4	CO5	PO1 PO2 PO6 PO8

(OR)

10.	a)	Describe the role of private sector participation in agriculture and service sectors.	7 Marks	L2	CO5	PO1 PO6 PO8
	b)	Mention different village adoption schemes promoted by central government for the benefit of rural villages.	7 Marks	L2	C05	PO1 PO6 PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

CONTROL SYSTEMS

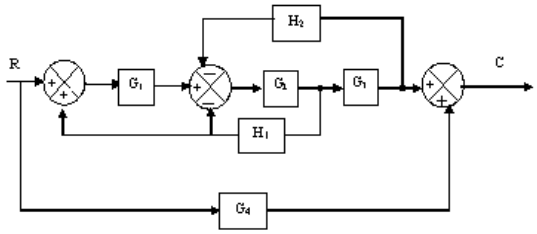
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

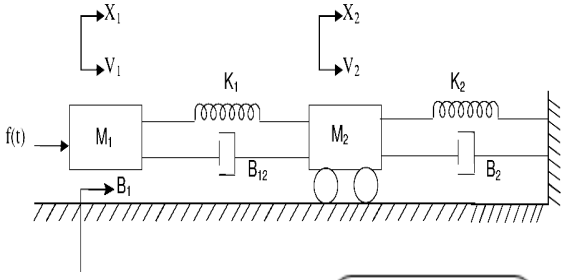
UNIT-I

1.	a)	Derive an expression for the transfer function of a field controlled DC motor.	7 Marks	L3	CO1	PO1
	b)	Find the transfer function for the given system using block diagram reduction techniques.	7 Marks	L3	CO1	PO5



(OR)

2.		Write the differential equations governing the mechanical system shown below. Draw the force-voltage and force-current electrical analogous circuits and verify by writing mesh and node equations.	14 Marks	L3	CO1	PO2

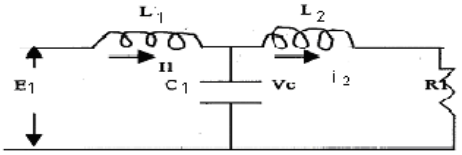
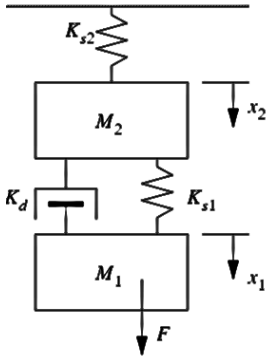


UNIT-II

3.	a)	Derive the expression for the time response of a 2nd order under damped system with unit step as input.	7 Marks	L2	CO2	PO1
	b)	A unity feedback control system has $G(s)=\frac{100}{s(s+5)}$. If it is subjected to unity step input, then determine. i) Damped frequency of oscillation. ii) Maximum peak overshoot iii) Time to reach first overshoot iv) Settling time v) Output response	7 Marks	L4	CO2	PO2

(OR)

4.	a)	Find K_p, K_v and K_a for the open-loop transfer function of a unity feedback system given by $G(s)=\frac{10}{s(0.1s+1)}$.	7 Marks	L2	CO2	PO2

	b)	For a given negative feedback control system $G(s) = \frac{10}{s(0.4s+1)}$ and $H(s) = \frac{5}{(s+4)}$. Determine the steady state error of the system when the input applied is $r(t)=(1+3t+4t^2)$, using generalized error series.	7 Marks	L3	CO2	PO2
		UNIT-III				
5.		A unity feedback system has an open loop transfer function $G(s)H(s) = \frac{K}{s(s+3)(s^2+2s+2)}$ Sketch the root locus as 'K' varies from 0 to ∞.	14 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Investigate the stability for a closed loop control system whose characteristic equation $S^6 + S^5 + 5S^4 + 3S^3 + 2S^2 + 4S + 8$.	7 Marks	L3	CO3	PO4
	b)	Discuss the effect of addition of poles and zeros to the open loop transfer function.	7 Marks	L3	CO3	PO4
		UNIT-IV				
7.		Design a suitable lag compensator so that phase margin is sustained at 40 degree and steady state error for unit ramp input is less than or equal to 0.2 for a given unity feedback open loop system $G(S) = \frac{K}{S(1+2S)}$.	14 Marks	L4	CO4	PO3
		(OR)				
8.	a)	Write down the procedure for designing lead compensator using bode plot.	7 Marks	L2	CO4	PO1
	b)	Draw polar plot for the given open loop transfer function $G(S) = \frac{1}{S(1+S)(1+2S)}$ and determine the gain and phase margin.	7 Marks	L4	CO4	PO2
		UNIT-V				
9.	a)	Obtain the state space representation of the electrical system shown in figure: 	7 Marks	L3	CO5	PO2
	b)	Define the terms: i) State variables ii) State transition matrix.	7 Marks	L3	CO5	PO2
		(OR)				
10.		Obtain the state model of the given mechanical system. 	14 Marks	L3	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

LINEAR AND DIGITAL IC APPLICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Design a square waveform generator of frequency 100Hz and duty cycle of 70% using a 555 timer.	8 Marks	L3	CO1	PO3
	b)	Design a 555 timer based square wave generator to produce a symmetrical square wave of 2 kHz, if Vcc=12V, draw the voltage across timing capacitor and output.	6 Marks	L3	CO1	PO6
		(OR)				
2.	a)	Prove that an Op amp can be used to find the log of a given analog signal.	6 Marks	L2	CO1	PO2
	b)	Draw the block diagram of IC566 VCO and explain its operation.	8 Marks	L1	CO1	PO1
		UNIT-II				
3.	a)	Explain in brief the principle of operation of Flash type ADC.	7 Marks	L1	CO3	PO1
	b)	Explain the principle of operation of a R-2R ladder DAC.	7 Marks	L1	CO3	PO2
		(OR)				
4.	a)	Explain in brief the principle of operation of successive Approximation ADC.	7 Marks	L1	CO3	PO1
	b)	Design a second order Butterworth high pass filter with cut off frequency of 3 KHz.	7 Marks	L3	CO2	PO8
		UNIT-III				
5.	a)	What are the basic components of a module? Which components are mandatory in Verilog HDL?	8 Marks	L3	CO4	PO1
	b)	Write 4-to-1 multiplexer using case statement in dataflow modelling.	6 Marks	L3	CO4	PO1
		(OR)				
6.	a)	Illustrate the salient features of data flow design elements.	6 Marks	L1	CO4	PO2
	b)	Explain the sequential and parallel blocks in Verilog HDL with an example.	8 Marks	L1	CO4	PO1
		UNIT-IV				
7.	a)	Illustrate a 4 to 16 decoder using two 74*138 decoders and write the Verilog HDL code for it.	7 Marks	L3	CO5	PO2
	b)	Explain the importance of IC 74X181 in recent developments of processors.	7 Marks	L1	CO5	PO1
		(OR)				
8.	a)	Sketch the diagram and functional table of a 4-bit comparator and briefly explain about it. Write a Verilog HDL code for it in any modeling.	7 Marks	L2	CO5	PO2
	b)	Write a Verilog code for full adder using two half adders and an OR Gate.	7 Marks	L2	CO5	PO1

UNIT-V

9.	a)	Draw the logic diagram of 74×163 binary counter and explain its operation.	7 Marks	L1	CO5	PO1
	b)	Implement a modulo-11 counter using 74×163 binary counters?	7 Marks	L3	CO5	PO4
		(OR)				
10.	a)	Sketch the symbol, functional table & write Verilog HDL source code of 74X194 IC.	5 Marks	L2	CO5	PO6
	b)	Design a 3-bit LFSR counter using 74x194. List out the sequence assuming that the initial state 111.	9 Marks	L3	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

THEORY OF COMPUTATION

[Computer Science and Engineering (Artificial Intelligence),
Computer Science and Engineering (Data Science),
Computer Science and Engineering (Artificial Intelligence & Machine Learning)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Construct a DFA equivalent to the NFA. 7 Marks L4 CO1 PO3
M=({p,q,r},{0,1},δ,p,{q,s}) Where δ is defined in the following table.

	0	1
p	{q,s}	{q}
q	{r}	{q,r}
r	{s}	{p}
s	-	{p}

b) Tabulate the differences between Moore and Melay machines. 7 Marks L2 CO1 PO2

(OR)

2. a) Convert the following ε-NFA to DFA. 7 Marks L3 CO1 PO2

states	ε	a	b	C
P	θ	{p}	{q}	{r}
q	{p}	{q}	{r}	θ
*r	{q}	{r}	ϕ	{p}

b) List and explain briefly about the components of Finite automaton model. 7 Marks L2 CO1 PO1

UNIT-II

3. a) Construct a NFA equivalent to the regular expression (10+11)*00. 7 Marks L4 CO1 PO3

b) Prove that the language L={$a^m b^n$|m=n} is not regular. 7 Marks L4 CO2 PO2

(OR)

4. a) List the applications of regular expressions and write the regular expression for following sets: 7 Marks L2 CO3 PO2
   i) The set of all strings over {0,1} having at most one pair of 0's or at most of one pair of 1's.
   ii) The set of all strings over {a,b} in which there are at least two occurrences of b between any two occurrences of a.

b) Using Pumping lemma Show that the language L={$a^n b^n c^n$ | n>=1} is not a CFL. 7 Marks L3 CO6 PO2

UNIT-III

5. a) Obtain a CFG to generate the set of all strings over alphabet {a,b} with exactly twice as many a's as b's. 7 Marks L3 CO4 PO4

b) Show that the grammar is ambiguous. 7 Marks L4 CO3 PO2
S→aSbS|bSaS|Є.

(OR)

6.	a)	Remove useless symbols and use less productions from the given grammar. S→aAa A→Sb|bcc|DaA C→abb|DD E→ac D→aDA	7 Marks	L4	CO4	PO4
	b)	Explain pumping lemma for context free languages.	7 Marks	L2	CO4	PO1

UNIT-IV

7.	a)	Define pushdown automata and explain its model with a neat diagram.	7 Marks	L2	CO2	PO1
	b)	Construct PDA generating all odd palindromes over string {a,b,c}.	7 Marks	L4	CO5	PO4

(OR)

8.	a)	Construct PDA for the following grammar. S→aABB|aAA A→aBB|a B→A **.**	7 Marks	L3	CO4	PO3
	b)	Write short notes on Deterministic Pushdown Automata.	7 Marks	L2	CO1	PO1

UNIT-V

9.	a)	Define the language generated by a PDA using the two methods of accepting a language.	7 Marks	L3	CO5	PO5
	b)	List the applications of pumping lemma.	7 Marks	L2	CO2	PO1

(OR)

10.	a)	Differentiate multi tape and multi stack Turing machines.	7 Marks	L4	CO5	PO2
	b)	Design a Turing machine that computes a function f(x,y)=x+y.	7 Marks	L4	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ARTIFICIAL INTELLIGENCE

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the disciplines that contribute ideas and techniques to artificial intelligence.	7 Marks	L2	CO1	PO2
	b)	Discuss the risks and benefits of artificial intelligence.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Distinguish between rationality and omniscience.	7 Marks	L2	CO1	PO2
	b)	Construct schematic diagrams for simple-reflex agent and model-based reflex agents.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	Define problem solving agent? What are the advantages of using problem solving agent.	7 Marks	L1	CO2	PO1
	b)	Describe uninformed search strategies with examples.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Discuss the importance of using Greedy best-first search mechanism.	7 Marks	L2	CO2	PO1
	b)	Analyze and apply heuristic functions with real world problems.	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Explain local beam search with example.	7 Marks	L2	CO2	PO1
	b)	Examine the importance of using Monte Carlo tree search in games to provide optimal decisions.	7 Marks	L2	CO2	PO3
		(OR)				
6.	a)	Explain Hill-climbing search algorithm.	7 Marks	L1	CO2	PO1
	b)	Discuss the importance and benefits of using evolutionary algorithms for optimization problems.	7 Marks	L2	CO2	PO2
		UNIT-IV				
7.	a)	Elaborate the process of representing knowledge in an uncertain domain.	7 Marks	L2	CO3	PO1
	b)	Outline the design issues of Bayesian networks.	7 Marks	L1	CO3	PO3
		(OR)				
8.	a)	Discuss the benefits of using kalman-filter in real-time applications to solve linear problems.	7 Marks	L2	CO3	PO2
	b)	Examine the importance of using transition and sensor models to handle dynamic situations.	7 Marks	L4	CO3	PO2
		UNIT-V				
9.	a)	Elaborate on the types of robots from the hardware perspective.	7 Marks	L2	CO4	PO1
	b)	Write a short note on safety in artificial intelligence.	7 Marks	L3	CO5	PO7
		(OR)				
10.	a)	Analyze Monte Carlo localization algorithm using a range-scan sensor model for robots.	7 Marks	L2	CO4	PO2
	b)	Discuss the ethics of artificial intelligence and its impact on society.	7 Marks	L2	CO5	PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Enumerate the different types of soil samples. Describe about a sampler with which undisturbed samples are obtained.	7 Marks	L2	CO1	PO1 PO5 PO8 PO10
	b)	The field 'N' value in a deposit of fully submerged fine sand was 50 at a depth of 8 m. The average saturated unit weight of soil is 19 kN/m^3. Calculate the corrected 'N' value.	7 Marks	L4	CO1	PO1 PO2 PO5 PO8
		(OR)				
2.	a)	Distinguish between disturbed and undisturbed soil samples. Also give the typical values of area ratio, inside clearance and outside clearance for extracting an undisturbed sample.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
	b)	Discuss about the planning of subsurface exploration program. What are the factors affecting the depth of exploration?	7 Marks	L2	CO1	PO1 PO11

UNIT-II

3.	a)	What is lateral earth pressure? Explain the different types of earth pressures with neat sketches.	7 Marks	L2	CO2	PO1 PO10
	b)	A 4 m high vertical wall supports a saturated cohesive soil $\varphi = 0°$ with horizontal surface. The top 2.5 m of the backfill has bulk density of 17.6 kN/m^3 and apparent cohesion of 15 kN/m^2. The bulk density and apparent cohesion of the bottom 1.5 m is 19.2 kN/m^3 and 20 kN/m^2 respectively. If tension cracks develop, what would be the total active pressure on the wall? Also draw the pressure distribution diagram.	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO6 PO8 PO10
		(OR)				
4.	a)	What are the assumptions of Rankine's earth pressure theory? Derive the Rankine's expression for active and passive earth pressure for a horizontal ground surface condition.	7 Marks	L4	CO2	PO1 PO2 PO5 PO10
	b)	Determine the passive pressure by Rankine's theory per unit run for a retaining wall 4m high, with i=15°, $\Phi' = 30^\circ$ and γ = 19 kN/m^3. The back face of the wall is smooth and vertical.	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO6 PO8 PO10

UNIT-III

5.	a)	Illustrate the different types of earth slope failures with neat sketches.	7 Marks	L2	CO3	PO1 PO6 PO10
	b)	A 5 m deep canal has side slopes 1:1. The properties of soil are c_u = 20 kPa, $\phi = 10^\circ$, e = 0.8 and G = 2.80. If Taylor's stability number is 0.108, determine the factor of safety with respect to cohesion, when the canal runs full. Also find the same in case of sudden drawdown, if Taylor's stability number for this condition is 0.137.	7 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO6 PO7 PO8 PO10
		(OR)				

6.	a)	Drive an expression for the factor of safety of an infinite slope in cohesion-less soil at dry and submerged conditions. And also describe how the factor of safety reducing in steady seepage condition.	7 Marks	L4	CO3	PO1 PO2 PO10
	b)	Define Taylor's stability number and explain how it is used in the stability analysis of slope under submerged condition.	7 Marks	L2	CO3	PO1 PO5

UNIT-IV

7.	a)	State the assumptions made in Terzaghi's bearing capacity analysis. Distinguish between general and local shear failures.	7 Marks	L4	CO4	PO1 PO2 PO6 PO10
	b)	A square footing of size 2.5 m is built in a homogeneous bed of denses and of unit weight 20kN/m³ at a depth of 1.5m below the ground surface. Estimate the safe load that can be carried by footing with a factor of safety of 3 against shear failure. Take N_c=65.4, N_q= 49.4and N_γ=54.0.	7 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO7 PO8 PO10

(OR)

8.	a)	Explain the plate load test to determine the bearing of soils. What are its limitations?	7 Marks	L2	CO4	PO1 PO5 PO10
	b)	Plate load tests were conducted in a cohesive soil using two plates of different sizes and the following results were obtained. Find the size of the square footing to carry a load of 800 kN at a settlement of 25 mm.	7 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

Load (kN)	Size of plate (m)	Settlement (mm)
40	0.3 X 0.3	25
100	0.6 X 0.6	25

UNIT-V

9.	a)	With the help of sketch, explain the load transfer mechanism in a single pile.	7 Marks	L2	CO5	PO1 PO10
	b)	A group of nine piles of 10 m length are arranged in square pattern in sand. Each pile is of 300 mm in diameter with centre to centre spacing of 900 mm. Calculate the ultimate load capacity of the pile group. Take $Nq = 27, \theta = 30^\circ, \gamma = 19\,kN/m^3$.	7 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO6 PO8 PO10

(OR)

10	a)	Discuss the process of sinking of well foundation in detail.	7 Marks	L2	CO5	PO1 PO10
·	b)	Determine the group capacity of 15 piles arranged in 3 rows of diameter 300 mm. If the piles are driven 8 m in to clay with cohesion 25 kN/m². Take spacing of piles as 0.8 m.	7 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

REINFORCED CEMENT CONCRETE STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Design a singly reinforced rectangular concrete beam simply supported on masonry walls 300 mm thick with an effective span of 5 m to support a service load of 8 kN/m and a dead load of 4 kN/m in addition to its self weight. Adopt M20 grade concrete and Fe 415 HYSD bars. Width of support of beams of 300 mm. Adopt working stress method.	14 Marks	L6	CO1	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10
		(OR)				
2.	a)	Find the moment carrying capacity of a singly reinforced rectangular beam 230 X 480 mm effective depth, reinforced with 3 bars of 20 mm diameter. Assume M20 grade concrete and Fe 415 steel.	7 Marks	L4	CO1	PO1 PO2 PO4 PO5 PO6 PO8 PO10
	b)	A singly reinforced concrete beam section 200 X 450 mm is reinforced with 4 bars of 20 mm diameter with a effective cover of 40 mm. The beam is simply supported over a span of 4 m. Find the safe uniformly distributed load the beam can carry. Use M20 grade concrete and Fe 415 steel.	7 Marks	L4	CO1	PO1 PO2 PO4 PO5 PO6 PO8 PO10

UNIT-II

3.		Design a rectangular simply supported beam over a clear span of 6 m, if the super imposed load is 12 kN/m and the support width is 230 mm. Use M20 grade concrete and Fe 415 steel. The beam is to have a width of 300 mm. Design the shear reinforcement and do check for deflection.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10
		(OR)				
4.		A rectangular reinforced concrete beam section of size 400 mm overall depth and 200 mm wide is subjected to a twisting moment of 2500 N-m in addition to a transverse shear of 60 kN at the critical section. Calculate the stirrups necessary. Assume M20 grade concrete and Fe 415 steel. The bending moment at a critical section is 25000 N-m. Take effective cover as 40 mm.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

UNIT-III

5.	a)	Compare the difference in the design of one-way slab and two-way slabs.	7 Marks	L4	CO3	PO1 PO2 PO10
	b)	A simply supported slab has a clear span of 2.1 m and is supported on walls 400 mm thick along edges. If the live load on the slab 4 kN/m^2, and the floor finish weighs 0.6 kN/m^2. Design the slab using M20 grade concrete and Fe 415 HYSD bars.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO8 P010

(OR)

6.	Design a two way slab for a room size 4m x 5m with discontinuous and simply supported edges on all four sides with corners prevented from lifting to supported a live load 4 kN/m^2. Adopt M20 grade concrete and Fe 415 HYSD bars.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

UNIT-IV

7.	Design the longitudinal reinforcement in a short column 400 mm x 600 mm subjected to an ultimate axial load of 1600 KN together with ultimate moments of 120 KN-m and 90 KN-m about the major and minor axis respectively. The reinforcements are distributed equally on all four sides. Adopt M20 grade concrete and Fe 415 steel bars.	14 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

(OR)

8.	How the compression failures occur in columns. Determine the ultimate load carrying capacity of rectangular column section 400 x 600 mm reinforced with 10 nos. of 25 mm diameter. Use M25 concrete and Fe 415 steel.	14 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO8 PO10

UNIT-V

9.	Design a suitable footing for a 500 mm x 500 mm square column transferring 100 kN axial load and a moment of 35 KNm. The safe bearing capacity of soil is 190 kN/ m^2. Use M20 concrete and Fe 415 steel. Adopt limit state design method.	14 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

(OR)

10.	A Longitudinal type of a staircase spans a distance of 3.75 m c/c of beams. The flight consists of 15 steps. Take rise is 175 mm, tread is 250 mm. Assuming M25 concrete and Fe 415 steel, Calculate the reinforcement and design the staircase for a live load of 5 kN/m^2. Assuming the breadth of the staircase as 1.4 m.	14 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO5

PO6
PO8
PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

TRANSPORTATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	As a highway engineer suggest and write the ideal alignment requirements for a highway.	7 Marks	L4	CO1	PO1 PO2 PO4 PO5 PO6 PO7
	b)	Design the length of the transition curve and shift using the following data; Design speed= 70 kmph Radius of circular curve= 220 m Allowable rate of super elevation= 1 in 150 Pavement rotated about inner edge of the pavement Pavement width including extra widening= 7.5 m	7 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO8
		(OR)				
2.	a)	Explain in detail about the different road pattern with neat sketches.	7 Marks	L2	CO1	PO1 PO10
	b)	Design the extra widening required for a pavement of width 7m on a horizontal curve of radius 250 m if the longest wheel base of vehicle expected on the road is 7.0 m. Design speed is 70 kmph.	7 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO8
		UNIT-II				
3.	a)	A two lane road at present carrying a traffic of 1200 CVPD. It is to be strengthen for growing traffic needs, VDF=2.75, rate of growth of traffic 7.5% annum, period of construction is 5 years. The pavement is to be designed for a life of 15 years after completion. Calculate the cumulative standard axles used for design.	7 Marks	L6	CO3	PO1 PO2 PO3 PO5 PO8
	b)	Write a short note on Aggregate Crushing test and its significance.	7 Marks	L2	CO1	PO1 PO5
		(OR)				
4.	a)	Write a short note on Softening Point test on bitumen and its significance.	7 Marks	L2	CO1	PO1 PO5 PO8
	b)	The CBR value of subgrade soil is 8 percent. Calculate the total thickness of flexible pavement using design chart recommended by IRC.	7 Marks	L4	CO3	PO1 PO2 PO8
		UNIT-III				
5.	a)	What is the need of Origin and Destinations studies discuss briefly.	7 Marks	L4	CO4	PO1 PO2
	b)	Discuss the relationship between speed, density and flow with neat sketches.	7 Marks	L4	CO4	PO1 PO2

						PO10
		(OR)				
6.	a)	For designing a two phase fixed signal at an intersection having N-S and E-W roads where only a straight ahead traffic is permitted. The lost time per cycle is 11 sec. The average normal flow of traffic on N-S and E-W during design period are 1100 PCU per hour and 800 PCU per hour respectively. The saturation flow values are 2400 PCU per hour and 2900 PCU per hour for N-S and E-W roads respectively. Calculate the optimum cycle length (sec) as per Webster's approach.	7 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6
	b)	Briefly discuss the traffic volume data collection methods and list out latest trends in traffic volume data collection.	7 Marks	L4	CO4	PO1 PO2 PO12
		UNIT-IV				
7.	a)	Discuss briefly about Points and Crossings.	7 Marks	L4	CO5	PO1 PO2
	b)	A turnout takes off as a 5º curve with contrary flexure from a BG main line on a 3º curve. The speed on the branch line is restricted to 50 km/hr. Determine the maximum permissible speed on the main line.	7 Marks	L4	CO5	PO1 PO2 PO4
		(OR)				
8.	a)	Discuss railway development in Indian Scenario.	7 Marks	L2	CO5	PO1
	b)	Determine the equilibrium speed for which super elevation is to be maintained for the following split-up of the trains and their speeds in the section: 14 trains at 55 km/h 5 trains at 62 km/h 5 trains at 85 km/h 2 trains at 92 km/h The track is on BG and the main line curve is a 2º curve. Determine the super elevation to be provided allowing cant deficiency of 75 mm, and the speed for this section.	7 Marks	L4	CO5	PO1 PO2 PO4
		UNIT-V				
9.	a)	Write a short note on Aircraft characteristics.	7 Marks	L2	CO6	PO1 PO6 PO7 PO8
	b)	The monthly average of the maximum daily temperature at the proposed site of an airport is 47º C during the hottest month of the year. During the same month, the average daily temperature is 36º C. Calculate the airport reference temperature. If the site is at MSL and is having an effective gradient of 0.6%. Calculate the actual length to be provided, if basic runway length is 2245 m.	7 Marks	L4	CO6	PO1 PO2 PO4 PO8
		(OR)				
10.	a)	Compare and contrast VASI and PAPI system with neat sketches	7 Marks	L4	CO6	PO1 PO2 PO8 PO10
	b)	Write down the steps involved in drawing Type-II Wind rose diagram along with explaining wind coverage, cross wind and calm period briefly.	7 Marks	L2	CO6	PO1 PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

CONSTRUCTION EQUIPMENT AND AUTOMATION

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Describe various criteria for deciding two-shift or three-shift working in a construction project.	7 Marks	L2	CO1	PO1
	b)	Elucidate safety control measures during construction.	7 Marks	L4	CO1	PO1 PO2 PO5
		(OR)				
2.	a)	Write short notes on: i) Field repairs. ii) Servicing of equipment. iii) Maintenance of engine of a heavy earthmoving equipment.	7 Marks	L2	CO1	PO1 PO5 PO6
	b)	A machine was purchased for Rs.45000/- on 1st January, 1985, the erection and installation work costs Rs.7000/-. This was replaced by a new one on 31st December 2005. If the scrap value was estimated fund on 15th June, 1996.	7 Marks	L4	C01	PO1 PO2 PO5 PO10
		UNIT-II				
3.	a)	How would you calculate the output of rippers? How would you increase the ripping production from dozer?	7 Marks	L4	CO2	PO1 PO2
	b)	Discuss main components of a hydraulic excavator.	7 Marks	L2	CO2	PO1 PO5 PO10
		(OR)				
4.	a)	Enlist and discuss different soil compaction principles.	7 Marks	L4	CO2	PO1 PO2 PO5
	b)	What is dump truck? How will you calculate the number of dump trucks required for a project?	7 Marks	L4	CO2	PO1 PO2 PO5
		UNIT-III				
5.	a)	How will you enhance the production capacity of: i) Jaw crushers. ii) Hammer mills. iii) Screening plants. iv) Crushing plants	7 Marks	L4	CO3	PO1 PO2 PO4 PO5
	b)	Explain the method of tunnelling by “drill and blast”.	7 Marks	L2	CO3	PO1 PO5

(OR)

6.	a)	Explain any two types of air pollution control equipment used in hot mix asphalt plants.	7 Marks	L2	CO3	PO1 PO5 PO7
	b)	Compare and explain the applications of following equipment i) Multi-stage pump ii) Submersible pump iii) Deep well pump	7 Marks	L4	CO3	PO1 PO2 PO5

UNIT-IV

7.	a)	Demonstrate how building automation system helps in the evolution of smart buildings.	7 Marks	L4	CO4	PO1 PO2 PO5 PO10 PO12
	b)	Explain construction life cycle using BIM. with neat sketch.	7 Marks	L2	CO4	PO1 PO5 PO10 PO11

(OR)

8.	a)	How do building automation system work? Explain with neat sketch.	7 Marks	L2	CO4	PO1 PO5 PO10 PO11
	b)	What does 5-D mean? Explain how 5-D technique in BIM will make the construction process easier.	7 Marks	L4	CO4	PO1 PO2 PO5 PO10 PO11

UNIT-V

9.	a)	Enumerate the steps would you like to take for starting the use of your own drone in construction project.	7 Marks	L4	CO5	PO1 PO2 PO5 PO6 PO11
	b)	Discuss the use of robots in pre-fabrication works for housing projects.	7 Marks	L4	CO5	PO1 PO2 PO5 PO11

(OR)

10.	a)	Write various possibilities that show evolution of autonomous machines.	7 Marks	L4	CO5	PO1 PO2 PO5 PO11 PO12
	b)	Define a robot. Illustrate different types of robots.	7 Marks	L2	CO5	PO1 PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

TRANSMISSION AND DISTRIBUTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Find an expression for the flux linkages i) Due to a single current carrying conductor ii) In parallel current carrying conductors	14 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Derive an expression for the capacitance of a single phase overhead transmission line.	7 Marks	L2	CO1	PO1
	b)	Determine the maximum and minimum stress in the insulation of a 33 kV single core cable which has a core diameter of 1.5 cm and a sheath of inside diameter 5 cm.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	A medium-length power transmission line is represented as a nominal pi-equivalent circuit with lumped parameters. Determine the ABCD constants of the line and Prove AD – BC = 1.	7 Marks	L3	CO2	PO2
	b)	A balanced 3-phase load of 30MW is supplied at 132kV, 50Hz and 0.85 p.f. lagging by means of a transmission line. The series impedance of a single conductor is (20 + j52) ohms and the total phase-neutral admittance is 315×10^{-6} mho. Using nominal-T method, determine: i) The A, B, C and D constants of the line ii) Sending end voltage iii) Regulation of the line	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	What is refraction and reflection of travelling waves and determine its coefficients when the transmission line is terminated with a resistance.	7 Marks	L2	CO2	PO1
	b)	A 100 Km long ttransmission Line is terminated by a resistance of 200 ohms. The characteristics impedance of the line is Z_0=600 ohms. Find the reflection and refraction Coefficients.	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	Define sag-template and explain it in brief.	7 Marks	L2	CO3	PO1
	b)	A transmission line conductor crossing a river is supported from two towers at heights of 30m and 80m above the water level. The horizontal distance between the towers is 450 m. If the tension in the conductor is 1500 kg and weight of the conductor is 1.4 kg/m length, find: i) The minimum safe clearance between conductor and water ii) Safe clearance mid-way between the supports.	7 Marks	L3	CO3	PO8

(OR)

6.	a)	A 3-phase, 220 kV, 50 Hz transmission line has an equilateral triangular spacing of 2m side. The conductor diameter is 3cm. The air density factor and surface irregularity factors are 0.95 and 0.83 respectively. Find critical disruptive voltage and corona loss per kilometre.	7 Marks	L3	CO3	PO2
	b)	Explain the phenomenon of corona. How can the corona loss be minimized in transmission lines?	7 Marks	L2	CO3	PO7

UNIT-IV

7.	a)	A single phase distributor 2 kms long supplies a load of 120 A at 0·8 p.f. lagging at its far end and a load of 80 A at 0·9 p.f. lagging at its mid-point. Both power factors are referred to the voltage at the far end. The resistance and reactance per km (go and return) are 0·05 Ω and 0·1 Ω respectively. If the voltage at the far end is maintained at 230 V, calculate : i) Voltage at the sending end ii) Phase angle between voltages at the two ends.	7 Marks	L3	CO4	PO2
	b)	A single phase distributor one km long has resistance and reactance per conductor of 0·1 Ω and 0·15 Ω respectively. At the far end, the voltage VB = 200 V and the current is 100A at a p.f. of 0·8 lagging. At the mid-point M of the distributor, a current of 100 A is tapped at a p.f. of 0·6 lagging with reference to the voltage VM at the mid-point. Calculate : i) voltage at mid-point ii) sending end voltage VA iii) phase angle between VA and VB	7 Marks	L3	CO4	PO2

(OR)

8.	a)	A 2-wire DC distributor 200 metres long is uniformly loaded with 2 A/metre. Resistance of single wire is 0·3 Ω/km. If the distributor is fed at one end, calculate : i) The voltage drop upto a distance of 150 m from the feeding point. ii) The maximum voltage drop.	7 Marks	L2	CO4	PO2
	b)	A single phase distributor 2 kilometres long supplies a load of 120 A at 0·8 p.f. lagging at its far end and a load of 80 A at 0·9 p.f. lagging at its mid-point. Both power factors are referred to the voltage at the far end. The resistance and reactance per km (go and return) are 0·05 Ω and 0·1 Ω respectively. If the voltage at the far end is maintained at 230 V, calculate : i) voltage at the sending end ii) phase angle between voltages at the two ends.	7 Marks	L3	CO4	PO4

UNIT-V

9.	a)	How do you analyze a substation service area with 'n' primary feeders?	7 Marks	L3	CO5	PO1
	b)	Explain the benefits derived through optimal location of substations.	7 Marks	L2	CO5	PO5

(OR)

10.	a)	Explain the factors affecting the loading of a primary feeder.	7 Marks	L2	CO5	PO1
	b)	Discuss in detail the design practice of secondary distribution system.	7 Marks	L2	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ENERGY SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Why the thermal power plants have a poor efficiency compared to other conventional electric power plants, justify with a valid reasons.	7 Marks	L2	CO1	PO1
	b)	A thermal power station has the following data: Max Demand: 60,000 kW; Load factor: 60% Boiler efficiency: 85%; Turbine efficiency : 92% Coal Consumption : 0.85kg/kWh; Cost of 1 ton of coal : Rs.1000/- Determine: i) Thermal efficiency ii) Coal bill per annum.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Enumerate the advantages and disadvantages of diesel power plants.	7 Marks	L2	CO1	PO1
	b)	List out the factors to be consider for the selection of a site for the erection of Nuclear power plants.	7 Marks	L2	CO1	PO7

UNIT-II

3.	a)	Enumerate the merits and demerits of Boiling Water Reactors (BWR) and Breeder Reactors of a nuclear power plant.	7 Marks	L2	CO2	PO1
	b)	Explain in detail about the various protocols to be followed for safe disposing nuclear waste.	7 Marks	L2	CO2	PO8
		(OR)				
4.	a)	Explain in detail about the effects of electromagnetic radiation on humans.	7 Marks	L2	CO2	PO6
	b)	Write short notes on limitation of fossil fuels.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Draw the schematic diagram of wind energy conversion system and write the function of each component.	7 Marks	L2	CO3	PO1
	b)	Enumerate the impacts of wind energy conversion system on environment.	7 Marks	L2	CO3	PO7
		(OR)				
6.	a)	Explain the construction details and working principle of the vapor dominated geothermal power plant with a neat sketch.	7 Marks	L2	CO3	PO1
	b)	What is solar radiation? Explain in detail about the direct and diffusion solar radiations.	7 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Describe in detail the working principle and operation of the open cycle OTEC electric power plant with a neat sketch.	7 Marks	L2	CO4	PO1
	b)	Draw the layout of tidal power plant and write the functional details of each component in the power plant.	7 Marks	L2	CO4	PO5

(OR)

8.	a)	What is fuel cell? Explain in detail about the classification of fuel cells.	7 Marks	L2	CO4	PO1
	b)	Write short notes on biomass conversion technologies.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Enumerate the various energy storage systems used in the hybrid energy systems and explain in detail about ultra-capacitors.	7 Marks	L2	CO5	PO1
	b)	Explain about the Standalone PV-wind hybrid system with neat block diagram.	7 Marks	L2	CO5	PO1

(OR)

10.	a)	Write short notes on operational modes of a co-generation.	7 Marks	L2	CO5	PO1
	b)	Write short notes on the following: i) Economic benefits of co-generation. ii) Environmental benefits of a co-generation.	7 Marks	L2	CO5	PO11

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DESIGN OF MACHINE ELEMENTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	State and explain the applications of different theories of failure.	14 Marks	L2	CO1	PO1 PO2
	(OR)				
2.	A circular bar of 500mm length is supported freely at its two ends. It is acted upon by a central concentrated cyclic load having a minimum value of 20kN and a maximum value of 50kN. Determine the diameter of bar by taking a factor of safety of 1.5, size effect of 0.85, surface finish factor of 0.9. The material properties of bar is given by: ultimate strength of 650MPa, yield strength of 500MPa and endurance strength of 350MPa.	14 Marks	L3	CO1	PO1 PO2 PO3

UNIT-II

3.	Design a muff coupling to connect two steel shafts transmitting 25KW of power at 360RPM. The shaft and key are of same material with a yield tensile stress of 400MPa. The muff is made of cast iron with an ultimate tensile stress of 200 MPa. Factor of safety can be taken as 4.0 for all the stresses.	14 Marks	L3	CO2	PO1 PO2 PO3
	(OR)				
4.	Draw a knuckle joint and explain its design procedure.	14 Marks	L2	CO2	PO1 PO2

UNIT-III

5.	Design and draw a cast iron flange coupling for a mild steel shaft transmitting 90 kW at 250 r.p.m. The allowable shear stress in the shaft is 40 MPa and the angle of twist is not to exceed 1° in a length of 20 diameters. The allowable shear stress in the coupling bolts is 30 MPa.	14 Marks	L3	CO3	PO1 PO2 PO3
	(OR)				
6.	Design a knuckle joint for a tie rod of a circular section to sustain a maximum pull of 70 kN. The ultimate strength of the material of the rod against tearing is 420 MPa. The ultimate tensile and shearing strength of the pin material are 510 MPa and 396 MPa respectively. Determine the tie rod section and pin section. Take factor of safety = 6.	14 Marks	L3	CO3	PO1 PO2 PO3

UNIT-IV

7.	The ball bearings are to be selected for an application in which the radial load is 2000N during 90% of the time and 8000N during the remaining 10%. The shaft is to rotate at 150 r.p.m. Determine the minimum value of the basic dynamic load rating for 5000 hours of operation with not more than 10% failures.	14 Marks	L3	CO4	PO1 PO2 PO3
	(OR)				
8.	A 70mm long journal bearing supports a load of 2700N on a 40mm diameter shaft. The bearing has a radial clearance of 0.05mm and the viscosity of the oil is 0.021 kg/m-s at the operating temperature. If the bearing is capable of dissipating 80J/s, determine the maximum safe speed.	14 Marks	L3	CO4	PO1 PO2 PO3

UNIT-V

9.	A helical compression spring made of oil tempered carbon steel, is subjected to a load which varies from 600 N to 1600 N. The spring index is 6 and the design factor of safety is 1.43. If the yield shear stress is 700 MPa and the endurance stress is 350 MPa, find the size of the spring wire and mean diameter of the spring coil.	14 Marks	L3	CO5	PO1 PO2 PO3
	(OR)				
10.	Design a pair of spur gears to transmit 25kW at 1200 r.p.m to a parallel shaft to be rotated at 600 r.p.m. The center distance between shafts is 175mm.	14 Marks	L3	CO5	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

OPERATIONS RESEARCH

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	An Air Force is experimenting with three types of bombs P, Q and R in which three kinds of explosives, viz., A, B and C will be used. Taking the various factors into account, it has been decided to use the maximum 600 kg of explosive A, at least 480 kg of explosive B and exactly 540 kg of explosive C. Bomb P requires 3, 2, 2 kg, bomb Q requires 1, 4, 3 kg and bomb R requires 4, 2, 3 kg of explosives A, B and C respectively. Bomb P is estimated to give the equivalent of a 2ton explosion, bomb Q, a 3ton explosion and bomb R, a 4ton explosion respectively. Under what production schedule can the Air Force make biggest bang.	14 Marks	L3	CO1	PO1 PO2

(OR)

2.	Use penalty (Big-M) method to solve following LP problem. $Min\ Z = 2X_1 + X_2$ $Subject\ to\ 3X_1 + X_2 = 3$ $4X_1 + 3X_2 \geq 6$ $X_1 + 2X_2 \leq 4$ $and\ \ X_1, X_2 \geq 0$	14 Marks	L3	CO1	PO1 PO2

UNIT-II

3.	A steel company has three open hearth furnaces and five rolling mills. The transportation costs (rupees per quintal) for shipping steel from furnaces to rolling mills are given in the following table:	14 Marks	L3	CO1	PO1 PO2

	M_1	M_2	M_3	M_4	M_5	Supply
F_1	4	2	3	2	6	8
F_2	5	4	5	2	1	12
F_3	6	5	4	7	7	14
Demand	4	4	6	8	8	

What is the optimal shipping schedule?

(OR)

4.	A solicitors' firm employs typists on hourly piece-rate basis for their daily work. There are five typists and their charges and speed are different. According to an earlier understanding only one job was given to one typist and the typist was paid for a full hour, even if he worked for a fraction of an hour. Find the least cost allocation for the following data:	14 Marks	L3	CO1	PO1 PO2

Typist	Rate per hour (Rs)	No. of pages typed/hour
A	5	12
B	6	14
C	3	8
D	4	10
F	4	11

Job	No. of pages
P	199
Q	175
R	145
S	298
T	178

UNIT-III

5. a) Explain the terms: 4 Marks L1 CO2 PO1
   i) Two-Person zero-sum games.
   ii) Pay-off matrix.

   b) Use graphical method to solve following Game problem. 10 Marks L3 CO2 PO1 PO2

		Player B			
Player A	3	0	6	-1	7
	-1	5	-2	2	1

(OR)

6. a) Explain the following terms: 4 Marks L1 CO3 PO1
   i) Shortage cost
   ii) Reorder level
   iii) Safety stock
   iv) Ordering cost

   b) A company buys 2500 units/year. The annual unit inventory carrying cost is estimated at 20% and the ordering cost is Rs. 10 per order placed. The price quoted by the supplier Rs. 1 / unit subjected to discount of 5% for order of 1000 – 1999 and 7% for orders of 2000 or more. Is it worthwhile to increase the discount order substantiate your answer. 10 Marks L3 CO3 PO1 PO2

UNIT-IV

7. The utility data for a network is given below. Draw a network. Determine the total, free and independent floats and identify critical path. 14 Marks L3 CO4 PO1 PO2 PO3

Activity	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration	2	8	10	6	3	3	7	5	2	8

(OR)

8. Consider the following data of the project. 14 Marks L3 CO4 PO1 PO2 PO3

Activity	Predecessor	Duration (Weeks)		
		Optimistic	Most likely	Pessimistic
A	-	3	5	8
B	-	6	7	9
C	A	4	5	9
D	B	3	5	8
E	A	4	6	9
F	C, D	5	8	11
G	C, D, E	3	6	9
H	F	1	2	9

   i) Construct the project network.
   ii) Find the expected duration & variance of the each activity.
   iii) Find the critical path and expected project completion time.
   iv) What is the probability of completing the project on or before 30weeks?

UNIT-V

9.	A fertilizer company distributes its products by trucks that are loaded at its only loading station. Both, company trucks and contractor's trucks are used for this purpose. It was found that on an average, every 5 minutes one truck arrived and the average loading time was 3 minutes. Out of these trucks 40 per cent being to the contractor's. Determine: i) The probability that a truck has to wait. ii) The waiting time of a truck that waits. The expected waiting time of the contractor's trucks per day.	14 Marks	L3	CO5	PO1 PO2 PO3

(OR)

10.	A firm has a single channel service station with the following arrival and service time probability distribution:	14 Marks	L4	CO5	PO1 PO2 PO3

Inter arrival time (min)	Probability	Service time (min)	Probability
8	0.10	6	0.08
15	0.25	10	0.14
20	0.30	15	0.18
26	0.25	21	0.24
30	0.1	25	0.22
---	---	30	0.14

The customer's arrival at the service station is a random phenomenon and the time between arrivals varies from 10 to 30 minutes. The service time varies from 5 to 30 minutes. The queuing process begins at 10 a.m. and proceeds for nearly 8 hours. The queue discipline is first-come first-served. Simulate this queue for 10 arrivals.

Random numbers for arrival time:

20, 73, 30, 99, 66, 83, 32, 75, 04, 15.

Random numbers for service time:

26, 43, 98, 87, 58, 90, 84, 60, 08, 50.

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

THERMAL ENGINEERING-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the working of Babcock and Wilcox boiler with a neat sketch.	8 Marks	L2	CO1	PO1
	b)	Classify boilers.	6 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Obtain an expression for the height of the chimney.	7 Marks	L3	CO1	PO1 PO2
	b)	A boiler raises3.7 kg of water per kg of coal from feed water at 54.5° C to steam at the pressure of 34 bar and temperature of 370° C. Assuming specific heat of superheated steam as 2.6 KJ/kg K, calculate equivalent of evaporation per kg of coal.	7 Marks	L3	CO1	PO1 PO2

UNIT-II

3.	a)	Show that for maximum discharge through a nozzle, the ratio of throat pressure to inlet pressure (Critical Pressure Ratio) is given by $\left(\frac{2}{n+1}\right)^{\frac{n}{n-1}}$ where n= Index of expansion through a nozzle.	7 Marks	L3	CO2	PO1 PO2
	b)	Calculate the throat area of convergent-divergent nozzle supplied steam at 5 bar and 250^0C. The rate of flow steam is 1.5 kg/sec, neglecting friction and initial velocity of steam.	7 Marks	L3	CO2	PO1 PO2
		(OR)				
4.	a)	Describe the principal requirements of a steam condensing plant.	7 Marks	L2	CO2	PO1
	b)	Explain counter flow type of Jet Condenser with a neat sketch.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Discuss the method of pressure compounding of an impulse turbine.	7 Marks	L2	CO3	PO1
	b)	The velocity of steam leaving the nozzles of impulse turbine is 1200 m/s and the nozzle angle is 20°. The blade velocity is 375 m/s and the blade velocity coefficient is 0.75. Assuming no loss due to shock at inlet, calculate for a mass flow of 0.5kg/s and symmetrical blading. i) Blade inlet angle ii) Driving force on the wheel iii) Axial thrust on the wheel iv) Power developed by Turbine.	7 Marks	L3	CO3	PO1 PO2
		(OR)				
6.	a)	Describe the working principle of parson's reaction turbine.	7 Marks	L3	CO3	PO1
	b)	A Reaction Turbine runs at 1500 rpm and its steam consumption is 7700 kg/hr. the pressure of steam at a certain pair is 1.9 bar its dryness 0.93 and power developed by air is 1.75 kW. The discharging blade tip angle is 200 for both fixed and moving blades and the axial velocity of flow is 0.72 of the blade velocity. Find the drum diameter and blade height. Take the tip leakage steam as 8%, but neglect blade thickness.	7 Marks	L3	CO3	PO1 PO2

UNIT-IV

7.	a)	Briefly explain the essential components of a refrigeration plant.	7 Marks	L3	CO4	PO1
	b)	Differentiate between VCR and VAR systems.	7 Marks	L3	CO4	PO1
		(OR)				
8.	a)	Explain the working principle of air refrigeration system with a neat sketch.	7 Marks	L3	CO4	PO1
	b)	The capacity of a refrigerator is 250 TR when working between -10° C and 28° C. Determine the mass of ice produced per day from water at 28^0C. Also find the power required to drive the unit. Assume that the cycle operates on reversed carnot cycle and latent heat of ice is 350 kJ/kg	7 Marks	L3	CO4	PO1 PO2

UNIT-V

9.	a)	Explain in brief, heating and dehumidification process. Represent the same on a psychrometric chart.	7 Marks	L3	CO5	PO1
	b)	In a laboratory test a sling psychrometer recorded dry bulb and wet bulb temperatures as 30° C and 25° C respectively. Calculate vapour pressure, relative humidity, specific humidity and degree of reaction.	7 Marks	L3	CO5	PO1 PO2
		(OR)				
10.	a)	Briefly explain the various lines of psychrometric chart.	7 Marks	L3	CO5	PO1
	b)	A sleeve psychrometer reads40°C DBT and 28°C WBT. Assuming the barometric pressure as 1.013 bar, determine i) humidity ratio, ii) relative humidity, iii) dew point temperature iv) enthalpy of the mixture per kg of dry air.	7 Marks	L3	CO5	PO1 PO2

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Draw the neat layout of 2WD and 4WD and also mention its advantages and disadvantages.	14 Marks	L2	CO1	PO1 PO2
		(OR)				
2.		Discuss about the working of fuel supply system is CI engine with neat sketch.	14 Marks	L2	CO1	PO1 PO2 PO6
		UNIT-II				
3.		Describe the working of forced circulation method of cooling with the neat diagram. What design changes can be made to improve the cooling efficiency of the system?	14 Marks	L2	CO2	PO1 PO2 PO6
		(OR)				
4.		List the important functions of ignition system and explain the working of magneto coil ignition system with neat diagram.	14 Marks	L2	CO2	PO1 PO2
		UNIT-III				
5.		Explain briefly the horn and wiper provided in a car and functions of each unit.	14 Marks	L2	CO3	PO1 PO2
		(OR)				
6.		Explain briefly the Electronic Brake Distribution (EBD) in a car.	14 Marks	L2	CO3	PO1 PO2
		UNIT-IV				
7.	a)	Demonstrate with a neat layout, the working of multi plate clutch.	7 Marks	L2	CO4	PO1
	b)	What are the different types of steering gears? What is the purpose of steering gear? Explain with sketch of steering gears.	7 Marks	L2	CO4	PO1 PO2
		(OR)				
8.		With neat sketch, explain Synchromesh gear box in an automobile.	14 Marks	L2	CO4	PO1
		UNIT-V				
9.		Name the various elements of suspension system. Explain the working of torsion bar with a neat diagram.	14 Marks	L2	CO5	PO1 PO2
		(OR)				
10.	a)	Describe briefly a `tandem master cylinder` used in a hydraulic braking system.	7 Marks	L2	CO5	PO1 PO6
	b)	Discuss the working of mechanical brake system with a neat sketch.	7 Marks	L2	CO5	PO1 PO2

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DIGITAL COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the working principle of Adaptive delta modulation system with neat sketches.	7 Marks	L2	CO1	PO1
	b)	Discuss the types of errors in delta modulation.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the effect of thermal noise in Delta modulation.	7 Marks	L2	CO1	PO1
	b)	Compare Delta Modulation and Pulse Code Modulation.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Describe the Eye Pattern to identify the inter symbol interference.	7 Marks	L2	CO2	PO2
	b)	Discuss correlative-level coding.	7 Marks	L2	CO2	PO1
		(OR)				
4.		Write short notes on: i) Inter symbol Interference. ii) Base band shaping.	14 Marks	L2	CO2	PO1
		UNIT-III				
5.		Implement a Matched filter and derive the Probability of error for Matched Filter.	14 Marks	L3	CO2	PO3
		(OR)				
6.	a)	With a neat block diagram explain the generation and reception of QPSK signals.	7 Marks	L2	CO2	PO2
	b)	Exemplify the merits of DPSK over BPSK.	7 Marks	L3	CO2	PO2
		UNIT-IV				
7.	a)	A message source generates one of four messages randomly every microsecond. The probabilities of these messages are [0.4,0.3,0.2,0.1]. Each emitted message is independent of the other messages in the sequence. Find the source entropy.	7 Marks	L3	CO3	PO4
	b)	Define the following: i) Information rate ii) Channel Capacity of Discrete Memory less Channel.	7 Marks	L2	CO3	PO1
		(OR)				
8.	a)	A discrete message source is generating the message sequence [X] = [A B C D E F G H] with probabilities [P]=[0.50, 0.15, 0.15, 0.08, 0.08, 0.02, 0.01, 0.01]. Find the Code words using Huffman coding.	7 Marks	L3	CO3	PO4
	b)	Describe in detail the bandwidth-S/N trade off.	7 Marks	L2	CO3	PO1

UNIT-V

9.		The generator polynomial of a (7, 4) cyclic Encoder is $g(x)=1+X+X^2$. Find the 8 possible code words of this code.	14 Marks	L3	CO4	PO3
		(OR)				
10.	a)	Explain time domain approach and transform domain approach of convolutional codes.	7 Marks	L2	CO4	PO1
	b)	Explain the process of decoding convolutional codes using Tree and state diagrams.	7 Marks	L2	CO4	PO2

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

FIBER OPTIC COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Outline various materials used in fabrication of Optical fibers and mention its types.	7 Marks	L2	CO1	PO1
	b)	A multimode step index fiber with a core diameter of 80 μm and a relative refractive index is 1.48, estimate. i) Normalized frequency for the fiber. ii) The number of guided modes.	7 Marks	L5	CO1	PO4
		(OR)				
2.	a)	Illustrate different types of optical fibers with its refractive index profile and list some applications of optical fibers.	7 Marks	L2	CO1	PO1
	b)	Demonstrate the mechanism of linearly polarized modes in optical fibers.	7 Marks	L4	CO1	PO1

UNIT-II

3.	a)	Demonstrate different mechanisms of absorption and attenuation in optical fibers.	8 Marks	L2	CO2	PO1
	b)	A multimode step index fiber has a numerical aperture of 0.3 and a core refractive index of 1.45. The material dispersion parameter for the fiber is 250 ps nm−1 km−l which makes material dispersion the totally dominating chromatic dispersion mechanism. Estimate i) The total rms pulse broadening per kilometer when the fiber is used with an LED source of rms spectral width 50 nm and. ii) The corresponding bandwidth–length product for the fiber.	6 Marks	L5	CO2	PO4
		(OR)				
4.	a)	Analyze pulse broadening in case of material dispersion.	7 Marks	L4	CO2	PO2
	b)	Analyze the two main causes for intramodal dispersion in optical fibers.	7 Marks	L4	CO2	PO2

UNIT-III

5.	a)	Develop the expression for Noise generated due to Avalanche Multiplication.	7 Marks	L3	CO3	PO3
	b)	Calculate the ratio of the stimulated emission rate to the spontaneous emission rate for an incandescent lamp at a temperature of 1000K. It may be assumed that the average operating wavelength is 0.5μm.	7 Marks	L5	CO3	PO4
		(OR)				
6.	a)	Illustrate the working mechanism of laser diodes and its various categories.	7 Marks	L2	CO3	PO1
	b)	Demonstrate the physical principles of photo detectors and analyze its noise parameters and detector response time.	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Illustrate various lensing schemes for coupling improvement in fibers.	7 Marks	L2	CO4	PO2
	b)	Distinguish two different types of fiber connectors and its real-time applications.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Classify various categories of splicing mechanisms and explain the operation of fusion splicing with neat sketch.	7 Marks	L3	CO4	PO5
	b)	List and describe different types of mechanical misalignment at fiber Joint.	7 Marks	L1	CO4	PO1

UNIT-V

9.	a)	Identify and justify the transmission modes suited for Optical Networks.	7 Marks	L1	CO6	PO1
	b)	Illustrate the mechanism of Wavelength Division Multiplexing in optical fibers.	7 Marks	L2	CO6	PO1
		(OR)				
10	a)	Justify how RF over fiber is useful to the society.	8 Marks	L5	CO5	PO6
.	b)	Select appropriate optical component along with Fiber bragg grating and explain.	6 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

FPGA ARCHITECTURES AND APPLICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the importance of clocking in Sequential Programmable Logic Devices. How does clocking impact the synchronization of operations within these devices, and why is it crucial for sequential logic circuits	7 Marks	L2	CO1	PO1
	b)	Implement a Half Subtracter using ROM.	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	Briefly explain the major blocks of FPGA.	7 Marks	L1	CO1	PO1
	b)	Discuss the key characteristics of Sequential Programmable Logic Devices like the 22CEV10. How do these devices combine both combinational and sequential logic elements? Provide a practical example of a circuit that requires sequential logic and explain how it can be implemented using a 22CEV10	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Detail the purpose and functionality of Programmable I/O blocks in FPGAs. How do these blocks interface with external devices and signals.	7 Marks	L2	CO2	PO2
	b)	Summarize General purpose interconnect and Direct connection in FPGA.	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Explain the basic FPGA architecture tabulate the architectural features of FPGA families.	7 Marks	L1	CO2	PO1
	b)	Explore the concept of dedicated specialized components within FPGAs, such as Digital Signal Processors (DSPs), Block RAMs, and clock management resources.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Trace the historical development and evolution of SRAM Programmable FPGAs, including key milestones and innovations that have shaped their role in modern electronic design.	7 Marks	L2	CO3	PO1
	b)	Summarize the design trade-offs of SRAM programmable FPGAs.	7 Marks	L2	CO3	PO2
		(OR)				
6.	a)	Draw the Xilinx XC 2000 interconnect architectures and explain.	7 Marks	L4	CO3	PO2
	b)	Describe the programming technology and methodology used for configuring SRAM-based FPGAs.	7 Marks	L4	CO3	PO1

UNIT-IV

7.	a)	Compare and contrast the architectural characteristics of the Actel ACT1, ACT2, and ACT3 series of FPGAs	7 Marks	L2	CO3	PO2
	b)	Discuss programmable technologies of anti-fuse FPGA.	7 Marks	L2	CO3	PO2

(OR)

8.	a)	Compare ACT2 & ACT3 Devices.	7 Marks	L2	CO3	PO2
	b)	How does the architecture of Anti-Fuse FPGAs contribute to their performance and flexibility.	7 Marks	L4	CO3	PO2

UNIT-V

9.	a)	Discuss in detail, counter design using FPGA technology	7 Marks	L1	CO4	PO1
	b)	Delve into the design considerations for creating a Position Tracker, including the choice of sensors and algorithms.	7 Marks	L3	CO4	PO1

(OR)

10.	a)	Explain about DMA (Direct Memory Access) and its significance in data transfer within a computer system.	7 Marks	L2	CO4	PO1
	b)	Explore the technical challenges involved in designing a Fast DMA Controller, such as minimizing data transfer latency and optimizing data flow between devices.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

VLSI SYSTEM DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Analyze the characteristics of CMOS Dynamic Electrical Behaviour.	8 Marks	L4	CO1	PO2
	b)	Explain the working of 3-input DTL NAND gate with truth table.	6 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the working of 3-input RTL NOR gate with truth table.	7 Marks	L2	CO1	PO1
	b)	Analyze the working principle of 3-input Open Collector TTL NAND gate.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Describe a step-by-step procedure for NMOS process with neat diagrams.	7 Marks	L1	CO2	PO1
	b)	Analyze the functioning of CMOS Inverter with logic levels and voltage levels.	7 Marks	L4	CO2	PO2
		(OR)				
4.	a)	Derive expressions for transconductance g_{ds} from I_{DS}–V_{DS} relationship in various regions of MOSFET operation.	8 Marks	L3	CO2	PO2
	b)	Develop NMOS and PMOS Pass transistor logic implementations for the 4-input OR gate.	6 Marks	L3	CO2	PO4
		UNIT-III				
5.	a)	Illustrate the lambda based layout design rules.	7 Marks	L2	CO3	PO8
	b)	Estimate the delay for cascaded NMOS Inverters.	7 Marks	L3	CO3	PO4
		(OR)				
6.	a)	Model a schematic and stick diagram using NMOS logic for $Y= (A+BC)'$.	8 Marks	L3	CO3	PO3
	b)	Identify the role of layout design rules in fabrication of ICs.	6 Marks	L3	CO3	PO8
		UNIT-IV				
7.	a)	Compare the various adders.	7 Marks	L4	CO4	PO2
	b)	Justify the use of carry look head adder for high performance applications.	7 Marks	L2	CO4	PO6
		(OR)				
8.	a)	Design 4 – bit Asynchronous Counter.	7 Marks	L4	CO4	PO3
	b)	Explain the working of a carry select adder and analyze its performance.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Develop the flow chart of VLSI Design Flow.	7 Marks	L3	CO5	PO6
	b)	Summarize the functionality of CAD Tools in the design and simulation of circuits at various levels of abstraction.	7 Marks	L4	CO5	PO5
		(OR)				
10.	a)	Justify the use of FPGAs over CPLDs.	7 Marks	L4	CO5	PO7
	b)	Compare the various programmable interconnect structures.	7 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

COMPUTER NETWORKS

[Computer Science and Engineering, Electronics and Instrumentation Engineering, Computer Science and Systems Engineering, Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Illustrate some of the factors that determine whether a communication system is a LAN or WAN?	7 Marks	L1	CO1	PO1
	b)	Explain how are OSI and ISO related to each other?	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Sketch the electromagnetic spectrum for Wireless Transmission	7 Marks	L1	CO1	PO1
	b)	Distinguish between Radio Wave Transmission and Microwave Transmission.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	How performance is improved in CSMA/CD protocol compared to CSMA protocol? Explain.	7 Marks	L2	CO1	PO2
	b)	Suppose a computer sends a frame to another computer on a bus topology LAN. The physical destination address of the frame is corrupted during the transmission. What happens to the frame? How can the sender be informed about the situation? Explain.	7 Marks	L3	CO3	PO4
		(OR)				
4.	a)	Calculate the hamming distance for each of the following code words? i) d(10000, 01000) ii) d(10101, 10010) iii) d(1111, 1111) iv) d(0000, 0000)	7 Marks	L2	CO3	PO2
	b)	Describe Selective Repeat Sliding Window Protocol.	7 Marks	L1	CO3	PO2
		UNIT-III				
5.	a)	Explain Internet Protocol with the neat block diagram of IPv6 header format.	7 Marks	L3	CO5	PO8
	b)	A router with IPV4 address 123.45.21.12 and Ethernet physical address 23:45: BA: 00:67: CD has received a packet for a host destination with IP address 124.10.78.10. Show the entries in the ARP request packet sent by the router**.** Assume no subnetting.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Distinguish between ARP and RARP Protocols.	7 Marks	L1	CO1	PO1
	b)	Elucidate congestion control algorithms in detail.	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Explain the real transport protocol of UDP and how will you calculate checksum in UDP?	7 Marks	L1	CO1	PO1
	b)	Suppose you are hired to design a reliable byte-stream protocol that uses a sliding window (like TCP). This protocol will run over a 50- Mbps network. The RTT of the network is 80 ms, and the maximum segment lifetime is 60 seconds. How many bits would you include in the Advertised Window and Sequence Number fields of your protocol header?	7 Marks	L3	CO3	PO2
		(OR)				
8.	a)	A client uses UDP to send data to a server. The data are 15 bytes. Calculate the efficiency of this transmission at the UDP level (ratio of useful bytes to total bytes)?	7 Marks	L3	CO4	PO6
	b)	Explain congestion avoidance techniques in detail.	7 Marks	L1	CO1	PO1

UNIT-V

9.	a)	Assess the impact of wired networks in the context of network protocols like HTTP.	7 Marks	L3	CO4	PO6
	b)	How is Hypertext Transfer Protocol related to World Wide Web?	7 Marks	L2	CO1	PO1
		(OR)				
10.	a)	Describe the role of the local name server and the authoritative name server in DNS?	7 Marks	L1	CO4	PO6
	b)	Differentiate between primary server and secondary server.	7 Marks	L1	CO1	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write the linear search algorithm and analysis for its best, worst and average case time complexity.	7 Marks	L2	CO1	PO1
	b)	Solve the recurrence relation and compute its complexity. $T(n) = 2T(n/2) + n, \quad n>1$	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Discuss the various stages of algorithm design and analysis process using flow chart.	7 Marks	L2	CO1	PO1
	b)	Solve the following recurrence relation and find its asymptotic bound on T. $T(n) = 1$ if $n=1$; $= 2T(n-1)$ if $n>1$	7 Marks	L3	CO1	PO2

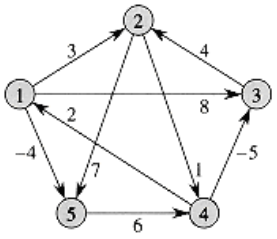
UNIT-II

3.	a)	Illustrate Weighted Union() and collapsing Find() algorithms with an example.	6 Marks	L4	CO2	PO2
	b)	Write iterative version of MaxMin algorithm completely and analyze the number of comparisons it requires against straight MaxMin algorithm.	8 Marks	L4	CO2	PO1
		(OR)				
4.	a)	Given a n by n board where n is of form 2^k where k >= 1 (Basically, n is a power of 2 with minimum value as 2). The board has one missing square). Fill the board using trionimos. A trionimo is an L-shaped tile is a 2 × 2 block with one cell of size 1×1 missing.	7 Marks	L3	CO2	PO1
	b)	Compare and contrast the operations of Strassen's Matrix multiplication with conventional matrix multiplication.	7 Marks	L4	CO2	PO2

UNIT-III

5.	a)	Demonstrate Traveling salesperson problem by taking any suitable graph.	7 Marks	L3	CO2	PO1
	b)	Determine the solution for 0/1 knapsack problem using dynamic programming N=3, m=6 profits (p1, p2, p3) = (1,2,5) weights (w1,w2,w3) = (2,3,4).	7 Marks	L3	CO3	PO3

(OR)

6.	a)	Calculate shortest distances using all pairs shortest path algorithm. 	7 Marks	L3	CO3	PO3
	b)	Explain Flow shop scheduling problem in detail.	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Obtain a set of optimal Huffman code for the messages (M1… M7) with relative frequencies (q1….q7) = (4,5,7,8,10,12,20).	7 Marks	L3	CO2	PO1
	b)	Outline an algorithm to the Job sequencing with deadlines.	7 Marks	L2	CO2	PO2

(OR)

8.	a)	Apply Sum of Subsets algorithm and find all possible subsets of w[1:7]={20,18,15,12,10,7,5} and m=35 using backtracking approach.	7 Marks	L3	CO2	PO2
	b)	Explain how the Hamiltonian circuit problem is solved by using backtracking approach.	7 Marks	L3	CO2	PO2

UNIT-V

9.	a)	Explain the strategy to prove that a problem is NP hard.	7 Marks	L2	CO4	PO1
	b)	Obtain the portion of the State Space tree that will be generated by LCBB for the following cost matrix of Travelling sales person instance.	7 Marks	L2	CO3	PO2

∞	7	3	12	8
3	∞	6	14	9
5	8	∞	6	18
9	3	5	∞	11
18	14	9	8	∞

(OR)

10.	a)	Generate FIFO branch and bound solution for the given knapsack problem, m = 15, n = 3, (P1, P2, P3) = (10, 6, 8) and (w1, w2, w3) = (10, 12, 3).	7 Marks	L3	CO3	PO2
	b)	Briefly explain deterministic and nondeterministic algorithms with example.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What are the five phases of the project management life cycle?	7 Marks	L3	CO1	PO1
	b)	How can the characteristics of a project be analyzed?	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	What is the importance of software project management?	7 Marks	L1	CO1	PO1
	b)	What are the steps involved in stepwise project planning?	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	What are the different types of project management methodologies?	7 Marks	L4	CO2	PO5
	b)	What are the benefits of using bottom-up estimating?	7 Marks	L2	CO2	PO3
		(OR)				
4.	a)	What are the key principles of agile methods?	7 Marks	L2	CO2	PO5
	b)	What are the advantages and disadvantages of using Albrecht function point analysis?	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	How do you calculate the critical path in a network model?	7 Marks	L2	CO2	PO1
	b)	What are the different risk management approaches?	7 Marks	L4	CO5	PO6
		(OR)				
6.	a)	Why is it important to add the time dimension to a network model?	7 Marks	L2	CO4	PO8
	b)	How does Monte Carlo simulation work?	7 Marks	L3	CO5	PO7
		UNIT-IV				
7.	a)	How do you identify the resource requirements for a project?	7 Marks	L2	CO2	PO3
	b)	What are the benefits of using software configuration management?	7 Marks	L2	CO2	PO2
		(OR)				
8.	a)	How do you create a critical path for a project?	7 Marks	L2	CO2	PO1
	b)	What are the factors to consider when prioritizing monitoring?	7 Marks	L2	CO1	PO1
		UNIT-V				
9.	a)	What are the limitations of the Oldham-Hackman model?	7 Marks	L2	CO3	PO1
	b)	What are the steps involved in implementing a software quality model?	7 Marks	L4	CO5	PO6
		(OR)				
10.	a)	What are some of the ethical concerns that software engineers face?	7 Marks	L2	CO3	PO1
	b)	What are the limitations of ISO 9126?	7 Marks	L2	CO3	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DATA WAREHOUSING AND DATA MINING

[Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Data Science), Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Compare OLAP systems with OLTP with respect to orientation, user, unit of work, no. of users accessed, priority and metric features.	7 Marks	L2	CO1	PO2
	b)	Define data warehouse and discuss its applications.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Draw and explain the Data warehouse Architecture.	7 Marks	L2	CO1	PO2
	b)	Design an enterprise data warehouse for implementing OLAP Operations.	7 Marks	L3	CO1	PO3

UNIT-II

3.	a)	Suppose that the data for analysis include the attributed age. The age values for the data tuples are 13,15,16,19,20,20,21,22,22,25,25,25,25,30,33,33,35,35,35,35, 36,40,45,46,52,60. i).use smoothing by bin means to smooth the above data using a bin depth of 3. Illustrate your steps.	7 Marks	L3	CO2	PO5
	b)	Classify the various methods for data smoothing.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Sketch the various phases of data mining and explain the different steps involved in preprocessing with their significance before mining, Give an example for each process.	7 Marks	L3	CO2	PO4
	b)	Distinguish between data generalization and characterizations.	7 Marks	L1	CO2	PO1

UNIT-III

5.		Find all frequent item sets for the given training set using Apriori and FP growth respectively. Compare the efficiency of the two mining processes.	14 Marks	L3	CO3	PO5

TID	ITEMS BROUGHT
T100	{M , O, N , K , E , Y }
T200	{D , O, N, K , E, Y }
T300	{M , A K, E }
T400	{M ,U , C , K ,Y }
T500	{C , O , O ,K , I , E}

(OR)

6.		Explain Linear Regression with a suitable example.	14 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Differentiate AGNES and DIANA hierarchical clustering algorithms.	7 Marks	L1	CO4	PO1
	b)	Explain the K-Means Algorithm with an example. Describe pros cons of K-mean in comparison with K-medoids algorithm.	7 Marks	L3	CO4	PO3
		(OR)				
8.	a)	Explain Density Based method with an Example.	7 Marks	L2	CO4	PO2
	b)	Briefly outline how to compute the dissimilarity between object described by the following types of variables with an example: i) Asymmetric binary variables ii) Normal variables iii) Ratio-scaled variables iv) Numerical (interval-scaled) variables	7 Marks	L1	CO4	PO1

UNIT-V

9.	a)	Classify similarity search methods in time series analysis.	7 Marks	L3	CO5	PO3
	b)	Explain Multimedia mining and its applications.	7 Marks	L2	CO5	PO2
		(OR)				
10.		What is spatial database? Explain the methods of mining spatial databases?	14 Marks	L1	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

WEB TECHNOLOGIES

[Information Technology, Computer Science and Business Systems, Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Design a web page to enroll student details including Name, Id, Address, Mobile No. and e-Mail id.	14 Marks	L2	CO1	PO3
		(OR)				
2.		Design a web page to drag and drop an object on a web browser using a mouse.	14 Marks	L2	CO1	PO3
		UNIT-II				
3.	a)	Explain absolute and relative positioning elements using Z-index property with suitable example.	7 Marks	L1	CO2	PO1
	b)	Describe the Box model in CSS with an example.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Write a Java script to display a given number in words.	7 Marks	L2	CO2	PO3
	b)	Design a webpage with animation effects using JQuery methods.	7 Marks	L3	CO2	PO4
		UNIT-III				
5.		Create signup page using bootstrap responsive classes.	14 Marks	L3	CO3	PO5
		(OR)				
6.		Create a grid system for mobile, tablet and desktop with bootstrap.	14 Marks	L3	CO3	PO3
		UNIT-IV				
7.	a)	Build a PHP code to retrieve variables passed using GET and POST super global variables.	7 Marks	L1	CO4	PO5
	b)	Explain the PHP code embedding procedure into web pages.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Build a PHP Page to read User Name and Favorite Programming language from the html form.	7 Marks	L1	CO4	PO3
	b)	Explain the various methods offered by PHP to output data into browser. Write a PHP code to demonstrate each method.	7 Marks	L1	CO4	PO1
		UNIT-V				
9.		Develop a PHP page that reads user details like name, id, gender, date of birth, address, phone no. and email id and then store the same into MySQL database.	14 Marks	L3	CO5	PO6
		(OR)				
10.		Develop a PHP code to perform the following: i) To fetch employee records from MySQL database. ii) To Update employee salary by 10% whose experience greater than 15 years.	14 Marks	L3	CO6	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ALGORITHM ANALYSIS

[Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Artificial Intelligence & Machine learning) Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write the linear search algorithm and analysis for its best, worst and average case time complexity.	7 Marks	L2	CO1	PO1
	b)	Solve the recurrence relation and compute its complexity. $T(n) = 2T(n/2)+ n, \quad n>1$	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Discuss the various stages of algorithm design and analysis process using flow chart.	7 Marks	L2	CO1	PO1
	b)	Solve the following recurrence relation and find its asymptotic bound on T. i) $T(n) = 1$ if $n=1$ ii) $= 2T(n-1)$ if $n>1$	7 Marks	L3	CO1	PO2

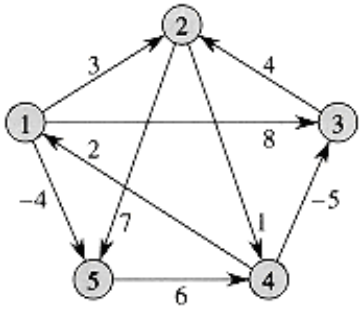
UNIT-II

3.	a)	Illustrate Weighted Union() and collapsing Find() algorithms with an example.	6 Marks	L4	CO2	PO2
	b)	Write iterative version of MaxMin algorithm completely and analyze the number of comparisons it requires against straight MaxMin algorithm.	8 Marks	L4	CO2	PO1
		(OR)				
4.	a)	Explain the General Method of Divide and Conquer in detail.	7 Marks	L1	CO2	PO1
	b)	Compare and contrast the operations of Strassen's Matrix multiplication with conventional matrix multiplication.	7 Marks	L4	CO2	PO2

UNIT-III

5.	a)	Demonstrate Traveling salesperson problem by taking any suitable graph.	7 Marks	L3	CO2	PO1
	b)	Determine the solution for 0/1 knapsack problem using dynamic programming N=3, m=6 profits (p1, p2, p3) = (1,2,5) weights (w1,w2,w3) = (2,3,4).	7 Marks	L3	CO3	PO3
		(OR)				

6.	a)	Calculate shortest distances using all pairs shortest path algorithm.	7 Marks	L3	CO3	PO3



	b)	Describe general method of dynamic programming and give its applications.	7 Marks	L2	CO2	PO2

UNIT-IV

7.	a)	Explain subset-sum problem and discuss the possible solution strategies using backtracking.	7 Marks	L2	CO2	PO2
	b)	Outline an algorithm to the Job sequencing with deadlines.	7 Marks	L2	CO2	PO2

(OR)

8.	a)	Apply Sum of Subsets algorithm and find all possible subsets of w[1:7]={20,18,15,12,10,7,5} and m=35 using backtracking approach.	7 Marks	L3	CO2	PO2
	b)	Explain how the graph coloring problem is solved by using backtracking approach.	7 Marks	L3	CO2	PO2

UNIT-V

9.	a)	Explain the strategy to prove that a problem is NP hard.	7 Marks	L2	CO4	PO1
	b)	Obtain the portion of the State Space tree that will be generated by LCBB for the following cost matrix of Travelling sales person instance.	7 Marks	L2	CO3	PO2

∞	7	3	12	8
3	∞	6	14	9
5	8	∞	6	18
9	3	5	∞	11
18	14	9	8	∞

(OR)

10.	a)	Generate FIFO branch and bound solution for the given knapsack problem, m = 15, n = 3, (P1, P2, P3) = (10, 6, 8) and (w1, w2, w3) = (10, 12, 3).	7 Marks	L3	CO3	PO2
	b)	Briefly explain deterministic and nondeterministic algorithms with example.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

MACHINE LEARNING

[Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Tabulate the List-Then-Eliminate algorithm and explain in detail.	7 Marks	L2	CO1	PO1
	b)	Discuss in detail about inductive bias.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	What if the target concept is not contained in the hypothesis space? Investigate.	7 Marks	L4	CO1	PO1
	b)	Illustrate the List-Then-Eliminate algorithm with an example.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	How to prevent overfitting using validation set? Explain.	7 Marks	L4	CO2	PO2
	b)	Define overfitting and explain the ways to avoid overfitting in decision tree learning.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Explain the classification process in a Support Vector Learning with necessary mathematical equations.	7 Marks	L2	CO2	PO2
	b)	Illustrate the impact of overfitting in a typical application of decision tree learning and explain.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	Tabulate the stochastic gradient descent version of the back propagation algorithm for feed forward network.	7 Marks	L2	CO2	PO1
	b)	Analyze the advantage of adding momentum to the training rule in Back propagation algorithm.	7 Marks	L4	CO2	PO2
		(OR)				
6.	a)	Explain the derivation of the Back propagation weight-tuning rule.	7 Marks	L2	CO2	PO2
	b)	What is an appropriate condition for terminating the weight update loop? Analyze	7 Marks	L4	CO2	PO2
		UNIT-IV				
7.	a)	Explain the bayesian approach for classifying the new instance using Naive Bayes Classifier.	7 Marks	L2	CO3	PO2
	b)	Illustrate the naive baye's classification for a concept learning task.	7 Marks	L2	CO2	PO2
		(OR)				
8.	a)	Explain the Bayesian belief network which represents the joint probability distribution for a set of variables.	7 Marks	L2	CO2	PO2
	b)	Explain the two steps of the EM algorithm and describe its general statement.	7 Marks	L2	CO2	PO2

UNIT-V

9.	a)	Illustrates the operation of the k-NEAREST NEIGHBOR algorithm with an example.	7 Marks	L2	CO2	PO2
	b)	Explain the architecture of the radial basis function network.	7 Marks	L2	CO2	PO2
		(OR)				
10.	a)	Describe the operations of the Q learning algorithm with necessary explanations.	7 Marks	L2	CO2	PO1
	b)	How can an agent learn an optimal policy n* for an arbitrary environment?	7 Marks	L3	CO3	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

ORGANIZATIONAL BEHAVIOUR

[Civil Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Define OB and explain its scope.	7 Marks	L4	CO1	PO1
	b)	Explain the various levels in OB.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	State the features and significance of OB.	6 Marks	L2	CO1	PO2
	b)	What are the emerging issues and challenges of OB?	8 Marks	L3	CO1	PO1
		UNIT-II				
3.	a)	Write a short note dissimilarities in individuals.	7 Marks	L4	CO2	PO1
	b)	Describe some of the major characteristics of personality and its influence on an individual's character.	7 Marks	L2	CO2	PO9
		(OR)				
4.	a)	Write a note on role of brain and mind in Individual Behavior	7 Marks	L1	CO2	PO2
	b)	What are the reasons for individual differences in human beings?	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Illustrate the various stages of group development.	8 Marks	L1	CO3	PO9
	b)	Describe the process of perception.	6 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Define a group? State the classification of groups.	7 Marks	L2	CO3	PO9
	b)	What is inter personal perception?	7 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	What is the process of effective leadership?	7 Marks	L1	CO4	PO1
	b)	Explain the new direction for leadership.	7 Marks	L1	CO4	PO2
		(OR)				
8.	a)	Write about any two leadership styles.	7 Marks	L4	CO4	PO1
	b)	Describe the modern theories of leadership.	7 Marks	L1	CO4	PO1
		UNIT-V				
9.	a)	Explain the process of organizational development.	6 Marks	L2	CO5	PO12
	b)	What are the factors influencing change?	8 Marks	L1	CO5	PO2
		(OR)				
10.	a)	Identify the external factors which influence the organizational change.	7 Marks	L3	CO5	PO1
	b)	Highlight organizational development interventions.	7 Marks	L4	CO5	PO9

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Computer Science and Engineering (IoT), Computer Science and Engineering (Cyber Security), Computer Science and Engineering (CSD)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Explain the significance of business economics in decision-making.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Define elasticity of demand. Explain different types of price elasticity of demand with examples.	14 Marks	L3	CO1	PO2

UNIT-II

3.	Distinguish between: i) Fixed costs Vs Variable costs ii) Urgent costs Vs Postponable costs iii) Avoidable costs Vs Unavoidable costs	14 Marks	L2	CO2	PO2
	(OR)				
4.	From the following information relating to Hi-Tech publishers you are required to find out i) Break-even point in units ii) Margin of Safety iii) Profit. Also calculate the volume of sales to earn a profit of Rs.6,000. Total fixed costs - Rs.4,500 Total Variable costs - Rs.7,500 Total sales - Rs.25,000 Units Sold - 5000 units	14 Marks	L4	CO2	PO2

UNIT-III

5.	What is perfect competition? Describe its features.	14 Marks	L2	CO3	PO2
	(OR)				
6.	Discuss the different methods of pricing followed by companies.	14 Marks	L2	CO3	PO2

UNIT-IV

7.	Write about various types of accounts and their rules governing each account.	14 Marks	L2	CO4	PO1
	(OR)				
8.	Define capital. Explain its significance in detail.	14 Marks	L2	CO4	PO2

UNIT-V

9. From the following trial balance, you are required to prepare a trading account and profit and loss account for the year ended 31-03-2023 and a balance sheet as on that date. 14 Marks L4 CO5 PO11

The closing stock amounted to Rs.14,220

Particulars	Debit (Rs.)	Credit (Rs.)
Debtors	12,000	
Creditors		7,900
Capital		30,000
Drawings	2,900	
Rent and rates	250	
Trade expenses	670	
Purchases	8,640	
Sales		14,290
Returns outwards		280
Return inwards	190	
Carriage inwards	250	
Wages	2,920	
Salaries	1,200	
Stock (April 1st , 2012)	3,100	
Discount received		240
Discount allowed	180	
Bad debts	200	
Plant and machinery	2,510	
Furniture and fittings	1,800	
Cash in hand	500	
Cash at bank	15,400	
Total	52,710	52,710

(OR)

10 Write about the types of ledger that can be made in Tally ERP 9.0. 14 Marks L2 CO5 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

MICROPROCESSORS AND INTERFACING

[Information Technology, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is a timing diagram? Draw the timing diagrams for memory read and memory write machine cycle in minimum mode.	7 Marks	L2	CO1	PO2
	b)	Classify the various Addressing Modes of input/output ports present in 8086 with an example?	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the process of physical address formation in 8086 microprocessor.	7 Marks	L1	CO1	PO1
	b)	Draw and discuss the internal block diagram of 8086 microprocessor.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Develop an 8086 ALP to sort an array of ten bytes in ascending order. Add comments to your program.	7 Marks	L3	CO2	PO1
	b)	Explain about Procedure and Macro with an example.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Differentiate the Maskable interrupt (INTR) and NMI.	7 Marks	L1	CO2	PO2
	b)	Draw and explain each bit in the flag register of 8051.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.		Interface a DAC 0800 to 8086 through 8255 PPI. And also generate different waveforms. i) Square wave ii) Triangular wave iii) Rectangular wave	14 Marks	L3	CO3	PO3
		(OR)				
6.	a)	What are the different modes of operation of 8255 Programmable Peripheral Interface (PPI) and explain each mode in detail.	7 Marks	L3	CO3	PO2
	b)	How and explain the ADC interfacing with 8086 microprocessor.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Write about initialization sequence of 8259 and also write about the control words of 8259.	7 Marks	L1	CO4	PO3
	b)	With a neat sketch explain the architecture of 8279.	7 Marks	L2	CO4	PO2
		(OR)				
8.	a)	With functional block diagram, explain the operation and programming of 8251 USART in detail.	7 Marks	L2	CO4	PO1
	b)	What is the need for DMA? With a neat block diagram explain the working of 8257 DMA controller.	7 Marks	L2	CO4	PO2

UNIT-V

9.	a)	Explain the following Instructions with the help of Syntax and Examples? i) MOVX ii) MOVC iii) XCHD iv) PUSH v) DJNZ	7 Marks	L2	CO5	PO2
	b)	Summarize the steps involved in executing an interrupt in 8051.	7 Marks	L3	CO5	PO2
		(OR)				
10.	a)	Distinguish between Microprocessor and Microcontrollers with their functionality?	7 Marks	L2	CO5	PO1
	b)	What is a timer? Explain the working of timer/counter's in 8051.	7 Marks	L2	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

ARTIFICIAL INTELLIGENCE

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Write about the foundations of AI.	7 Marks	L2	CO1	PO1
	b)	Explain about the nature of environments.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Differentiate between goal-based agent and utility-based agent.	7 Marks	L3	CO1	PO1
	b)	Discuss the characteristics of AI.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	List the five different components in which a problem can be defined and explain them.	7 Marks	L1	CO2	PO1
	b)	Differentiate between breadth first search and depth first search.	7 Marks	L3	CO2	PO1
		(OR)				
4.	a)	Write short noted on bidirectional search and Iterative deepening depth-first search.	7 Marks	L2	CO2	PO1
	b)	Explain about A* search algorithm.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Write about hill climbing search algorithm.	7 Marks	L2	CO2	PO2
	b)	Illustrate all the possible stated of the vacuum world.	7 Marks	L3	CO2	PO3
		(OR)				
6.	a)	Discuss about the min-max search algorithm.	7 Marks	L2	CO3	PO1
	b)	Explain the importance of using Monte Carlo tree search in games to provide optimal decisions.	7 Marks	L3	CO3	PO1
		UNIT-IV				
7.	a)	Discuss about the network as a representation of the joint probability distribution.	7 Marks	L2	CO4	PO1
	b)	Write about the inference in temporal models.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Write short notes on time and uncertainty.	7 Marks	L2	CO4	PO1
	b)	Explain the benefits of using Kalman filter in real time applications to solve linear problems.	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Distinguish between localization and mapping in robot perception.	7 Marks	L3	CO5	PO6
	b)	Write about safety in artificial intelligence.	7 Marks	L2	CO5	PO8
		(OR)				
10.	a)	Write about security and privacy in AI.	7 Marks	L2	CO5	PO8
	b)	Explain about the limitations of AI.	7 Marks	L2	CO5	PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

PRINCIPLES OF COMMUNICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	With neat sketches, explain how DSB-SC waves are generated using Balanced modulator and Ring modulator.	7 Marks	L4	CO1	PO1
	b)	Explain the product demodulation SSB-SC.ith neat sketches.	7 Marks	L4	CO1	PO1
		(OR)				
2.	a)	Derive the expression for single tone Amplitude modulated wave.	7 Marks	L3	CO1	PO1
	b)	Derive the expression for narrow band FM.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Explain the generation and detection of PPM signal.	7 Marks	L3	CO2	PO3
	b)	Draw and explain PAM modulator and transmission of PAM signal Explain the generation and detection of PPM signal.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Explain frequency division multiplexing.	7 Marks	L3	CO2	PO1
	b)	What is time division multiplexing? Explain the need of guard band and commutator-decommutator in Time division Multiplexing.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	With suitable block diagram explain the principle of operation of a PCM system.	7 Marks	L4	CO3	PO2
	b)	Explain the need for quantization and its effects in digital transmission.	7 Marks	L4	CO3	PO2
		(OR)				
6.	a)	Compare DM and ADM in detail.	7 Marks	L4	CO3	PO3
	b)	Write in detail about companding.	7 Marks	L4	CO3	PO3
		UNIT-IV				
7.	a)	Design a DPSK modulator circuit and explain the operation with suitable waveforms.	7 Marks	L2	CO4	PO2
	b)	Briefly explain ASK, FSK and PSK with relevant waveforms.	7 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Derive the expression for error probability of Coherent FSK system.	7 Marks	L3	CO4	PO3
	b)	Explain QPSK in detail with relevant diagrams.	7 Marks	L4	CO4	PO4
		UNIT-V				
9.	a)	Define information, entropy and rate of information.	7 Marks	L3	CO5	PO2
	b)	State and explain convolutional codes with suitable example.	7 Marks	L3	CO5	PO2
		(OR)				
10.	a)	Draw the code tree, code trellis, and state diagram for a rate ½ convolutional code generated by $g_1(x) = 1 + x + x^2$ and $g_2(x) = 1 + x^2$	7 Marks	L4	CO5	PO2
	b)	Determine the generator polynomial g(x) for a (7, 4) cyclic code, and find code vectors for the following data vectors 1100, 1010,	7 Marks	L3	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

COMPUTER NETWORKS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss functionalities of different layers of OSI reference model.	7 Marks	L2	CO1	PO1
	b)	Describe any two Guided transmission media options.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain design issues for the layers in computer network.	7 Marks	L2	CO1	PO1
	b)	Classify internet, intranet and extranet with applications	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	What are the different types of error detection methods? Explain the CRC error detection technique using generator polynomial x4+x3+1 and data 11100011.	7 Marks	L4	CO2	PO2
	b)	With an example, explain Go-Back N protocol.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	What is meant by Error in data link layer? Discuss about Error Detection and Correction in Data link Layer.	7 Marks	L4	CO2	PO1
	b)	Explain ALOHA in detail.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Describe the problem and solutions associated with Distance vector routing.	7 Marks	L2	CO3	PO4
	b)	Compare connection oriented and connection less services provided by the network layer.	7 Marks	L4	CO3	PO8
		(OR)				
6.	a)	Explain the Hierarchical Routing algorithm and discuss its advantages and limitations.	7 Marks	L2	CO3	PO2
	b)	Discuss the different Congestion control policies.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Draw and explain TCP header.	7 Marks	L3	CO4	PO1
	b)	What is UDP? Discuss its packet format and applications	7 Marks	L4	CO4	PO1
		(OR)				
8.	a)	Explain congestion control in TCP	7 Marks	L2	CO4	PO2
	b)	Comparison between TCP and UDP	7 Marks	L4	CO4	PO1
		UNIT-V				
9.	a)	What is DNS? What are the services provided by DNS and explain how it works.	7 Marks	L4	CO5	PO6
	b)	Explain briefly about the Architecture of WWW.	7 Marks	L2	CO5	PO6
		(OR)				
10.	a)	What is electronic mail? Describe in brief about different agents involved in sending and receiving e-mail.	7 Marks	L4	CO5	PO6
	b)	Explain the purpose of FTP and BOOTP protocols.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

CYBER SECURITY

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss classifications of cyber crime.	7 Marks	L4	CO1	PO1
	b)	Discuss the legal perspectives of cyber crime.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Illustrate about Ethical dimensions of cyber crime?	7 Marks	L2	CO1	PO2
	b)	Discuss the global perspective on cyber crime.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain how criminals plan the attacks.	7 Marks	L2	CO2	PO1
	b)	Categorize the various types of Stalkers with a case study.	7 Marks	L4	CO2	PO2
		(OR)				
4.	a)	Define Social Engineering. Describe the classification of Social Engineering with examples.	7 Marks	L2	CO2	PO2
	b)	Discuss in detail about the Botnets.	7 Marks	L4	CO2	PO1
		UNIT-III				
5.	a)	Explain about Credit Card frauds in mobile and wireless computing era.	7 Marks	L2	CO3	PO1
	b)	Demonstrate the impact of this proliferation on the way individuals and organizations conduct business and communicate.	7 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Explain the Security Challenges Posed by Mobile Devices.	7 Marks	L3	CO3	PO2
	b)	Illustrate the attacks on wireless networks.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Write about Proxy Servers and Anonymizers.	7 Marks	L2	CO4	PO1
	b)	Write about Keyloggers and Spywares.	7 Marks	L3	CO4	PO1
		(OR)				
8.	a)	Differentiate between computer Virus and Worms with two examples each.	7 Marks	L3	CO4	PO5
	b)	What is buffer overflow? Discuss how to minimize Buffer Overflow.	7 Marks	L2	CO5	PO1
		UNIT-V				
9.	a)	Discuss in detail about Cyber forensics and digital evidence.	7 Marks	L2	CO6	PO1
	b)	Illustrate the concept of forensic analysis of e-mail.	7 Marks	L2	CO6	PO2
		(OR)				
10.	a)	Demonstrate how Maharashtra Government's official website hacked.	7 Marks	L3	CO6	PO4
	b)	Demonstrate any two Online scams with an example.	7 Marks	L3	CO6	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

DATA WAREHOUSING AND DATA MINING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe the OLAP operations in multi dimensional model.	7 Marks	L2	CO1	PO1
	b)	Illustrate the Star Schema and Snow flake schema with neat sketch.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Write short note on Indexing OLAP Data.	7 Marks	L2	CO1	PO1
	b)	Explain the Multi tiered architecture with neat sketch.	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Describe the major issues in Data Mining.	7 Marks	L2	CO2	PO1
	b)	Illustrate the Data Reduction in detail.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Describe the steps in Data pre processing in detail.	7 Marks	L2	CO2	PO2
	b)	Write short note on Data Integration.	7 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Find the frequent item sets for the following data using Apriori algorithm with minimum support count = 3 and minimum confidence =60%.	9 Marks	L4	CO3	PO2

TID	Items bought
T100	{M,O,N,K,E,Y }
T200	{D,O,N,K,E,Y}
T300	{M,A,K,E}
T400	{M,U,C,K,Y}
T500	{C,O,O,K,I,E}

	b)	Write short note on Correlation Analysis.	5 Marks	L2	CO3	PO3
		(OR)				
6.	a)	Discuss the decision tree induction with suitable example.	7 Marks	L2	CO3	PO2
	b)	Illustrate the Linear Regression in detail.	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Explain in detail the DB-SCAN Clustering method.	7 Marks	L2	CO4	PO2
	b)	Describe the Outlier analysis in detail.	7 Marks	L2	CO4	PO2
		(OR)				
8.	a)	What is Cluster analysis? Explain K-Medoids algorithm with an example.	9 Marks	L2	CO4	PO2
	b)	Distinguish between Clustering and Classification.	5 Marks	L2	CO4	PO2

UNIT-V

9.	a)	Describe the Data mining applications.	7 Marks	L2	CO5	PO2
	b)	Write short note on Multimedia Mining.	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Demonstrate various methodologies of Data mining with suitable examples.	7 Marks	L2	CO5	PO3
	b)	Write short note on Mining Sequence Data.	7 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

WEB TECHNOLOGIES

[Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence & Machine learning), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain different form elements available in HTML?	7 Marks	L2	CO1	PO1
	b)	Identify the elements required to book a movie ticket and design a web page with all the requirements?	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	Illustrate how to use links in HTML?	7 Marks	L3	CO1	PO3
	b)	Explain about features of HTML5?	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain any Two JavaScript events with an example?	7 Marks	L3	CO2	PO1
	b)	Write JavaScript code to illustrate the methods to getElementById() and getElementByTagName().	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Explain different types of CSS with example?	7 Marks	L3	CO2	PO1
	b)	Explain about DOM tree traversing?	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Define Bootstrap? Give the basic HTML structure for Bootstrap?	7 Marks	L2	CO3	PO6
	b)	Describe the packaged components in Bootstrap?	7 Marks	L2	CO3	PO6
		(OR)				
6.	a)	How to create responsive layouts using Bootstrap CSS? Explain?	7 Marks	L3	CO6	PO6
	b)	How to construct data entry forms in Bootstrap? Explain with an example?	7 Marks	L3	CO3	PO6
		UNIT-IV				
7.	a)	Discuss about the structure of PHP?	7 Marks	L2	CO4	PO1
	b)	Explain any seven array methods in PHP with your own examples?	7 Marks	L3	CO4	PO2
		(OR)				
8.	a)	How strings are declared in PHP? Explain string functions?	7 Marks	L3	CO4	PO1
	b)	Write a short note on object oriented PHP?	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Explain with an example how the validation of form is done using PHP?	7 Marks	L3	CO5	PO3
	b)	Discuss the basic operations on tables in MYSQL with example?	7 Marks	L3	CO5	PO1
		(OR)				
10.	a)	Describe about cookies by demonstrating with an example?	7 Marks	L3	CO5	PO1
	b)	Develop a PHP code to fetch the data from MYSQL table?	7 Marks	L3	CO5	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April– 2024

SOFTWARE TESTING

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss in detail about model for software testing.	7 Marks	L2	CO1	PO1
	b)	Differentiate between static and dynamic testing.	7 Marks	L4	CO1	PO1
		(OR)				
2.	a)	Illustrate Verification of High-Level Design and Low-Level Design.	7 Marks	L3	CO1	PO2
	b)	Discuss in detail about Goals and Psychology of Testing.	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Explain the need of white box testing with a suitable example.	7 Marks	L4	CO2	PO1
	b)	Discuss the following: i) Boundary Value Analysis ii) Equivalence Class Testing	7 Marks	L2	CO2	PO1
		(OR)				

4.	a)	Apply basis path testing for the given example.
		int main()
		{
		int n, index;
		cout << "Enter a number: " << endl;
		cin >> n;
		index = 2;
		while (index <= n - 1) {
		if (n % index == 0) {
		cout << "It is not a prime number" <<
		endl;
		break;
		}
		index++;
		}
		if (index == n)
		cout << "It is a prime number" << endl;
		} // end main
			7 Marks	L3	CO2	PO2

	b)	Discuss different strategies used in dynamic data flow testing.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Discuss in detail about test administration and estimation.	7 Marks	L2	CO3	PO1
	b)	Illustrate the templates for test cases and test script with a suitable example.	7 Marks	L3	CO3	PO1
		(OR)				
6.	a)	Differentiate quality plan and test plan.	7 Marks	L4	CO3	PO2
	b)	Discuss in detail about test process monitoring.	7 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Identify the different parameters required for evaluating regression test selection techniques.	7 Marks	L4	CO5	PO2
	b)	Discuss in detail about classification of Software Metrics.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Discuss about Size Metrics in software quality.	7 Marks	L2	CO4	PO1
	b)	Discuss in detail about different regression test problems.	7 Marks	L2	CO5	PO1

UNIT-V

9.	a)	Explain about Detailed Test Design.	7 Marks	L4	CO6	PO1
	b)	Discuss the tools required for test execution and evaluation in software testing.	7 Marks	L2	CO6	PO2
		(OR)				
10.	a)	Illustrate some of the Commercial Testing Tools available.	7 Marks	L3	CO6	PO1
	b)	Discuss about Test specifications.	7 Marks	L2	CO6	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

IRRIGATION ENGINEERING AND HYDRAULIC STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Define Duty and delta and derive the relationship between them.	7 Marks	L4	CO1	PO1
	b)	Find the capacity of soil for the following data:	7 Marks	L4	CO1	PO1
		Root zone depth = 2m				PO2
		Existing water content = 5%				PO6
		Dry density of soil = 1.5gms/cm^3				PO7
		Water applied to the soil = 500m^3				
		Water loss due to evaporation = 10%				
		Area of plot = 1000m^2				
		(OR)				
2.	a)	Explain the factors effecting duty.	7 Marks	L2	CO1	PO1
	b)	Explain the Irrigation management with a case study.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain with the help of a diagram, various component parts along with their functions of a diversion head work.	7 Marks	L4	CO2	PO1 PO2
	b)	Briefly explain the Bligh's theory.	7 Marks	L4	CO2	**PO5**
		(OR)				
4.	a)	Explain design principles of a Barrage.	7 Marks	L2	CO2	**PO5**
	b)	Explain various types diversion head works with neat sketches.	7 Marks	L4	CO2	PO1
		UNIT-III				
5.	a)	What do you understand by the elementary profile of a gravity dam .Derive the expressions for determining base width based on i) Stress criterion ii) sliding criterion.	7 Marks	L4	CO3	PO1
	b)	Solve and check the stability of 100m high concrete gravity dam of trapezoidal in cross section has upstream face vertical, crest width 6m ,base width 75m and free board equal to 4m . Neglect all other forces except hydrostatic water pressure, uplift pressure and self weight. There is no drainage gallery and no tail water .Also find principal and shear stresses at toe and heel of the dam. The specific weight of concrete is 2.4 t/m^3 coefficient of friction μ = 0.7 and shear strength of concrete q= 14 kg (f)/cm^2.	7 Marks	L4	CO3	PO1 PO2 PO3 PO4
		(OR)				
6.	a)	Briefly explain causes of failure of earth dams and seepage control measures.	7 Marks	L4	CO3	PO1
	b)	Explain the energy dissipation below Spillways for relative positions of jump height curve and tail water curve.	7 Marks	L4	CO3	PO1

UNIT-IV

7.	a)	Design an irrigation channel by using Kennedy's theory to carry a discharge of 4000 cumecs. Assume manning's N = 0.0225, m = 1.0 and B/D = 5.5. Find the longitudinal slope.	7 Marks	L6	CO4	PO1
	b)	Explain the canal regulation works.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	A channel section has to be designed for the fallowing data: Longitudinal slope S = 1/5800, Silt factor f= 1.0, Side slopes = ½: 1. Find the maximum discharge and section of the channel.	7 Marks	L4	CO4	PO1 PO2
	b)	Explain the design principles of Sarada type fall.	7 Marks	L4	CO4	PO1

UNIT-V

9.	a)	Explain the various types of cross drainage works with neat sketches.	7 Marks	L4	CO5	PO1
	b)	Explain various types of river training works.	7 Marks	L4	CO5	PO1
		(OR)				
10.	a)	Explain the various types of aqueducts with neat sketches.	6 Marks	L2	CO5	PO1
	b)	Design a cross drainage work to suit the following hydraulic data.	8 Marks	L6	CO5	PO1 PO2 PO3 PO4

Canal:
Discharge= 20 cumecs.
Bed width = 15m
Full supply level= +67.00
Full supply depth= 2m
Bed level= +64.75
F S L = +67.50
Velocity= 0.49m/sec
Average bed level of drain= +63.00
Left bank top width= 4m
Right bank top width= 2m
Top bank level= 68.50

Drain:
Catchment Area= 3.8 sqkm
Flood discharge= 44cumecs.
M F L = +64.00
Soil is hard gravel below +62.00

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

STEEL STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Enumerate the mechanical properties is structural steel.	7 Marks	L1	CO1	PO1 PO2
	b)	Discuss the stress-Strain curve for structural steel and indicate the salient points.	7 Marks	L1	CO1	PO1 PO2
		(OR)				
2.	a)	Recommend the minimum pitch and maximum pitch as IS 800- 2007.	7 Marks	L1	CO1	PO1 PO2
	b)	A tie member of a roof truss consists of 2 ISA 90 x 60 x 10 mm is connected to a 12 mm thick gusset plate on either side and carries a factored pull of 400kN. Design suitable welded connection.	7 Marks	L2	CO1	PO1 PO2 PO6 PO7 PO10
		UNIT-II				
3.		Analyze and Design a laterally supported beam of effective span 5 m for the following data. Grade of steel: Fe 410 Factored maximum B.M. = 180 kN-m Factored maximum S. F. = 220 kN.	14 Marks	L4	CO2	PO1 PO2 PO5 PO6 PO10
		(OR)				
4.		A simply supported beam of span 3.25m consists of rolled steel section ISLB 325 @ 422.8 N/m. Determine the design bending strength of the beam, if the beam is laterally unsupported.	14 Marks	L4	CO2	PO1 PO2 PO8 PO10
		UNIT-III				
5.	a)	A single angle 125mm x 75mm x 10mm is used as a tension member of a truss. The longer leg of the angle is connected to a gusset plate with 5 bolts of 20mm diameter. Determine the net effective area of the angle. Alternatively if the ends of the longer leg of the angle are welded to the gusset plate, determine the net effective area of the angle.	7 Marks	L2	CO3	PO1 PO2 PO10
	b)	A built up column consists of ISHB 400 @ 77.4 kg/m with one 300 mm x 12 mm flange plate on each side. The column carries an axial load of 2800 kN. Design a gusseted base if the column is supported on concrete pedestal with a bearing pressure of 7N/ mm^2.	7 Marks	L4	CO3	PO1 PO2 PO3 PO4 PO10

(OR)

6.		Design as bridge truss diagonal subjected to a factored tensile load of 380 kN. The length of the diagonal is 3.5m. The tension member is connected to a gusset plate of 16mm thick with one line of 20 mm diameter bolts of grade 8.8.	14 Marks	L4	CO3	PO1 PO2 PO3 PO4 PO8 PO10

UNIT-IV

7.	a)	Illustrate the lateral systems that are used in compound columns.	7 Marks	L2	CO4	PO1 PO10
	b)	Discuss about column splices and its types.	7 Marks	L2	CO4	PO1 PO8 PO10

(OR)

8.	a)	Explain the step by step procedure for finding the load carrying capacity of a compression member.	7 Marks	L2	CO4	PO1 PO2 PO3 PO10
	b)	A column of ISMB 400 is subjected to an axial force of 750kN. Analyze and design suitable base plate. Assume necessary data required.	7 Marks	L2	CO4	PO3 PO8 PO10

UNIT-V

9.	a)	Explain in detail about different types of trusses.	7 Marks	L3	CO5	PO1 PO2 PO3 PO4 PO10
	b)	Write down the procedure of load patterns and combination of load in Purlins.	7 Marks	L3	CO5	PO1 PO2 PO4 PO10

(OR)

10.	a)	A roof truss- shed is to be built Jodhpur city area for an industrial use. Determine the basic wind pressure .The use of shed 18 m x 30 m.	7 Marks	L2	CO5	PO2
	b)	State advantages & disadvantages of tubular sections in steel structure.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April– 2024

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	State the Role of ground improvement in foundation engineering.	7 Marks	L2	CO1	PO1
	b)	Discuss in short Mechanical and Hydraulic Methods of ground improvement.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Discuss various Geotechnical problems associated with alluvial, laterite and black cotton soils.	7 Marks	L2	CO1	PO1 PO2
	b)	State how a suitable ground improvement technique is selected based on soil condition.	7 Marks	L2	CO1	PO1 PO2
		UNIT-II				
3.	a)	Explain single and multistage well point system of dewatering.	7 Marks	L2	CO2	PO1
	b)	How are sumps and ditches used in dewatering?	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Explain the open sumps and vacuum well dewatering systems.	7 Marks	L1	CO2	PO1
	b)	What are the filter requirements of a filler material around the drains?	7 Marks	L1	CO2	PO1
		UNIT-III				
5.	a)	Describe the vibroflotation technique of densifying granular soil.	7 Marks	L1	CO3	PO1
	b)	State the need for densification of granular soils.	7 Marks	L4	CO3	PO1
		(OR)				
6.	a)	Explain in detail the advantage of using vertical drains along with preloading?	7 Marks	L2	CO3	PO1
	b)	What is a stone column? What are the methods of installing a stone column?	7 Marks	L1	CO3	PO1 PO2
		UNIT-IV				
7.	a)	Explain the principle and application of soil-lime stabilization.	7 Marks	L2	CO4	PO1
	b)	Explain in detail with the help of a neat sketch the different stages of grouting.	7 Marks	L1	CO4	PO1 PO2
		(OR)				
8.	a)	Discuss cement and bitumen stabilization along with its merits and demerits.	7 Marks	L2	CO4	PO1 PO2
	b)	Explain in detail mechanical stabilization of soils.	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Describe with illustrations the differences between geotextiles and geomembranes.	7 Marks	L4	CO5	PO1 PO2
	b)	What are the practical applications of geotextiles?	7 Marks	L4	CO5	PO1
		(OR)				
10.	a)	What do you understand by reinforced earth? Enumerate various applications of reinforced earth.	7 Marks	L2	CO5	PO1 PO7
	b)	Explain the design principles of reinforced earth walls.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

REHABILITATION AND RETROFITTING OF STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write a short note on Retrofitting and Rehabilitation.	7 Marks	L4	CO1	PO1 PO2 PO5
	b)	Discuss the classification of various causes for deterioration of concrete structures.	7 Marks	L2	CO1	PO1 PO2 PO6 PO7
		(OR)				
2.		Explain the evaluation of seismic induced damage on concrete structural elements.	14 Marks	L4	CO1	PO1 PO2 PO6 PO7 PO8

UNIT-II

3.		Suggest a method to evaluate the strength of historical building and state and explain any four methods of concrete testing in brief.	14 Marks	L4	CO2	PO1 PO2 PO4 PO5
		(OR)				
4.	a)	Define the damage assessment or condition survey.	7 Marks	L2	CO2	PO1 PO2 PO4 PO5
	b)	Explain the different types of cracks in concrete structure.	7 Marks	L4	CO2	PO1 PO2 PO4

UNIT-III

5.		Describe the procedure of fusion bonded epoxy coating of rebars with a simple sketch. Also give the advantages and disadvantages.	14 Marks	L4	CO3	PO1 PO2 PO5
		(OR)				
6.	a)	Suggest any two materials necessary to repair i) Concrete surface protection ii) Dampness of RCC roof slab	7 Marks	L2	CO3	PO1 PO2 PO4 PO5
	b)	Discuss the factors on which the selection of materials for repair and rehabilitation depends on.	7 Marks	L4	CO3	PO1 PO2 PO4

UNIT-IV

7.	a)	Compare and contrast the jacking technique and external bonding technique with a neat sketch.	7 Marks	L4	CO4	PO1 PO2 PO5 PO6
	b)	Suggest the repair technique for shoring and underpinning in detail with a neat sketch.	7 Marks	L2	CO4	PO1 PO2 PO5 PO6
		(OR)				
8.		Explain with necessary sketch the externally bonding method of retrofitting.	14 Marks	L4	CO4	PO1 PO2 PO4 PO5

UNIT-V

9.	a)	Discuss various methods for structural strengthening in case of earthquake damage structures.	7 Marks	L4	CO5	PO1 PO2 PO4 PO5
	b)	Discuss the failure modes of the building.	7 Marks	L2	CO5	PO1 PO2 PO4
		(OR)				
10.		Compare and contrast any two retrofitting strategies for RC members considering with global level and local level retrofitting of structures.	14 Marks	L4	CO5	PO1 PO2 PO5 PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

SOLID AND HAZARDOUS WASTE MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write a detail note on sources and type of solid waste.	7 Marks	L2	CO1	PO1
	b)	Discuss the adverse health and environmental impacts due to improper handling of solid waste.	7 Marks	L2	CO1	PO1 PO2 PO6 PO7
		(OR)				
2.	a)	Discuss the methods of sampling and characterization of solid waste.	7 Marks	L2	CO1	PO1 PO6 PO7
	b)	Investigate the importance of public awareness in source reduction and waste minimization.	7 Marks	L4	CO1	PO1 PO6 PO8 PO12

UNIT-II

3.	a)	Discuss the principles of solid waste management.	7 Marks	L2	CO2	PO1 PO2 PO4
	b)	Compare the operational sequence and maintenance of Stationary and hauled container system.	7 Marks	L4	CO2	PO1 PO2 PO10
		(OR)				
4.	a)	Describe the safety and health issues associated with shredding and compaction processes.	7 Marks	L2	CO2	PO1 PO2 PO6
	b)	"Segregation of solid wastes at sources is the key to waste management" Justify.	7 Marks	L4	CO2	PO1 PO2 PO4 PO6 PO7

UNIT-III

5.	a)	Explain the factors affecting the selection of location for transfer station.	7 Marks	L2	CO3	PO1
	b)	How to optimize collection routes in transportation of municipal solid waste?	7 Marks	L2	CO3	PO1 PO2 PO4
		(OR)				
6.	a)	Explain about the operation and maintenance of vehicles used for collection and transportation of municipal solid waste?	7 Marks	L2	CO3	PO1
	b)	Identify the activities responsible for successful implementation of collection system.	7 Marks	L4	CO3	PO1 PO2

						PO4

UNIT-IV

7.	a)	Explain and describe the aerobic as well as the anaerobic methods of composting of the organic solid wastes of a society, giving details of the digestion process of each method and their environmental impacts?	7 Marks	L2	CO4	PO1 PO2 PO5 PO6 PO7
	b)	What is pyrolysis? With a neat sketch, explain the process of pyrolysis.	7 Marks	L2	CO4	PO1 PO2 PO5 PO6 PO7

(OR)

8.	a)	Draw a neat sketch and explain the filling process adopted in sanitary land filling practices.	7 Marks	L2	CO5	PO1 PO2 PO5 PO6 PO7
	b)	Identify the adverse effects of a landfill leachate and list appropriate control measures.	7 Marks	L2	CO5	PO1 PO2 PO5 PO6 PO7

UNIT-V

9.	a)	Define hazardous waste. Discuss the various sources of hazardous waste.	7 Marks	L2	CO6	PO1
	b)	Describe the various techniques of hazardous waste processing and methods of disposal.	7 Marks	L2	CO6	PO1 PO2 PO6 PO7

(OR)

10.	a)	Examine the importance of recycling of plastic waste considering environmental sustainability.	7 Marks	L4	CO6	PO1 PO2 PO6 PO7
	b)	Discuss in detail the effect of E-waste on the environment.	7 Marks	L2	CO6	PO1 PO2 PO5 PO7

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

FIRE ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss about the toxicity of products of combustion for fire safety.	7 Marks	L2	CO1	PO1 PO6 PO7
	b)	Describe the process of combustion and distinguish between flaming and smoldering combustion.	7 Marks	L2	CO1	PO1
		(OR)				
2.		Write short notes on: i) Auto-ignition ii) Boiling liquid expanding iii) vapour explosion	14 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain the principle of fire protection arrangement.	7 Marks	L2	CO2	PO1
	b)	Discuss the sources of ignition.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Explain the different types of firefighting installation in detail.	7 Marks	L2	CO2	PO1 PO2 PO5 PO6 PO7
	b)	Write short note on the following: i) selection of the fire extinguishing device. ii) protective device for fire due to lighting.	7 Marks	L2	CO2	PO1 PO2 PO5 PO6 PO7
		UNIT-III				
5.	a)	Discuss the active and passive fire protection systems in industries.	7 Marks	L2	CO3	PO1 PO2 PO5 PO6 PO7
	b)	What types of protective measure should be followed to lay out the hazardous pipe line in industry?	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Discuss the features, characteristics, arrangement and operation of CO_2 installation and foam system.	7 Marks	L2	CO3	PO1 PO2 PO4
	b)	Explain the Halon system and its needs for industrial building.	7 Marks	L2	CO3	PO1 PO2 PO5 PO6

						PO7

UNIT-IV

7.	a)	How will you classify the building according to the occupancy?	7 Marks	L2	CO4	PO1
	b)	Which types of planning parameters must be followed to construct the fire prevention building?	7 Marks	L2	CO4	PO1 PO2 PO4 PO6
		(OR)				
8.	a)	Design the following part of the building as per NBC i) Horizontal exit ii) Internal stair case	7 Marks	L4	CO4	PO1 PO2 PO3 PO4 PO6
	b)	How will you determine the number and width of exit as per NBC for different occupancy?	7 Marks	L2	CO4	PO1 PO2 PO4 PO6

UNIT-V

9.	a)	Explain the principle of fire explosion protecting arrangement.	7 Marks	L2	CO5	PO1
	b)	Write in detail about the Flame Arrestors, Isolation and Venting.	7 Marks	L2	CO5	PO1 PO6 PO7
		(OR)				
10.	a)	As an engineer, how would you describe explosion protection systems in industry and residential building?	7 Marks	L2	CO5	PO1 PO2 PO4 PO5 PO6 PO7 PO10
	b)	Discuss the fire suppression systems.	7 Marks	L2	CO5	PO1 PO6 PO7

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

SMART MATERIALS AND STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Explain the functions of various sensing systems and actuation systems in smart structures.	14 Marks	L4	CO1	PO1 PO2 PO4 PO5 PO6 PO7
		(OR)				
2.	a)	How will you use the smart system and why you need the smart system?	7 Marks	L4	CO1	PO1 PO2 PO5
	b)	Explain about the actuation systems and its types.	7 Marks	L2	CO1	PO1 PO2
		UNIT-II				
3.		Describe transducers and rosettes. Compare the pressure transducers and strain rosettes?	14 Marks	L4	CO2	PO1 PO2 PO5
		(OR)				
4.		What are the different types of strain gauges in smart structure? Explain any two of them with simple sketches.	14 Marks	L2	CO2	PO1 PO2
		UNIT-III				
5.	a)	Suggest some smart technology for sustainable building? Assume yourself as a maintenance engineer.	7 Marks	L4	CO3	PO1 PO2 PO5 PO6
	b)	How will you measure the strain using piezo electric strain gauge? Explain with a neat sketch	7 Marks	L2	CO3	PO1 PO2 PO6 PO7
		(OR)				
6.		Explain: i) passive sensory smart structure ii) active sensing and reactive smart structure.	14 Marks	L4	CO3	PO1 PO2 PO5
		UNIT-IV				
7.	a)	Explain the phenomenon of piezo electric effect and discuss its applications.	7 Marks	L4	CO4	PO1 PO2 PO5
	b)	Compare shape memory alloys and electro rheological fluids.	7 Marks	L2	CO4	PO1 PO2

(OR)

8.		What are the different actuator materials? Explain reactive actuator based smart structures.	14 Marks	L4	CO4	PO1 PO2 PO5

UNIT-V

9.	a)	Explain the representation of Discrete Time Signals.	7 Marks	L4	CO5	PO1 PO2
	b)	Compare the various types of Controller Operation.	7 Marks	L2	CO5	PO1 PO2

(OR)

10.		What is an optimized control algorithm? How does it help to perform the required functions after sensing changes?	14 Marks	L4	CO5	PO1 PO2 PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

POWER ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Briefly explain the two-transistor analogy of SCR, derive the expression for the anode current and state the factors that are affect the gate current.	7 Marks	L2	CO1	PO1
	b)	Briefly explain the switching characteristics of power diode.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Briefly explain dv/dt and di/dt protection.	7 Marks	L3	CO1	PO2
	b)	Explain the static V-I characteristics of SCR	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	Explain the operation of single phase full controlled rectifier with RL load for discontinuous conduction mode. Derive the expression for the average voltage, rms voltage.	7 Marks	L3	CO1	PO4
	b)	A single phase full controlled converter is operating from a 230V, 50Hz AC supply. The load resistance is 100Ω. If the average output voltage is 15% of the maximum possible output voltage. Calculate the a) firing angle b) average and RMS output voltage. C) average and RMS output current.	7 Marks	L3	CO1	PO4
		(OR)				
4.	a)	Explain the operation of three phase full controlled rectifier with R load.	7 Marks	L2	CO1	PO2
	b)	Explain the operation of single-phase half-controlled rectifier with RL load.	7 Marks	L2	CO1	PO2
		UNIT-III				
5.	a)	For step up chopper the DC source voltage is 110V, load resistance is 20Ω. The chopper is operated at duty ratio of 0.6. calculate i) Average and rms values of output voltage ii) Chopper efficiency.	7 Marks	L4	CO2	PO4
	b)	Briefly explain duty ratio control, constant frequency control for DC-DC converters.	7 Marks	L3	CO2	PO4
		(OR)				
6.	a)	Explain the principle of operation of the step-down chopper. What are the applications of it?	7 Marks	L3	CO2	PO5
	b)	Define forced commutation. Briefly explain the class-E commutation method.	7 Marks	L2	CO2	PO4
		UNIT-IV				
7.	a)	Explain the operation of single-phase dual converter with R load circulating modes of operation.	7 Marks	L2	CO3	PO4
	b)	Explain the operation of single-phase AC voltage controller with RL load. Derive the expression for RMS load voltage.	7 Marks	L2	CO3	PO4

(OR)

8.	a)	A single-phase full wave ac voltage controller feeds a resistive load of 20Ω with an input voltage of 230V, 50Hz. if the firing angle for both the SCRs is 45 degrees calculate the rms output voltage, load power and input power factor.	7 Marks	L3	CO3	PO5
	b)	Explain the operation of single-phase midpoint step down cycloconverter for R load.	7 Marks	L2	CO3	PO4

UNIT-V

9.		Explain the operation of three phase voltage source inverter for 180-degree mode of operation.	14 Marks	L3	CO4	PO4

(OR)

10.	a)	Explain the operation of single-phase full bridge voltage source inverter employing the sinusoidal PWM technique.	7 Marks	L4	CO4	PO4
	b)	Explain the operation of single-phase half bridge voltage source inverter for RL load.	7 Marks	L4	CO4	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Derive the condition for economical load dispatch among various generating plants by considering transmission losses.	7 Marks	L3	CO1	PO3
	b)	Three plants of total capacity 500MW are scheduled for operation to supply a total system load of 300MW. Evaluate the optimum load scheduling .If the plants have the following incremental Cost characteristics and the limitations $\frac{dc_1}{dp_{g_1}} = 0.12P_{G1} + 30Rs/MWh$ $\frac{dc_2}{dp_{g2}} = 0.2P_{G2} + 40.0Rs/MWh$ $\frac{dc_3}{dp_{g3}} = 0.15P_{G3} + 10Rs/MWh$ $30 \le P_{G1} \le 150$ $20 \le P_{G2} \le 100$ $50 \le P_{G3} \le 250$	7 Marks	L3	CO1	PO2

(OR)

2.	a)	Derive transmission line loss equation in terms of B-Coefficients	7 Marks	L3	CO1	PO3
	b)	A constant load of 300MW is supplied two 200MW generators 1 and 2 whose incremental fuel costs in Rs/MW are given below $\frac{dF_1}{dP_1} = 0.1P_1 + 20$ $\frac{dF_2}{dP_2} = 0.12p_2 + 15$ Determine: i) The most economic division of load between the generators ii) The saving per annum thus obtained compared to equal load Sharing between the generators.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Explain short term hydro scheduling by γ-λ iteration method.	7 Marks	L2	CO2	PO1
	b)	Explain short term hydro-thermal scheduling by Lagrange method.	7 Marks	L2	CO2	PO1

(OR)

4.		Describe the hydro-thermal economic load scheduling. Derive the necessary equations.	14 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Develop the mathematical model for the forward Dynamic programming algorithm, taking into account the start up costs of the units.	7 Marks	L4	CO3	PO3
	b)	Explain the various constraints in unit commitment problem.	7 Marks	L2	CO3	PO2

(OR)

6.		Draw the flowchart and explain the unit commitment problem using priority list method.	14 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Draw the block representation of a complete DC excitation system and explain its features.	7 Marks	L2	CO4	PO1
	b)	Explain the block diagram representation of IEEE Type 1 excitation system.	7 Marks	L2	CO4	PO1

(OR)

8.	a)	Derive the transfer function of Generator – load model of power system.	7 Marks	L3	CO4	PO3
	b)	Explain the operation of speed governor system to control frequency of generator.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Explain the concept of control area with respect to power system and develop the appropriate block diagram representation of two areas LFC and explain.	7 Marks	L2	CO5	PO3
	b)	Explain tie-line oscillations. What determines the frequency of these oscillations?	7 Marks	L2	CO5	PO1

(OR)

10.	a)	Derive the expression for the change in tie-line power when the loads change in the control areas.	7 Marks	L3	CO5	PO3
	b)	Two areas are connected with a tie line .The characteristics are as follows: Area 1 : R=0.014 ,D=0.75 ,base MVA =600 Area 2 : R=0.01 pu ,D=1 pu ,base MVA =600 A load change of 100 MW occurs in area 1 .What is the new frequency and tie-line flow change .The nominal frequency is 50 Hz	7 Marks	L3	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain in detail breakdown strength of insulating materials.	7 Marks	L2	CO1	PO1
	b)	Explain in detail field distortions by conducting particles.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	What is a surge voltage? What is the difference between a power frequency voltage and a surge voltage? What are the various sources that produce surge voltages?	7 Marks	L2	CO1	PO1
	b)	How do earthing screen and ground wires provide protection against Direct lightning strokes?	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	State Pachen's law and explain Pachen's curve. Derive an expression for minimum 'pd' value of Pachen's curve from first principles.	7 Marks	L2	CO1	PO2
	b)	Explain the phenomena of thermal breakdown in solid dielectrics.	7 Marks	L2	CO1	PO2
		(OR)				
4.	a)	Briefly discuss the intrinsic breakdown in solid insulating materials.	7 Marks	L2	CO1	PO1
	b)	In an experiment for determining the breakdown strength of Transformer the following observations are made. Determine the power law dependence between the gap spacing and the applied voltage of the oil.	7 Marks	L3	CO1	PO4

Gap Spacing(mm)	4	6	10	12
Voltage at Breakdown(kV)	90	140	210	255

UNIT-III

5.	a)	Draw the equivalent circuit of a 3-stage Cascade transformer and determine the expression for short circuit impedance of the transformer. Derive an expression for the short circuit impedance of an n-stage Cascade transformer.	7 Marks	L2	CO2	PO3
	b)	Determine ripple voltage and regulation of a 10 stage Cockroft-Walton type DC voltage multiplier circuit having stage capacitance = 0.01 μF, supply voltage = 100 kV at a frequency of 400 Hz and a load Current = 10 mA.	7 Marks	L3	CO2	PO4
		(OR)				
6.	a)	Draw and explain the operation of voltage doubler circuit.	7 Marks	L2	CO2	PO2
	b)	Explain the operation of multi stage impulse generator.	7 Marks	L2	CO2	PO2

UNIT-IV

7.	a)	What is Ragowskii Coil? Explain with a neat diagram, its principle of operation for measurement of high impulse currents.	7 Marks	L2	CO3	PO1
	b)	Explain the use of capacitance voltage transformer used for high voltage measurements in power systems.	7 Marks	L2	CO3	PO1
		(OR)				

8.	a)	Explain the working principle of Chubb and Fortescue method for HV AC measurement.	7 Marks	L2	CO3	PO1
	b)	Briefly explain the procedure to be followed while measuring high Voltages by using sphere gaps as per the standards.	7 Marks	L2	CO3	PO1

UNIT-V

9.	a)	Explain the measurement of DC resistivity using loss of charge method.	7 Marks	L2	CO4	PO2
	b)	Describe the partial discharge methods used in high voltage cables.	7 Marks	L2	CO4	PO2

(OR)

10.	a)	With a neat diagram explain one method of measuring RIV of transmission line hardware.	7 Marks	L2	CO4	PO2
	b)	Explain in detail Dielectric loss and loss angle measurements using Schering bridge.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

SPECIAL ELECTRICAL MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	With neat diagrams, explain in detail the constructional details of a permanent magnet stepper motor.	7 Marks	L2	CO1	PO1
	b)	Explain different configurations for switching the phase windings in stepper motor.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain torque production in stepper motor. What is the effect of hybrid stepping in the torque production?	7 Marks	L2	CO1	PO1
	b)	With a block diagram, explain the closed loop control of a stepper motor.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Discuss the design of stator and rotor pole arc for a three phase, 6/4 switched reluctance motor.	7 Marks	L3	CO2	PO3
	b)	Derive the torque equation of switched reluctance motor and also mention its significance.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	What is the need for power converter in the operation of Switched Reluctance motors? With a neat circuit diagram, explain the operation of an asymmetric power converter topology for a three-phase 6/4 SRM.	7 Marks	L2	CO2	PO1
	b)	A SRM with 6 stator poles and 4 rotor poles has a stator pole arc of 30 degree and rotor pole arc is 32 degrees. The aligned inductance is 10.5 mH and unaligned inductance is 1.5mH. Saturation can be neglected. Calculate the instantaneous torque when the rotor is 30 degree before the aligned position and the phase current is 7A. What is the maximum energy conversion in one stroke, if the current is limited to 7A?	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	Explain the principle of operation and constructional features of Synchronous reluctance motor.	7 Marks	L2	CO3	PO1
	b)	Draw and explain the steady state phasor diagram of Synchronous reluctance motor.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Explain the various types of Synchronous reluctance motor based on rotor construction	7 Marks	L2	CO3	PO1
	b)	A 3-phase, 4 pole, 50 Hz, 415V, star connected synchronous reluctance motor has direct axis and quadrature axis synchronous reactances of 10Ω Ohm and 4Ω Ohm respectively. For a load torque of 96 Nm, Calculate load angle, line current and power	7 Marks	L4	CO3	PO2

factor. Neglect armature resistance and mechanical losses.

UNIT-IV

7.	a)	Derive the expression for torque equation of BLDC square wave motor.	7 Marks	L3	CO4	PO2
	b)	Explain the Sensor less and sensor based control of BLDC motors.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Explain the principle of operation of a sine wave Permanent Magnet Synchronous Machine. Draw its phasor diagram.	7 Marks	L2	CO4	PO1
	b)	A 3-phase 16 pole star connected synchronous motor with 144 slots and 10 conductors per slot. The flux/pole is 0.03wb, sinusoidally distributed and the speed is 375 rpm. Find the line and phase voltage. Assuming the full-pitched coil.	7 Marks	L3	CO4	PO2

UNIT-V

9.	a)	Draw and explain the different characteristics of A. C. Series motor.	7 Marks	L2	CO5	PO1
	b)	Explain how the single sided linear induction motor is used for traction drive applications.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Discuss the performance of linear synchronous motor with different excitation systems.	7 Marks	L2	CO5	PO1
	b)	A single phase fractional horse power series motor has a total resistance of 30Ω and a total reactance of 0.5H. It draws a current of 0.8 A while runs at 2000 rpm connected to a 250 V D.C.Supply. Calculate the speed, torque and power factor when motor is connected to 250 V, 50 Hz single phase supply drawing the same load current.	7 Marks	L4	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

SMART GRID TECHNOLOGY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the importance and need for a smart grid in the present scenario.	7 Marks	L2	CO1	PO1
	b)	Explain the functions of smart grid components.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the technologies and architecture required for a smart grid.	7 Marks	L2	CO1	PO1
	b)	Compare the conventional grid with the smart grid.	7 Marks	L3	CO1	PO1
		UNIT-II				
3.	a)	Explain Wide Area Networks (WAN) in smart metering.	7 Marks	L2	CO2	PO1
	b)	What are the key components of smart metering?	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	What are the standards for information exchange and monitoring in smart grid technologies?	7 Marks	L1	CO2	PO1
	b)	What are smart meters? How are they different from conventional meters?	7 Marks	L2	CO2	PO5
		UNIT-III				
5.	a)	What is an Electric Vehicle (EV)? What are the advantages and disadvantages of EVs?	7 Marks	L2	CO3	PO5
	b)	What are the penetration and variability issues associated with sustainable energy technology?	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Describe the power quality issue and demand response issues of grid-connected renewable energy sources.	7 Marks	L3	CO3	PO1
	b)	What are the different sustainable energy options for smart grids? How will they contribute to energy sustainability in a country?	7 Marks	L2	CO3	PO5
		UNIT-IV				
7.	a)	Explain IEEE 802 architecture and the various IEEE 802 standards.	7 Marks	L2	CO4	PO1
	b)	Illustrate the difference between demand-side management and demand response.	7 Marks	L2	CO4	PO5
		(OR)				
8.	a)	Design the layouts of Sub-networks for WAN and NAN and compare them.	7 Marks	L4	CO4	PO7
	b)	Explain the various switching techniques used in communication channels.	7 Marks	L2	CO4	PO7
		UNIT-V				
9.	a)	Explain the necessity of cyber security for the smart grid.	7 Marks	L2	CO5	PO7
	b)	What are the benefits and challenges of Interoperability?	7 Marks	L1	CO5	PO5
		(OR)				
10.	a)	Examine the Authentication and Authorization Services in Cyber Security.	7 Marks	L3	CO5	PO1
	b)	Define the State-of- the-art-interoperability with a neat diagram.	7 Marks	L2	CO5	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

COMPUTER AIDED DESIGN AND MANUFACTURING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Give the general configuration of a CAD computer system.	7 Marks	L2	CO1	PO1,2
	b)	In what ways CAD can help manufacturing activity? Discuss.	7 Marks	L2	CO1	PO1, 2
		(OR)				
2.	a)	With a neat sketch discuss the product life cycle.	7 Marks	L2	CO1	PO1, 2
	b)	What do you understand by the term CIM? Elaborate the advantages of CIM in a manufacturing unit.	7 Marks	L2	CO1	PO1, 2
		UNIT-II				
3.	a)	Write Short notes on NURBS and B-splines.	7 Marks	L2	CO2	PO1, 2
	b)	Discuss various types of geometric modeling with neat sketches.	7 Marks	L2	CO2	PO1, 2
		(OR)				
4.		The vertices of a triangle are situated at points (15, 30), (25, 35) and (5, 45). Find the coordinates of the vertices if the triangle is first rotated 100 counter clockwise directions about the origin and then scaled to twice its size.	14 Marks	L3	CO2	PO1, 2
		UNIT-III				
5.	a)	Describe the classifications of CNC based on feedback control system.	7 Marks	L2	CO3	PO1, 2
	b)	Explain a typical CNC machining centre with a neat sketch.	7 Marks	L2	CO3	PO1, 2
		(OR)				
6.	a)	Differentiate manual part programming and Computer assisted part programming.	7 Marks	L2	CO3	PO1, 2
	b)	With a neat sketch describe the canned cycles.	7 Marks	L2	CO3	PO1, 2
		UNIT-IV				
7.	a)	Explain briefly optical non-contact inspection methods.	7 Marks	L2	CO4	PO1, 2
	b)	Explain computer aided process planning with steps involved.	7 Marks	L2	CO4	PO1, 2
		(OR)				
8.	a)	Briefly discuss the benefits and limitations of implementing a group technology in a firm.	7 Marks	L2	CO4	PO1, 2
	b)	Enumerate any seven uses of computers in quality control.	7 Marks	L2	CO4	PO1, 2
		UNIT-V				
9.		Discuss different part transfer methods and mechanisms used in the automation.	14 Marks	L2	CO5	PO1, 2
		(OR)				
10.		Discuss robot end effectors and grippers with a neat schema.	14 Marks	L2	CO5	PO1, 2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April– 2024

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define and explain Fourier's law of conduction.	7 Marks	L2	CO1	PO1 PO2
	b)	A hot steel plate of k = 40 W/m K of 5 mm thick having its face area 0.5 x 0.3 m is maintained at 200° C. If this is exposed to a current of air at 20°C having heat transfer coefficient 10 W/m^{2}K, determine the heat carried by it due to convection from the surface.	7 Marks	L5	CO1	PO1 PO2 PO3 PO4
		(OR)				
2.		Develop the general conduction equation for cylindrical coordinates, the system being with uniform heat generation and unsteady state.	14 Marks	L3	CO1	PO1 PO2

UNIT-II

3.	a)	What is the importance of providing extended surface? Sketch the profiles of at least 3 types of extended surfaces used in engineering applications.	7 Marks	L1	CO2	PO1 PO2
	b)	Three identical straight fins 10 mm in diameter and 120 mm long are exposed to an environment with heat transfer coefficient is 32 W/m^2-K. Compare their efficiencies and relative heat flow performance. The three fin materials and their conductivities are i) K copper = 380 W/m-K ii) K for aluminium = 210 W/m-K iii) K for steel = 45 W/m-K.	7 Marks	L4	CO2	PO1 PO2 PO3 PO4
		(OR)				
4.	a)	What is the importance of Heslier charts? And under what conditions can we use them?	7 Marks	L1	CO2	PO1 PO2
	b)	A slab of 15 cm thick is originally at a temperature of 500°C. It is suddenly immersed in a liquid at 100°C resulting in a heat transfer coefficient of 1000 W/m^2 K. Determine the temperature at the centre line and on the surface 30 minutes after immersion. Also calculate the total thermal energy removed per unit area during this period. Take α = 6.1 X 10^{-6} m^2/s, k=40 W/m K, ρ=7800 kg/m^3 and C=840 J/kg K.	7 Marks	L5	CO2	PO1 PO2 PO3 PO4

UNIT-III

5.	a)	Define Nusselt, Reynolds, Prandtl and Stanton numbers. Explain their significance in forced convection.	7 Marks	L1	CO3	PO1 PO2

	b)	Hot engine oil at 150°C is flowing in parallel over a flat plate at a velocity of 2 m/s. Surface temperature of the 0.5 m long flat plate is constant at 50°C. Determine following at 0.2 m from the leading edge i) Hydrodynamic Boundary thickness ii) Local friction coefficient iii) Average friction coefficient iv) Drag force in N v) Thickness of thermal Boundary Layer vi) Local convective heat transfer coefficient vii) Average corrective heat transfer coefficient viii) Rate of heat transfer	7 Marks	L5	CO3	PO1 PO2 PO3 PO4
		(OR)				
6.	a)	A horizontal plate of 800 mm long, 70 mm wide is maintained at a temperature of 140° C in a large tank of full of water at 60°C. Determine the heat loss from the upper side of the plate.	7 Marks	L5	CO3	PO1 PO2 PO3
	b)	A vertical pipe of 12 cm outer diameter, 2.5 m long is at a surface temperature of 120°C is in a room where the air is at 20° C. Calculate the heat loss per meter length of the pipe.	7 Marks	L5	CO3	PO1 PO2 PO3
		UNIT-IV				
7.	a)	Develop the expression for LMTD in the case of a concentric parallel flow heat exchanger.	7 Marks	L3	CO4	PO1 PO2
	b)	A heat exchanger is required to cool 60,000 kg/h of alcohol from 100°C to 44°C using 30,000 kg/h of water entering at 10°C. Determine the surface area required for i) parallel flow mode ii) counter flow mode. Take U = 600 W/m^{2}K, Cp for water = 4184 J/kgK and Cp for alcohol = 3456 J/kg.K	7 Marks	L5	CO4	PO1 PO2 PO3 PO4
		(OR)				
8.	a)	Define critical heat flux and explain pool boiling.	7 Marks	L1	CO4	PO1
	b)	A double pipe heat exchanger is used to heat water with a mass flow rate of 12 kg/s from 25°C to 45°C. The hot fluid enters at 75°C with a capacity rate 25 kW/K and overall heat transfer coefficient is 1550 W/m^2 K. Determine the surface area required for counter and parallel flow arrangement.	7 Marks	L5	CO4	PO1 PO2 PO3 PO4
		UNIT-V				
9.	a)	Define Wein's displacement law and derive it.	7 Marks	L1	CO5	PO1
	b)	A black body emits radiation at 2500 K. Calculate: i) The Monochromatic emissive power at 3 μm wavelength ii) Wavelength at which the emission is maximum iii) The maximum emissive power and iv) The total emissive power.	7 Marks	L5	CO5	PO1 PO2 PO3 PO4
		(OR)				
10.	a)	Write a short note on the following: i) Radiosity ii) Irradiation iii) Shape factor.	7 Marks	L2	CO5	PO1 PO2
	b)	Two large parallel plates at a temperature of 1000 K and 600 K having emissivity's of 0.5 and 0.8 respectively. A radiation shield having emissivity of 0.1 on one side and 0.05 on the other side is placed in between the plates. Determine the heat transfer rate by radiation per unit area with and without radiation shield.	7 Marks	L5	CO5	PO1 PO2 PO3 PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Discuss in detail about functions of management.	14 Marks	L3	CO1	PO1 PO6 PO8 PSO3
		(OR)				
2.	a)	Describe various techniques of decision making.	7 Marks	L2	CO1	PO1 PO6 PO8 PSO3
	b)	List out the different tools for decision making explain with neat sketches.	7 Marks	L2	CO1	PO1 PO6 PO8 PSO3

UNIT-II

3.	a)	What is effective interaction communication? Discuss different types of interaction communication skills.	7 Marks	L1	CO2	PO1 PO2 PO3 PO6 PSO3
	b)	How leadership and management are related?	7 Marks	L2	CO2	PO1 PO2 PO3 PO6 PSO3
		(OR)				
4.		Discuss in detail about classic motivational theories of leadership?	14 Marks	L3	CO2	PO1 PO2 PO3 PO6 PSO3

UNIT-III

5.	a)	What are the various measures of Productivity? Explain.	7 Marks	L1	CO3	PO1 PO2 PO3 PO6 PSO3
	b)	What are the various tools for recording information in method study? Explain about any three briefly.	7 Marks	L1	CO3	PO1 PO2 PO3 PO6 PSO3

(OR)

6.	a)	Explain the principles of motion economy related to arrangement of workplace with appropriate diagrams?	7 Marks	L5	CO3	PO1 PO2 PO3 PO6 PSO3
	b)	Write a short notes on Ergonomics.	7 Marks	L1	CO3	PO1 PO2 PO3 PO6 PSO3

UNIT-IV

7.	a)	Compare product and process layout.	7 Marks	L5	CO4	PO1 PO2 PO3 PO6 PSO3
	b)	Explain the advantages and disadvantages of urban, semi-urban and rural locations.	7 Marks	L3	CO4	PO1 PO2 PO3 PO6 PSO3

(OR)

8.	a)	Define the term failure? Enumerate about the different phases of failures.	7 Marks	L2	CO4	PO1 PO2 PO3 PO6 PSO3
	b)	Describe about system reliability.	7 Marks	L3	CO4	PO1 PO2 PO3 PO6 PSO3

UNIT-V

9.		Explain about the need of ISO quality systems in an industry.	14 Marks	L5	CO5	PO1 PO2 PO3 PO5 PO6 PO8 PSO3

(OR)

10.	a)	What is meant by process capability? How will you determine the same?	7 Marks	L2	CO5	PO1 PO2 PO3 PO5 PO6 PO8 PSO3
	b)	Explain the theory underlying control charts for fraction defective.	7 Marks	L1	CO5	PO1 PO2 PO3 PO5 PO6 PO8 PSO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

CASTING AND WELDING TECHNOLOGY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is a Gate? Explain any two types of Gating system with a neat sketch.	7 Marks	L2	CO1	PO1 PO2
	b)	What is nucleation? Differentiate between Homogeneous Nucleation and heterogeneous nucleation.	7 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	A disc shaped casting bar is to be cast out of aluminum and the diameter of disc is 500mm and its thickness is 20mm.The mould constant as per Chvorinov's rule is 2 sec/mm^2.Determine how long it will take for casting to solidify.	7 Marks	L2	CO1	PO1 PO2
	b)	Discuss about grain growth in casting process?	7 Marks	L2	CO1	PO1 PO2
		UNIT-II				
3.	a)	Explain the continuous casting process with a neat sketch.	7 Marks	L2	CO2	PO1 PO2
	b)	Explain the Investment casting process .What is the advantages and limitations of this process.	7 Marks	L2	CO2	PO1 PO2
		(OR)				
4.	a)	What is Centrifugal casting? Describe the centrifugal casting process with a neat sketch?	7 Marks	L2	CO2	PO1 PO2
	b)	Explain any fore Casting defects with all possible causes and remedies.	7 Marks	L2	CO2	PO1 PO2
		UNIT-III				
5.	a)	Write a short note on: Hydrogen embrittlement, lamellar tearing.	7 Marks	L2	CO3	PO1 PO2
	b)	Why do properties vary widely in most welding heat affected zones?	7 Marks	L2	CO3	PO1 PO2
		(OR)				
6.	a)	What are the destructive testing methods used in welding? Explain?	7 Marks	L2	CO3	PO1 PO2
	b)	Define Weld ability. How to assess the weld ability of material?	7 Marks	L2	CO2	PO1 PO2
		UNIT-IV				
7.	a)	Explain the process of LASER beam welding process with a neat sketch.	7 Marks	L2	CO4	PO1 PO2
	b)	What are the advantages, disadvantages and applications of LASER beam welding?	7 Marks	L2	CO4	PO1 PO2

(OR)

8.	a)	Explain the process of friction stir welding with a neat sketch.	7 Marks	L2	CO4	PO1 PO2
	b)	With neat sketch, explain joint designs in friction welding process.	7 Marks	L2	CO4	PO1 PO2

UNIT-V

9.	a)	Write a brief note on Pollution control in foundry.	7 Marks	L2	CO4	PO1 PO2
	b)	Discuss in detail about sand reclamation process.	7 Marks	L2	CO4	PO1 PO2

(OR)

10.	a)	Explain in detail about automation of welding in nuclear surface applications.	7 Marks	L2	CO4	PO1 PO2
	b)	Discuss about the recent trends in welding.	7 Marks	L2	CO4	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

GAS TURBINES AND JET PROPULSION

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the advantages of using a closed cycle gas turbine in environments unsuitable for open cycle turbines.	7 Marks	L2	CO1	PO2
	b)	Discuss how you would adjust the compressor and turbine inlet temperatures in a gas turbine plant to maintain efficiency under varying climatic conditions.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Discuss a modified simple gas turbine cycle that includes either an intercooler, a reheater, or a regenerator. Explain how your design improves the cycle's performance.	7 Marks	L2	CO1	PO1
	b)	Explain the energy conversion processes involved in a total energy system that incorporates a gas turbine. Identify where losses typically occur.	7 Marks	L2	CO1	PO2

UNIT-II

3.	a)	A single-stage single-acting air compressor delivers 0.6 kg of air per minute at 6 bar. The temperature and pressure · at the end of suction stroke are 30°C and 1 bar. The bore and stroke of the compressor are 100 mm and 150 mm respectively. The clearance is 3% of the swept volume. Assuming the index of compression and expansion to be 1.3 find: i) Volumetric efficiency of the compressor, ii) Power required if the mechanical efficiency is 85%, and	14 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Explain why certain materials are preferred for turbine blades in high-temperature environments.	7 Marks	L2	CO2	PO2
	b)	Explain the construction and working principle of centrifugal compressor and axial flow compressor with neat sketches	7 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Explain how the combustion chamber functions within the overall operation of a gas turbine engine.	7 Marks	L2	CO3	PO2
	b)	Explain the factors that affect the efficiency and performance of the combustion chamber, including fuel types, air-fuel ratio, and temperature control.	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	What are the primary consequences of incomplete combustion in a gas turbine engine?	7 Marks	L1	CO3	PO1
	b)	Develop a control strategy that adjusts air-fuel mixtures dynamically to minimize incomplete combustion across various operating conditions.	7 Marks	L3	CO3	PO2

UNIT-IV

7.	a)	Describe with a neat sketch turbojet engine and explain its thermodynamic cycle.	7 Marks	L3	CO4	PO1
	b)	Explain how a turbojet engine converts air and fuel into thrust.	7 Marks	L2	CO4	PO1

(OR)

8.	a)	What is a gas turbine power plant? What are the components of a simple gas turbine power plant? Write its classification.	7 Marks	L1	CO4	PO2
	b)	Draw and explain Ram jet engine with advantages and disadvantages.	7 Marks	L2	CO4	PO2

UNIT-V

9.	a)	What do you mean by jet propulsion? Explain the Various devices in a jet propulsion unit.	7 Marks	L1	CO5	PO2
	b)	Explain working of turbo prop engine with a neat sketch.	7 Marks	L2	CO5	PO2

(OR)

10.	a)	Explain working principle of rocket engine with neat sketch.	7 Marks	L2	CO5	PO1
	b)	Explain the following terms: i) Isentropic Compressor efficiency ii) Isentropic Turbine efficiency iii) Propelling nozzle efficiency iv) Transmission efficiency.	7 Marks	L3	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

QUALITY MANAGEMENT AND RELIABILITY ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Give any two definitions of quality. Enlist the various dimensions of quality and explain any two in detail.	7 Marks	L2	CO1	PO1 PO6
	b)	Briefly discuss the "Steps for Quality Improvement".	7 Marks	L2	CO1	PO1 PO6

(OR)

2.	a)	Explain the concept of Quality Circles. Discuss advantages and disadvantages of Quality Circles.	7 Marks	L1	CO1	PO1 PO6
	b)	Discuss about the basic 7 Quality Control tools.	7 Marks	L2	CO1	PO1 PO6

UNIT-II

3.	a)	What is Statistical Quality Control? Explain the reasons for variation.	7 Marks	L1	CO2	PO1 PO2 PO6
	b)	10 samples of size 5 each have been collected with following observations.	7 Marks	L3	CO2	PO1 PO2 PO3 PO6

S.No.	1	2	3	4	5	6	7	8	9	10
X-bar	2.008	1.998	1.995	2.001	2.003	1.997	2.002	1.997	2.003	2.011
R	.027	.011	.017	.009	.014	.017	.023	.021	.015	.026

Given A2= 0.577 D3 = 0 and D4 = 2.114. Draw the appropriate control chart and put your conclusions.

(OR)

4.	a)	The following table gives the number of defects in a casting used for making crank case of diesel engine.	7 Marks	L3	CO2	PO1 PO2 PO3 PO6

Casting No	1	2	3	4	5	6	7	8	9	10
Number of defects	15	11	25	10	12	20	15	10	17	13

Construct appropriate control chart with the control limits and comment on the process.

	b)	Differentiate between variable and attribute control charts.	7 Marks	L1	CO2	PO1 PO2 PO6

UNIT-III

5.	a)	Explain Single sampling and Double sampling.	7 Marks	L1	CO3	PO1 PO2
	b)	For a double sampling plan, n_1=50, c_1=1,n_2=100 and c_2=3, determine the average sample number.	7 Marks	L1	CO3	PO1 PO2

(OR)

6.		Design a single sampling plan if α=0.05, AQL=0.01, β=0.10 and LTPD=0.10.	14 Marks	L1	CO3	PO1 PO2 PO3

UNIT-IV

7.	a)	An electronic component in a CNC Lathe machine has an exponential time to failure distribution with a failure rate of 8% per 1000 hours. What is the reliability of the component at 5000 hour? Find the mean time to failure.	7 Marks	L1	CO4	PO1 PO2 PO6
	b)	Find out the system reliability for a serial and parallel configuration with 2 components.	7 Marks	L2	CO4	PO1 PO2 PO3
		(OR)				
8.	a)	Define the terms 'MTTF' and 'MTTR. Derive the relation between Reliability and MTTF.	7 Marks	L1	CO4	PO1 PO2 PO3
	b)	Deduce the expression for the reliability, R of a system having two components of reliabilities R1 and R2 connected in parallel. Find the reliability of system of three components of reliability 0.85 each, connected in series.	7 Marks	L2	CO4	PO1 PO2 PO6

UNIT-V

9.	a)	Explain the classification of redundancy.	7 Marks	L3	CO5	PO1 PO2 PO3
	b)	A standby system has three components 1, 2, 3, where component 1 is normally operating and components 2, 3 are standby components. The reliability of component 1 is 0.95. The reliability of component 2 given that component 1 has failed is 0.96 and that of component 3 given that components 1 and 2 have failed is 0.98. Evaluate the reliability of the system under the assumption that the switch is perfect.	7 Marks	L2	CO5	PO1 PO2 PO3
		(OR)				
10.	a)	What are various events and gates symbols used in fault tree analysis.	7 Marks	L3	CO5	PO1 PO2 PO3
	b)	Define Maintainability and availability and compare it with reliability.	7 Marks	L1	CO5	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

NON-TRADITIONAL MACHINING PROCESSES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What do you understand by the term unconventional or non-traditional machining methods? What is their importance?	7 Marks	L2	CO1	PO1 PO2
	b)	What are the applications of non - traditional machining processes?	7 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	Explain the principle of chemical machining with a neat sketch.	7 Marks	L2	CO1	PO1 PO2
	b)	Discuss the Surface finish and Material removal rate in chemical machining.	7 Marks	L2	CO1	PO1 PO2
		UNIT-II				
3.	a)	Explain the principle and working of electro chemical machining process.	7 Marks	L2	CO2	PO1 PO2
	b)	What are the materials commonly used for making a tool in ECM? Briefly explain.	7 Marks	L2	CO2	PO1 PO2
		(OR)				
4.	a)	Explain the principle of Electro Chemical Grinding.	7 Marks	L2	CO2	PO1 PO2
	b)	List out the applications of ECM.	7 Marks	L2	CO2	PO1 PO2
		UNIT-III				
5.	a)	Explain the different types of abrasives used in AWJM.	7 Marks	L2	CO3	PO1 PO2
	b)	Explain the water jet machining process with a schematic diagram.	7 Marks	L2	CO3	PO1 PO2
		(OR)				
6.	a)	Explain how material is removed in ultra-sonic machining with a neat sketch.	7 Marks	L2	CO3	PO1 PO2
	b)	Discuss the effects of the amplitude and frequency of vibrations, abrasive grain size and mass flow rate on the rate of material removal and surface finish obtainable in ultrasonic machining.	7 Marks	L2	CO3	PO1 PO2
		UNIT-IV				
7.	a)	Explain Electro discharge Machining process with a neat sketch.	7 Marks	L2	CO3	PO1 PO2
	b)	For RC circuit, adjusted for maximum power delivery condition, the following data are available: R= 250 Ohms, C= 25mF and supply voltage is 75 V. Calculate charging current and frequency of discharge when the circuit is closed.	7 Marks	L2	CO3	PO1 PO2

(OR)

8.	a)	Explain about R-C circuit used for pulse generation in EDM process	7 Marks	L2	CO4	PO1 PO2
	b)	Explain the principle of Wire EDM with suitable diagram.	7 Marks	L2	CO4	PO1 PO2

UNIT-V

9.	a)	Describe about various process parameters effecting electron beam machining process.	7 Marks	L2	CO5	PO1 PO2
	b)	State the mechanism of metal removal, merits and demerits of laser beam machining process.	7 Marks	L2	CO5	PO1 PO2

(OR)

10.	a)	Discuss the parameters that govern the performance of plasma arc machining.	7 Marks	L2	CO5	PO1 PO2
	b)	Explain in detail various industrial applications of plasma machining.	7 Marks	L2	CO5	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

OPTIMIZATION TECHNIQUES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the structure of an optimization problem.	7 Marks	L2	CO1	PO1 PO2 PO3
	b)	Classify the optimization problems.	7 Marks	L2	CO1	PO1 PO2 PO3
		(OR)				
2.		Find the extreme points of the function. $f((x_1,x_2) = x_1^3+x_2^3+2x_1^2+4x_2^2$	14 Marks	L3	CO1	PO1 PO2 PO3
		UNIT-II				
3.		By using simplex method Maximize $Z= 10x_1+20x_2$ Subjected to $2x_1+4x_2 \geq 16$ $x_1+5x_2 \geq 15$ $x_1, x_2 \geq 0$	14 Marks	L3	CO2	PO1 PO2 PO3
		(OR)				
4.		By using dual simplex method solve Minimize $G= 60y_1+96 y_2$ Subjected to $2y_1+4y_2 \geq 40$ $3y_1+3y_2 \geq 35$ $y_1, y_2 \geq 0$	14 Marks	L3	CO2	PO1 PO2 PO3
		UNIT-III				
5.		Minimize f $(x_1, x_2) = x_1 - x_2 + 2 x_1^2 + 2 x_1 x_2 + x_2^2$ from the starting Point $X_1 = \begin{Bmatrix} 0 \\ 0 \end{Bmatrix}$ using Powell's method.	14 Marks	L3	CO3	PO1 PO2 PO3
		(OR)				
6.		Minimize $f = 4x_1^2+3x_2^2 -5x_1x_2 - 8x_1$ starting from point (0,0) using Powell's method, perform three iterations.	14 Marks	L3	CO3	PO1 PO2 PO3
		UNIT-IV				
7.	a)	What is the curse of dimensionality in dynamic programming?	7 Marks	L2	CO4	PO1 PO2 PO3
	b)	What is the importance of sub-optimization in dynamic programming?	7 Marks	L2	CO4	PO1 PO2 PO3

(OR)

8.	a)	Explain with a suitable example for illustrating the calculus method of solution in a dynamic programming problem.	7 Marks	L2	CO4	PO1 PO2 PO3
	b)	State two engineering examples of serial systems that can be solved by dynamic programming.	7 Marks	L2	CO4	PO1 PO2 PO3

UNIT-V

9.	a)	Explain the Selection, Crossover and Mutation operations used in the Genetic algorithm.	7 Marks	L2	CO5	PO1 PO2 PO3
	b)	Describe the steps involved in ant colony method of optimization.	7 Marks	L2	CO5	PO1 PO2 PO3

(OR)

10.	a)	Describe the Basic Differential Evolution algorithm.	7 Marks	L2	CO5	PO1 PO2 PO3
	b)	Validate the Ant Colony Optimization algorithm against other evolutionary optimization algorithms.	7 Marks	L2	CO5	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

OPTIMIZATION TECHNIQUES

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	List out the Engineering applications of optimization,	7 Marks	L2	CO1	PO1 PO2 PO3
	b)	Explain the following: i) Design vector ii) Design constraints iii) Constraint surface,	7 Marks	L2	CO1	PO1 PO2 PO3
		(OR)				
2.		Minimize $f = x_1^2+2x_2^2+3x_3^2$ Subject to the constraints $g_1 = x_1-x_2-2x_3 \leq 12$ $g_2 = x_1+2x_2-3x_3 \leq 8$ using Kuhn –Tucker conditions	14 Marks	L3	CO1	PO1 PO2 PO3

UNIT-II

3.		Solve the linear programming problem using Simplex method. Max $Z = 3x_1 + 2x_2$ Subject to $4x_1 + 3x_2 \leq 12$, $4x_1 + x_2 \leq 8$, $4x_1 - x_2 \leq 8$, x_1 , $x_2 \geq 0$	14 Marks	L3	CO2	PO1 PO2 PO3
		(OR)				
4.		By using dual simplex method solve Maximize $Z = 10x_1+20x_2$ Subjected to $2x_1+4x_2 \geq 16$ $x_1+5x_2 \geq 15$ $x_1, x_2 \geq 0$	14 Marks	L3	CO2	PO1 PO2 PO3

UNIT-III

5.		Find the minimum of the function $f = \lambda^5-5\lambda^3-20\lambda+3$ by using the quadratic interpolation method with an initial trial step length as 0.5.	14 Marks	L3	CO3	PO1 PO2 PO3 PO4
		(OR)				
6.		Minimize $f = 2x_1^2+x_2^2$ by using the steepest descent method with the starting point (1,2) (two iterations only).	14 Marks	L3	CO3	PO1 PO2 PO3

UNIT-IV

7.	a)	Describe the Multistage decision processes with example.	7 Marks	L2	CO4	PO1 PO2 PO3
	b)	Explain the concept of Principle of optimality.	7 Marks	L2	CO4	PO1 PO2 PO3

(OR)

8.		Solve the following LP problem by dynamic programming Maximize $f(x_1,x_2) = 10x_1+8x_2$ Subject to $2x_1+x_2 \leq 25$ $3x_1 + 2x_2 \leq 45$ $x_2 \leq 10$ $x_1, x_2 \geq 0$	14 Marks	L3	CO4	PO1 PO2 PO3

UNIT-V

9.	a)	Explain the significance of Genetic Algorithm.	7 Marks	L2	CO5	PO1 PO2 PO3
	b)	Describe the steps involved in Genetic Algorithm with a flow chart.	7 Marks	L2	CO5	PO1 PO2 PO3

(OR)

10.	a)	Describe the Basic Differential Evolution algorithm.	7 Marks	L2	CO5	PO1 PO2 PO3
	b)	Describe the steps involved in ant colony method of optimization.	7 Marks	L2	CO5	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April– 2024

REFRIGERATION AND AIR CONDITIONING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Demonstrate the working principle of simple vapour compression refrigeration system with the help of T-S and p-h diagrams. — 7 Marks | L2 | CO1 | PO1

   b) A vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is dry saturated at the end of the compression and there is no under cooling of the liquid before the expansion. Estimate: i) COP of the cycle and ii) Capacity of the refrigerator if the fluid flow is at the rate of 5 kg/min. — 7 Marks | L3 | CO1 | PO1, PO2, PO3

Pressure (bar)	Saturation Temp (K)	Enthalpy (kJ/kg)		Entropy (kJ/kg.K)	
		Liquid	Vapour	Liquid	Vapour
60	295	151.96	293.29	0.554	1.0332
25	261	56.32	322.58	0.226	1.2464

(OR)

2. a) A refrigerator works on the Carnot cycle in temperature between -7^0C and 27 ^{0}C. It makes 500 kg of ice per hour at -5^0C from water at 14^0C. Find power required to drive the compressor and C.O.P. of the cycle. Take specific heat of ice as 2.1 kJ/kg-k and latent heat as 336 kJ/kg — 7 Marks | L3 | CO1 | PO1, PO2, PO3

   b) Define energy efficiency ratio of refrigeration system. How it is applicable for the refrigeration systems. — 7 Marks | L2 | CO1 | PO1

UNIT-II

3. a) How do you classify the refrigerants? Discuss about the nomenclature of refrigerants with suitable example. — 7 Marks | L2 | CO2 | PO1

   b) Differentiate between physical and thermodynamic properties of a refrigerant. Explain which more important properties are giving specific examples. — 7 Marks | L2 | CO2 | PO1

(OR)

4. a) Illustrate the working of thermostatic expansion valve. — 7 Marks | L2 | CO2 | PO1

   b) Derive an expression for the work input required of single stage reciprocating compressor without clearance volume. — 7 Marks | L2 | CO2 | PO1

UNIT-III

5. a) Construct the lithium bromide water absorption refrigeration system and explain its working principle. — 7 Marks | L3 | CO3 | PO1

   b) Illustrate the working principle of Vortex tube refrigeration system. — 7 Marks | L3 | CO3 | PO1

(OR)

6. a) List out the merits and demerits of thermo-electric refrigeration system over other refrigeration systems. What are the major fields of applications? — 7 Marks | L2 | CO3 | PO1

	b)	Develop an expression for the maximum COP of vapour absorption refrigeration system. Also determine the maximum COP of a vapour absorption refrigeration system when the temperature of generator is 120^0C, the temperature of the condenser is 30^0C and the temperature of the evaporator is -20^0C.	7 Marks	L3	CO3	PO1
		UNIT-IV				
7.	a)	Illustrate the working principle of central air conditioning system with neat sketch.	7 Marks	L3	CO4	PO1
	b)	Discuss about the different types of heat loads which have taken into account in order to estimate the total heat load of a large restaurant for summer air conditioning.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Differentiate unitary and central air conditioning systems.	7 Marks	L2	CO4	PO1
	b)	Discuss the need of air conditioning system? And list the detailed classification of air conditioning systems.	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Sketch the psychrometric chart and explain the properties of moist air and its representation on psychrometric chart.	7 Marks	L3	CO5	PO1
	b)	Discuss the applications air – water heat pump circuits	7 Marks	L2	CO5	PO1
		(OR)				
10	a)	Write notes on Grills and Registers.	7 Marks	L2	CO5	PO1
.	b)	List out the functions of a fan in an air conditioning system?	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

ARTIFICIAL INTELLIGENCE AND ROBOTICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What can AI do today?	7 Marks	L2	CO1	PO1
	b)	Is AI a science, or is it engineering? Or neither or both? Explain.	7 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	What are various agent programs in intelligent system?	7 Marks	L2	CO1	PO1 PO2
	b)	What is the history of AI?	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Define the term 'Robot'. Explain different Robot types.	7 Marks	L2	CO2	PO1
	b)	What are the different workspace configurations? Explain with neat diagrams.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Explain in brief about robot anatomy.	7 Marks	L2	CO2	PO1
	b)	What is meant by a manipulator having redundant degrees of freedom and write its advantages?	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Explain the implementation of DH notation for a links coordinate system and joint parameters.	7 Marks	L2	CO3	PO1 PO2 PO3
	b)	Explain about homogeneous transformations in Robotics kinematics.	7 Marks	L2	CO3	PO1 PO2
		(OR)				
6.	a)	Derive the transformation of inverse matrix	7 Marks	L2	CO3	PO1 PO2
	b)	Discuss the features of SCARA and cylindrical robot and also find the D-H matrix for cylindrical robot.	7 Marks	L2	CO3	PO1 PO2 PO3
		UNIT-IV				
7.	a)	Explain the trajectory planning in detail.	7 Marks	L2	CO4	PO1 PO2
	b)	What are the steps involved in trajectory planning?	7 Marks	L2	CO4	PO1 PO2
		(OR)				
8.	a)	Briefly explain the working principle of any two types of position sensors with a neat sketch.	7 Marks	L2	CO4	PO1 PO2
	b)	Explain briefly about the following terms: i) Skew Motion ii) Path planning iii) Joint Integrated motion.	7 Marks	L2	CO4	PO1 PO2

UNIT-V

9.	a)	Explain about the processing operation robots in Arc welding system with neat sketch.	7 Marks	L2	CO5	PO1 PO2
	b)	Describe the advantages and application of using robots in Arc welding operation.	7 Marks	L2	CO5	PO1 PO2
		(OR)				
10.	a)	Explain the present and future applications robots in industries.	7 Marks	L2	CO5	PO1 PO2
	b)	List out the non-industrial applications of robots.	7 Marks	L2	CO5	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

NON-CONVENTIONAL ENERGY SOURCES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What are the prospects of non-conventional energy sources in India? Explain.	7 Marks	L2	CO1	PO1
	b)	What are the conclusions on alternate energy strategies?	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Write a short notes on beam and diffusion radiation and define the terms i) Solar constant, ii) Local Solar Time.	7 Marks	L2	CO1	PO1
	b)	Explain the working of Angstrom Pyrheliometer.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	What are the main components of a flat-plate solar collector, explain the function of each?	7 Marks	L2	CO2	PO1 PO2
	b)	What are the different parameters affecting the performance of the collector and explain?	7 Marks	L2	CO2	PO1 PO2
		(OR)				
4.	a)	Enumerate different types of concentrating type collectors.	7 Marks	L2	CO2	PO1
	b)	What are the advantages and disadvantages of concentrating collectors over flat -plate collectors?	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Explain the photovoltaic principle. Describe a basic photo voltaic system for power generation.	7 Marks	L2	CO3	PO1 PO2
	b)	What are the advantages and disadvantages of photo voltaic solar energy conversion?	7 Marks	L2	CO3	PO1 PO2
		(OR)				
6.	a)	What are the different methods of storing solar energy? Briefly explain.	7 Marks	L2	CO3	PO1 PO2
	b)	Explain the solar distillation process with a sketch.	7 Marks	L2	CO3	PO1 PO2
		UNIT-IV				
7.	a)	Describe the main considerations in selecting a site for wind energy plant.	7 Marks	L2	CO4	PO1 PO2
	b)	Explain the working of horizontal axis wind turbine.	7 Marks	L2	CO4	PO1 PO2
		(OR)				
8.	a)	What is the difference between biomass and biogas? And what is pyrolysis?	7 Marks	L2	CO4	PO1 PO2
	b)	How biogas plants are classified? Explain them briefly.	7 Marks	L2	CO4	PO1 PO2

UNIT-V

9.	a)	What is the sub classification of hydrothermal convective systems? Describe a vapour dominated system.	7 Marks	L2	CO5	PO1
	b)	What are the possible sources of Geothermal pollution? How these are avoided?	7 Marks	L2	CO5	PO1 PO2
		(OR)				
10.	a)	What are the different components of tidal power plant? Explain them briefly.	7 Marks	L2	CO5	PO1
	b)	Describe the working of Ocean thermal energy conversion power plant.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

ANTENNAS AND PROPAGATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define the terms directivity and gain. State the relation between gain of the antenna and the antenna aperture.	7 Marks	L3	CO1	PO1
	b)	Find the radiation resistance of a Hertzian dipole of length λ/40, λ/60, λ/80.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Derive the expression for the radiation pattern of center fed λ/2 dipole antenna.	7 Marks	L3	CO1	PO1
	b)	Define radiation resistance and show that the radiation resistance of dipole antenna is 73 Ohms.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Consider a two point sources element array separated a distance "d". Determine the total far field E for the given array.	7 Marks	L3	CO2	PO3
	b)	An end fire array composed of λ/2 radiators with axes at right angles to the line of the array is required to have a power gain of 20. Determine the array length and the width of a major lobe between the nulls.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Determine the array length and first null beam width for an end fire array composed of λ/2 radiators with axes at right angles to the line of the array is required to have a power gain of 40.	7 Marks	L3	CO2	PO3
	b)	Discuss in brief how the improved directional patterns are achieved with Yagi-Uda arrays.	7 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Narrate in detail about Cassegrain feed of a parabolic reflector.	7 Marks	L2	CO1	PO1
	b)	Give the equations for the effective length and effective width of the micro strip patch antenna and list the limitations of micro strip antennas.	7 Marks	L2	CO1	PO2
		(OR)				
6.	a)	With neat diagram explain the helical antenna and briefly describe its operation in axial mode.	7 Marks	L3	CO1	PO1
	b)	Explain the difference between driven and parasitic elements in an antenna array.	7 Marks	L2	CO1	PO2

UNIT-IV

7.	a)	Describe the methods for measuring the gain and half power beam width of an antenna.	7 Marks	L2	CO3	PO2
	b)	How the far field pattern of a receiving antenna experimentally determined? Explain with a neat block diagram.	7 Marks	L3	CO3	PO5

(OR)

8.	a)	With neat setup, explain the comparison method of measuring the gain of the antenna.	7 Marks	L3	CO3	PO2
	b)	Write short notes on phase error and amplitude taper due to finite measurement distance.	7 Marks	L2	CO3	PO2

UNIT-V

9.	a)	Explain in detail the mechanism of space wave propagation with a neat sketch.	7 Marks	L2	CO4	PO2
	b)	Assume the reflection takes place at height of 400km and that the maximum density in the ionosphere corresponds to a 0.9 refractive index at 10MHz. What will be the range for flat earth condition for which the MUF is 10 MHz.	7 Marks	L3	CO4	PO2

(OR)

10.	a)	Write a short note on ionospheric absorption.	7 Marks	L2	CO4	PO1
	b)	Explain briefly the terms skip distance, maximum usable frequency and virtual height as used n ionospheric propagation.	7 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain in detail the classification of discrete-time systems.	7 Marks	L2	CO1	PO1
	b)	Evaluate the convolution of the following signals using Z transform $x_1(n) = \{1, -2, 1\}$, $x_2(n) = \begin{cases} 1; & 0 \le n \le 5 \\ 0; & elsewhere \end{cases}$.	7 Marks	L4	CO1	PO2
		(OR)				
2.	a)	What are the conditions for stability and causality of an LTI system? Explain.	7 Marks	L2	CO1	PO1
	b)	Examine whether the given system described by the following difference equation, with the input *x(n)* and output *y(n)* , is linear or nonlinear. i) $y(n) - 2y(n-1) = 4x(n-1)$ ii) $y(n) + 2y^2(n) = 2x(n)$	7 Marks	L4	CO1	PO2

UNIT-II

3.	a)	Compute the DFT of an 8 point sequence using DIT-FFT algorithm and draw the butterfly diagram of each stage.	7 Marks	L4	CO2	PO3
	b)	State and prove any four properties of DFT.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Perform the linear convolution of the following two sequences using DFT. $x_1(n) = \{2, 5, 0, 4\}$ and $x_2(n) = \{4, 1, 3\}$	7 Marks	L4	CO2	PO2
	b)	Give the steps involved in implementing Radix–2, DIT-FFT algorithm.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Apply Bilinear transformation to convert the following analog filter with transfer function $H_A(s)$ to a digital IIR filter where the digital filter is to have a resonant frequency $\omega_r = \frac{\pi}{2}$. $H_A(S) = \frac{s + 0.1}{(s + 0.1)^2 + 16}$.	7 Marks	L4	CO3	PO5
	b)	Compare Bilinear and Impulse Invariant transformation methods.	7 Marks	L2	CO3	PO2
		(OR)				
6.	a)	Design an IIR Butterworth LPF for the following specifications. Assume T = 1 s. Passband : $0.8 \le \lvert H(e^{j\omega}) \rvert \le 1$; $\lvert\omega\rvert \le 0.2\pi$ Stopband : $\lvert H(e^{j\omega}) \rvert \le 0.2$; $0.6\pi \le \lvert\omega\rvert \le \pi$	7 Marks	L4	CO3	PO3
	b)	Design a Chebyshev analog filter with a maximum pass-band attenuation of 2.5 dB at Ω_p = 20 *rad/s* and a minimum stop-band attenuation of 30 dB at Ω_p = 50 *rad/s*.	7 Marks	L4	CO3	PO3

UNIT-IV

7.	a)	Design an FIR LPF using a rectangular window with a pass band gain of unity, cut-off frequency of 0.4π. Take the length of the impulse response as 7.	7 Marks	L4	CO3	PO3
	b)	Design a linear phase FIR band pass filter to pass frequencies in the range 0.4π to 0.65π rad/sample by taking 7 samples of hanning window sequence.	7 Marks	L4	CO3	PO3
		(OR)				
8.	a)	Derive the Frequency Response of a Linear Phase FIR Filter when Impulse Response is Symmetric with even length.	7 Marks	L3	CO3	PO2
	b)	Design a FIR HPF using Hamming window for M=7 and ωc = 2 rad/sample.	7 Marks	L4	CO3	PO3

UNIT-V

9.	a)	Discuss about the Central Arithmetic Logic Unit and Auxiliary Register of TMS 320C6X DSP processor.	7 Marks	L2	CO4	PO1
	b)	With neat block diagram, explain about the pipelining.	7 Marks	L2	CO4	PO1
		(OR)				
10.	a)	What are the various memory access schemes in DSP processors? Explain.	7 Marks	L2	CO4	PO1
	b)	What is MAC? Explain its operation in detail.	7 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss the phenomena of eclipse as applied to geostationary satellite and solar interference experienced at an earth station. How do these factors influence the system design.	7 Marks	L2	CO1	PO1
	b)	A geostationary satellite moving in an equational circular orbit is at a height of a 5786 km from the earth surface. If the earth radius is taken as 6378 km. Determine the theoretical maximum coverage angle and maximum slant range.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Explain about the launch and launch-vehicles for the satellite.	7 Marks	L2	CO1	PO3
	b)	A low earth orbit satellite is in a circular polar orbit with an altitude, h, of 1000km. A transmitter on the satellite has a frequency of 2.65GHz. Find i) The velocity of the satellite in orbit ii) The component of velocity toward an observer at an earth station as the satellite appears over the horizon, for an observer who is in the plane of the satellite orbit. iii) Hence, find the Doppler shift of the received signal at the earth station. Use a mean earth radius value, r_e, of 6378 km.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	Explain in detail how geostationary satellites are tracked from the earth station.	7 Marks	L2	CO2	PO1
	b)	A satellite at a distance of 40,000 km from a point on the earth's surface radiates a power of 10W from an antenna with a gain of 17 dB in the direction of the observer. Find the flux density at the receiving point, and the power received by antenna at this point with an effective area of $10m^2$.	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Draw the Satellite uplink model and explain about each block.	7 Marks	L2	CO2	PO1
	b)	Determine G/T ratio for a satellite transponder with a receiver antenna gain of 22db, LNA gain of 10db, and an equivalent noise temp of 30db.	7 Marks	L3	CO2	PO4
		UNIT-III				
5.	a)	Explain various types of antennas used in satellite to produce wide coverage.	7 Marks	L2	CO3	PO1
	b)	A Satellite at a distance of 36,000km from earth radiates a power of 5W from an antenna with a gain of 16db. Find the power received by an earth station antenna with a gain of 45db. operating frequency is 11Ghz.	7 Marks	L3	CO3	PO4

(OR)

6.	a)	Explain what are the similarities and differences between the terms multiplexing and multiple access?	7 Marks	L2	CO3	PO1
	b)	Find the earth station transmitter power and received (C/N) when the system is operated. i) In TDMA with the transponder saturated by each earth station in turn ii) In FDMA with 3-dB input and output back off.	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Explain any 3 types of operational NGSO constellation designs.	7 Marks	L2	CO4	PO1
	b)	Discuss in detail about Off-Axis Scanning.	7 Marks	L2	CO4	PO1

(OR)

8.	a)	Explain the determination of Optimum Orbital Altitude in satellite system.	7 Marks	L2	CO4	PO1
	b)	List out the important factors that influence the design of any satellite communication system? Explain in detail?	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Find the exact altitude of a GPS satellite that has an orbital period equal to precisely one half of a side real day. Use a value of mean earth radius r_e=6378.14km and a sidereal day length of 23h 56 min 4.1s.	7 Marks	L5	CO5	PO1
	b)	Explain the Differential GPS.	7 Marks	L2	CO5	PO1

(OR)

10.	a)	Illustrate the steps for satellite position determination algorithm's from the broadcast ephemeris.	7 Marks	L3	CO5	PO1
	b)	Explain how to increase the accuracy of GPS by using differential GPS techniques.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

IMAGE PROCESSING

[Electronics and Communication Engineering, Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence & Machine Learning)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Describe the fundamental steps in image processing.	7 Marks	L2	CO1	PO1
	b)	Explain about KL Transform.	7 Marks	L2	CO2	PO2
		(OR)				
2.	a)	Explain the theory of sampling of an image.	7 Marks	L2	CO1	PO2
	b)	Explain the elements of an image processing system.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Define Histogram of Image. Explain the concept of Histogram Equalization technique for Image enhancement.	7 Marks	L3	CO2	PO2
	b)	Discuss the procedure of image smoothing using frequency domain filters.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Explain about intensity transformation functions.	7 Marks	L2	CO2	PO2
	b)	Illustrate homomorphic filtering approach for image enhancement.	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Explain the need for Image Restoration and discuss image restoration with wiener filtering.	7 Marks	L2	CO3	PO2
	b)	Discuss the concept of Inverse Filtering and also mention the limitations of it.	7 Marks	L2	CO3	PO2
		(OR)				
6.	a)	How linear position invariant degradation employed for image restoration?	7 Marks	L3	CO3	PO4
	b)	What is the role of Constrained least squares filtering in image restoration? Discuss in detail.	7 Marks	L3	CO3	PO4
		UNIT-IV				
7.	a)	What is the need of compression? Explain about Run Length coding with a neat diagram.	7 Marks	L2	CO4	PO2
	b)	Draw and explain the general image compression system model	7 Marks	L2	CO4	PO2
		(OR)				
8.	a)	Explain Huffman coding by taking an example.	7 Marks	L2	CO4	PO3
	b)	How many types of redundancies are there in image compression? Explain in detail.	7 Marks	L3	CO4	PO3

UNIT-V

9.	a)	Discuss the procedure for conversion from the RGB color model to the HSI color model.	7 Marks	L2	CO6	PO2
	b)	Discuss about Roberts, Prewitt and Sobel edge detectors.	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Explain about Pseudo color image processing.	7 Marks	L2	CO6	PO4
	b)	Define image segmentation. Give classification. Explain region based segmentation.	7 Marks	L2	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April – 2024

NANOSTRUCTURES AND NANOTECHNOLOGY

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is importance of Gleiter's in nanostructured material classification?	5 Marks	L1	CO1	PO1
	b)	Is optical properties depends on the surface properties and feature size of different nanostructures? If yes justify. Correlate the crystal structure and dimension of the nanostructure.	9 Marks	L2	CO1	PO1
		(OR)				
2.		Classify nanostructures in detail by considering the dimension.	14 Marks	L3	CO1	PO1
		UNIT-II				
3.		Explain the working of X-ray diffraction. Is nanostructure synthesis possible without X-ray, what properties of nanomaterials measured by the X-ray measurement?	14 Marks	L4	CO1	PO1
		(OR)				
4.	a)	Identify role of TEM (Transmission electron microscope) for analysis of nanostructure. Is atomic arrangement can be identified using TEM?	7 Marks	L4	CO1	PO1
	b)	Which physical properties are measured by secondary ion mass spectrometry (SIMS) of a synthesized nanomaterial?	7 Marks	L3	CO1	PO1
		UNIT-III				
5.		How Soft lithography is used for nanomanipulation in nanotechnology. Is nanotechnology is possible without lithography.	14 Marks	L1	CO2	PO1
		(OR)				
6.	a)	Discuss the importance of EBEAM in nanostructure synthesis.	7 Marks	L2	CO2	PO1
	b)	Analyze the application of Near-field scanning optical microscopy (NSOM) in photolithography for the 100 nm or less feature size.	7 Marks	L4	CO2	PO2
		UNIT-IV				
7.	a)	Discuss the CNT considering its different features. Can CNT be realized by graphene	7 Marks	L2	CO3	PO1
	b)	Analyze the properties of carbon nanotube defined by the charaity?	7 Marks	L2	CO3	PO1
		(OR)				
8.		Justify role of gold nanoparticles in CNT synthesis by considering a suitable method that use gold as catalyst for nanotube growth. Is CNT occurring in nature?	14 Marks	L4	CO3	PO2

UNIT-V

9.	a)	Design a nanobot that can be used in drug delivery.	7 Marks	L3	CO4	PO3
	b)	Analyze difference between nanoelectronics and molecular electronics with proper example.	7 Marks	L2	Co4	PO4
		(OR)				
10.	a)	What are the possible applications of the photonic crystal in the era of nanotechnoly.	7 Marks	L4	CO4	PO4
	b)	Elaborate the applications of nanomaterial in biology.	7 Marks	L2	CO4	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

MICROELECTROMECHANICAL SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the basic building blocks of MEMS with neat diagrams.	7 Marks	L2	CO1	PO1
	b)	Give one application of MEMS in automobiles. Illustrate its working with neat sketches.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Describe the evolution of Micro fabrication.	7 Marks	L2	CO1	PO1
	b)	What are MEMS and Microsystems? How will you classify them from the conventional systems?	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Describe the principle of operation of acoustic sensors and actuators with neat diagrams.	7 Marks	L2	CO1	PO1
	b)	Discuss on electrostatic actuation model with neat diagram.	7 Marks	L4	CO1	PO3
		(OR)				
4.	a)	With suitable diagrams explain the working principle of Micro valves and micro pumps also discuss their various applications with regard to actuation.	7 Marks	L3	CO1	PO3
	b)	Explain with neat diagram actuation using shape memory alloys.	7 Marks	L2	CO1	PO2

UNIT-III

5.	a)	Derive equations for acceleration a, time t and power density P/V based on the Trimmer force scaling vector? What information does the force scaling vector provide to the MEMS designer?	7 Marks	L3	CO2	PO3
	b)	Explain in detail about scaling in electricity.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Explain scaling in heat conduction and heat convection.	7 Marks	L3	CO2	PO3
	b)	List the properties and applications of piezoelectric materials.	7 Marks	L4	CO2	PO2

UNIT-IV

7.	a)	Demonstrate the steps involved in photolithography. State the chemicals used in each of the stages along with the operating conditions.	7 Marks	L3	CO3	PO4
	b)	Demonstrate about chemical vapour deposition.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	With neat diagrams explain the different etching processes in detail.	7 Marks	L2	CO3	PO3
	b)	Describe steps of fabrication of a square tube using LIGA process.	7 Marks	L2	CO3	PO2

UNIT-V

9.	a)	Illustrate about PIN diode RF switches with neat circuit diagram.	7 Marks	L3	CO4	PO1
	b)	Explain the various contact mechanisms for RF switches.	7 Marks	L2	CO4	PO2
		(OR)				
10.	a)	Illustrate about various actuation methods used in RF switching.	7 Marks	L2	CO4	PO1
	b)	Explain the fabrication of MEMS capacitive switch.	7 Marks	L3	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April – 2024

PIC MICROCONTROLLERS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	List all the Registers used in PC18 Micro controller in brief.	7 Marks	L1	CO1	PO1
	b)	Explain the memory organization of PIC 18F542 Microcontroller.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain about ROM space.	7 Marks	L2	CO1	PO1
	b)	Explain about RAM space.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explaindirectivesanddataformatssupportable forPIC18F452.	7 Marks	L2	CO2	PO1
	b)	Write a program in PIC microcontroller to Subtract of two 16-bitnumbers.	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Explain the Logical instruction set of PIC micro controller.	7 Marks	L2	CO2	PO1
	b)	Explain the BIT Wise instruction set of PIC micro controller.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Write the applications of PIC18F452 micro controller.	7 Marks	11	CO2	PO2
	b)	Explain about macros.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Explain about structure of Timer0.	7 Marks	L2	CO2	PO2
	b)	Explain the different types of PIC interrupts.	7 Marks	L2	CO2	PO2
		UNIT-IV				
7.	a)	Explain serial port structure of PIC18F452.	7 Marks	L2	CO3	PO2
	b)	Explain Serial port structure.	7 Marks	L2	CO3	PO3
		(OR)				
8.	a)	Explain the different types of PIC interrupts.	7 Marks	L2	CO3	PO2
	b)	Explain the programing serial interrupts.	7 Marks	L2	CO3	PO6
		UNIT-V				
9.		Explain about Keyboard interfacing.	14 Marks	L2	CO4	PO8
		(OR)				
10.	a)	Explain PWM using CCP.	7 Marks	L2	CO4	PO6
	b)	Explain the construction and working of stepper motor. Explain the 4 step sequence, step angle and step per revolution.	7 Marks	L2	CO4	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

MICROCONTROLLERS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Differentiate between Microprocessors and Microcontrollers.	7 Marks	L1	CO1	PO1
	b)	Explain about Addressing modes with examples in 8051.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Draw and explain the TMOD Register in 8051.	7 Marks	L1	CO1	PO1
	b)	Explain about arithmetic & logical instructions in 8051.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Discuss in detail about the memory organization of PIC micro controller.	7 Marks	L2	CO2	PO2
	b)	What features make PIC18F452 categorize it among RISC based architectures?	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Sketch PIC18 status register and list associated conditional branching instructions.	7 Marks	L2	CO2	PO2
	b)	Draw and explain the architecture of PIC18.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Generalize the usage of directives and data formats supportable for PIC18F452.	7 Marks	L3	CO3	PO3
	b)	Debate what features make PIC18F452 categorize it among RISC based architectures.	7 Marks	L3	CO3	PO3
		(OR)				
6.	a)	Discuss the role of TRIS register in inputting and outputting data.	7 Marks	L2	CO3	PO3
	b)	Demonstrate the 16 bit mode programming of Timer 0.	7 Marks	L3	CO3	PO3
		UNIT-IV				
7.	a)	Explain what happens if a higher-priority interrupt is activated while the PICI8 is serving a lower-priority interrupt (i.e., executing a lower-priority ISR).	7 Marks	L3	CO4	PO4
	b)	Identify PIC18 external hardware interrupt pins, associated flags and associated registers.	7 Marks	L2	CO4	PO4
		(OR)				
8.	a)	Find SPBRG for 9600, 19200 baud rates if XTAL=12 MHz and BRGH= 0. Comment on the baud rate error in the calculations.	7 Marks	L3	CO4	PO4
	b)	What is an interrupts and explain interrupts of PIC18.	7 Marks	L2	CO4	PO4
		UNIT-V				
9.	a)	Demonstrate the PWM pulse generation using micro controller.	7 Marks	L2	CO5	PO5
	b)	Explain the speed control of DC motor using PIC micro controller with suitable diagram.	7 Marks	L2	CO5	PO5
		(OR)				
10.	a)	Explain how to interface LCD with micro controller with an assembly language program.	7 Marks	L2	CO5	PO5
	b)	Write short notes on CCP modules.	7 Marks	L2	CO5	PO5

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CODE No.: 20BT60501 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

MACHINE LEARNING

[Computer Science and Engineering, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Illustrate Find S Algorithm over EnjoySport concept. Training instances given below. — 7 Marks | L4 | CO2 | PO2

Example	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

   b) Explain elimination algorithm with an example. — 7 Marks | L2 | CO1 | PO2

(OR)

2. a) Explain Concept learning as search with respect to General to specific ordering of hypothesis. — 7 Marks | L2 | CO1 | PO1
   b) Discuss the concept of Inductive Bias. — 7 Marks | L2 | CO1 | PO2

UNIT-II

3. a) Construct Decision trees to represent the Boolean Functions for the Play Tennis.
   (Outlook = Sunny ^ Humidity = Normal) V (Outlook = Overcast) V (Outlook = Rain ^ Wind = Weak) — 7 Marks | L4 | CO3 | PO2
   b) Explain the issues in decision tree learning. — 7 Marks | L2 | CO2 | PO1

(OR)

4. a) Differentiate logistic regression and SVM. — 7 Marks | L2 | CO3 | PO3
   b) Explain hypothesis space search in Decision tree learning. — 7 Marks | L2 | CO3 | PO3

UNIT-III

5. a) Describe the following: — 7 Marks | L2 | CO4 | PO2
      i) Neural Network Representation
      ii) ProLems for Neural Network Learning
   b) Write short note on concept of Perceptron. — 7 Marks | L2 | CO4 | PO2

(OR)

6. a) Write an algorithm for Back propagation. — 7 Marks | L2 | CO4 | PO2
   b) Write short note on — 7 Marks | L2 | CO4 | PO2
      i) Generalization
      ii) Over fitting
      iii) Stopping criterion

UNIT-IV

7.	a)	Discuss Maximum Likelihood and Least-Square Error Hypothesis.	7 Marks	L2	CO2	PO2
	b)	Explain the concept of Bayes optimal classifier.	7 Marks	L2	CO2	PO2

(OR)

8.	a)	Discuss the concept of Maximum likelihood hypotheses for predicting probabilities.	7 Marks	L2	CO2	PO2
	b)	Explain the concept of EM Gaussian Mixtures.	7 Marks	L2	CO2	PO2

UNIT-V

9.	a)	Explain briefly k-Nearest Neighbor learning.	7 Marks	L2	CO2	PO2
	b)	Explain locally weighted Regression.	7 Marks	L2	CO2	PO2

(OR)

10	a)	Write the Q learning Algorithm.	7 Marks	L2	CO3	PO2
.	b)	Discuss Temporal difference learning.	7 Marks	L2	CO3	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

COMPILER DESIGN

[Computer Science and Engineering,
Computer Science and Engineering (Artificial Intelligence),
Computer Science and Engineering (Artificial Intelligence & Machine Learning)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain in detail, the various phases of compiler.	7 Marks	L1	CO1	PO1
	b)	Define the following terms: compiler, interpreter, and translator. Differentiate them.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Write briefly about the role of Lexical analyzer with the possible error recovery actions.	7 Marks	L3	CO1	PO1
	b)	Write short notes on Lexeme, Token and Pattern.	7 Marks	L3	CO1	PO1
		UNIT-II				
3.		Construct LL(1) parser table for the following grammar S —— iCtS|iCtSeS|a C —— b Is the grammar LL(1).	14 Marks	L4	CO2	PO4
		(OR)				
4.		Explain LR parsing algorithm in detail with an example.	14 Marks	L4	CO2	PO4
		UNIT-III				
5.		Suppose we have a production A— B C D. Each of the four non-terminals has two attributes s, which is synthesized, and I, which is inherited. For each set of rules below, check whether the rules are consistent with i) An S-attributed definition ii) An L-attributed definition iii) Any evaluation order at all	14 Marks	L4	CO3	PO2
		(OR)				
6.		Construct a Syntax-Directed Translation scheme that translates arithmetic expression from infix into postfix notation.	14 Marks	L2	CO3	PO3
		UNIT-IV				
7.		Explain different methods of representing Boolean expressions with examples.	14 Marks	L2	CO4	PO1
		(OR)				
8.		Write the translation scheme to generate three address code for the assignment statement.	14 Marks	L3	CO4	PO1
		UNIT-V				
9.		Explain the principle sources of code optimization with examples.	14 Marks	L2	CO5	PO1
		(OR)				
10		Illustrate the design of a code generator with suitable examples.	14 Marks	L3	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain about substitution techniques.	7 Marks	L2	CO1	PO1
	b)	Write short notes on security mechanisms.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain about Security attacks.	7 Marks	L2	CO1	PO1
	b)	Construct a Caeser cipher and convert the word "cryptosystemalwayssecure" into cipher text with k=4.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Explain in detail about the steps involved in DES.	7 Marks	L2	CO2	PO2
	b)	Explain in detail about Elgamal Cryptosystem and Chinese Remainder theorem.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Differentiate between block and stream ciphers. Explain the block cipher modes of operations? What are the attacks on block ciphers?	7 Marks	L2	CO1	PO2
	b)	Explain Cipher feedback mode.	7 Marks	L2	CO1	PO1
		UNIT-III				
5.	a)	Perform Encryption and Decryption using the RSA algorithm. p = 3 q = 11 e = 7 M = 5	7 Marks	L3	CO1	PO2
	b)	With an example, explain in detail about Secure Hash Algorithm.	7 Marks	L3	CO2	PO2
		(OR)				
6.	a)	Explain in detail about HMAC and Digital Signature Standard.	7 Marks	L2	CO3	PO2
	b)	Explain about Elgamal cryptographic system.	7 Marks	L2	CO3	PO2
		UNIT-IV				
7.	a)	Explain in detail about Kerberos.	7 Marks	L2	CO2	PO1
	b)	Sketch neatly and briefly explain about Public Key Infrastructure.	7 Marks	L2	CO2	PO1
		(OR)				
8.	a)	Explain about Remote user authentication principles.	7 Marks	L2	CO2	PO1
	b)	How to do Distribution of public keys explain with an example.	7 Marks	L2	CO2	PO1
		UNIT-V				
9.	a)	Explain about DNSSEC.	7 Marks	L2	CO2	PO3
	b)	Explain about Encapsulating security payload.	7 Marks	L2	CO3	PO2
		(OR)				
10.	a)	Explain in detail about IP Security Policy.	7 Marks	L2	CO3	PO2
	b)	Explain in detail about SSH and SSL record protocol transmission.	7 Marks	L2	CO3	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

AD HOC AND WIRLESS SENSOR NETWORKS

[Computer Science and Systems Engineering, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Define electromagnetic spectrum and list out various frequency bands and their common uses.	7 Marks	L2	CO1	PO1
	b)	Differentiate between cellular network and an ad hoc network.	7 Marks	L4	CO1	PO3
		(OR)				
2.	a)	Which factors restrict the range, data rate and reliability of the wireless transmission? Explain.	7 Marks	L2	CO1	PO1
	b)	Explain medium assess scheme issue in ad hoc wireless networks.	7 Marks	L1	CO1	PO2
		UNIT-II				
3.	a)	Discuss the concept of hidden and exposed terminal problems with diagram.	7 Marks	L2	CO2	PO2
	b)	Which protocol is more bandwidth efficient, RTMAC or MACA/PR? Explain.	7 Marks	L3	CO2	PO3
		(OR)				
4.		Provide a detailed classification tree of MAC protocol and write the key notes of each.	14 Marks	L4	CO2	PO1
		UNIT-III				
5.		Design an ad hoc wireless network with nodes and demonstrate the process of route establishment and route maintenance using the on-demand routing protocol.	14 Marks	L4	CO3	PO3
		(OR)				
6.	a)	How is the loop free property ensured in an on-demand routing protocol?	7 Marks	L2	CO3	PO3
	b)	Explain how the route establishment happens in CGSR (Cluster-Head Gateway Switch Routing Protocol) with a sample network.	7 Marks	L3	CO3	PO1
		UNIT-IV				
7.		Discuss various challenges for wireless sensor networks.	14 Marks	L2	CO4	PO2
		(OR)				
8.		Explain major components of a basic sensor node with a block diagram in detail.	14 Marks	L3	CO4	PO1
		UNIT-V				
9.	a)	Summarize most common characteristics of the MAC protocols.	7 Marks	L3	CO5	PO2
	b)	Explain low duty cycle protocols and wakeup concepts with the help of a periodic wake-up scheme.	7 Marks	L2	CO5	PO1
		(OR)				
10.		Explain network architecture and types/roles of nodes in IEEE 802.15.4 MAC Protocol along with application of EEE 802.15.4 MAC Protocol	14 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular& Supplementary Examinations April – 2024

PROCESS CONTROL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	List out the Characteristics of the electric system.	7 Marks	L2	CO1	PO2
	b)	What are the various Elements used for process dynamics?	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	What is a gas system explain in detail with examples?	7 Marks	L2	CO1	PO2
	b)	Explain the Servo operation with an example.	7 Marks	L3	CO1	PO3
		UNIT-II				
3.	a)	Explain the working of the Electronic PID controller with a neat diagram.	7 Marks	L3	CO2	PO2
	b)	Explain the working of the Pneumatic proportional Derivative controller with neat diagram.	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Explain the working procedure of continuous modes in detail.	7 Marks	L4	CO2	PO3
	b)	Define the displacement type controller in detail.	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	What is meant by controller tuning?	7 Marks	L2	CO2	PO2
	b)	Explain in detail the Ziegler-Nichols method.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	What are the relative advantages and disadvantages of time integral criteria ISE, IAE, and ITAE? How would you select the most appropriate for a particular application?	7 Marks	L3	CO2	PO3
	b)	Time integral criteria lead to a unique solution to determine the controller parameters. Justify.	7 Marks	L3	CO2	PO1
		UNIT-IV				
7.	a)	What is an actuator? List the types of Electrical actuators.	7 Marks	L2	CO3	PO1
	b)	Define & discuss the Pneumatic valve positioner in detail.	7 Marks	L3	CO3	PO1
		(OR)				
8.	a)	Write the importance of a valve positioner.	7 Marks	L2	CO3	PO1
	b)	Identify the appropriate control valve with one port opening and one seat plug. Explain it with a neat diagram.	7 Marks	L3	CO3	PO1
		UNIT-V				
9.	a)	List the applications of the cascade control system. Explain to anyone with a neat diagram.	7 Marks	L2	CO4	PO1
	b)	Consider a process with one controlled output and two active manipulated variables. Under what conditions could you use both manipulated variables to control the single output?	7 Marks	L3	CO4	PO5
		(OR)				
10.	a)	Explain in detail the ratio control with a suitable diagram.	7 Marks	L2	CO4	PO1
	b)	Define and discuss the constant bottom product and reflex rate?	7 Marks	L4	CO4	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

OPTOELECTRONICS AND LASER INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is dispersion in an optical fiber? How does it affect the communication link? Compare single mode and multi mode fibers in this regard in detail.	8 Marks	L4	CO1	PO1
	b)	Estimate the maximum core diameter for an optical fiber with the same relative refractive index difference (1.5%) & core refractive index (1.48) as the fiber may be suitable for single mode operation. It may be assumed that the fiber is operating at the same wavelength (0.85μm). Further, estimate the new maximum core diameter for single mode operation when the relative refractive index difference is reduced by a factor of 10.	6 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Illustrate the principle and operation of p-i-n photo diode.	6 Marks	L3	CO1	PO1
	b)	Classify basic attenuation mechanisms in an optical fiber? Discuss them in detail.	8 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Illustrate the operation of polarization maintaining fibers with neat diagrams.	6 Marks	L3	CO2	PO1
	b)	With a neat diagram explain the principle and operation of Fabry-Perot interferometric fiber optic sensor used for temperature and pressure measurements.	8 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Illustrate with an example, the difference between Intensity modulated fiber optic sensor and Phase modulated fiber optic sensor.	6 Marks	L2	CO2	PO1
	b)	With a neat diagram explain the principle and operation of fiber optic sensor used for current and voltage measurements.	8 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Define mode locking. Analyze mode locking laser for obtaining short intense pulses from laser by modulation.	7 Marks	L4	CO3	PO2
	b)	Calculate the ratio of the stimulated emission rate to the spontaneous emission rate for an incandescent lamp operating at a temperature of 1000 K. It may be assumed that the average operating wavelength is 0.5 μm.	7 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Distinguish between the spontaneous and stimulated emissions. Which one is necessary for laser action and why?	6 Marks	L2	CO3	PO1
	b)	Construct and discuss a gas laser system which uses He-Ne gas mixture within the glass tube and electrical pumping mechanism	8 Marks	L2	CO3	PO1

with energy level diagram.

UNIT-IV

7.	a)	Briefly discuss the role of laser in i) scribing and ii) trimming of materials.	8 Marks	L2	CO3	PO1
	b)	Illustrate the operation of laser Doppler velocity meter.	6 Marks	L3	CO3	PO1
		(OR)				
8.	a)	Write a short note on how lasers are used in Gynecology.	7 Marks	L2	CO3	PO1
	b)	Explain the usage of laser in the treatment of eye tissues and diseases.	7 Marks	L2	CO3	PO1

UNIT-V

9.	a)	Explain about various holographic components in detail.	7 Marks	L2	CO3	PO1
	b)	Illustrate the operation of Contour Generation Interferometer.	7 Marks	L3	CO3	PO1
		(OR)				
10.		Analyze different optic electronic modulators with respect to their working principle.	14 Marks	L2	CO3	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

POWER PLANT INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Illustrate the thermal power generation process with a neat diagram.	7 Marks	L1	CO1	PO1
	b)	Compare the conventional and non-conventional resources.	7 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Illustrate the hydro power generation process with a neat diagram.	7 Marks	L1	CO1	PO1
	b)	Explain the objectives of instrumentation and control in power plant.	7 Marks	L1	CO1	PO1

UNIT-II

3.	a)	Describe the operation of drum level transmitter with a suitable diagram.	7 Marks	L1	CO2	PO1
	b)	Design a measurement system setup to measure water and steam pressure measurement.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Explain the coal quantity measuring technique in air fuel circuit.	7 Marks	L1	CO2	PO1
	b)	Illustrate the operation of gas holder measuring technique for measurement of level in gaseous fuel circuit.	7 Marks	L1	CO2	PO1

UNIT-III

5.	a)	Describe the operation of single element drum level control in boiler.	7 Marks	L1	CO3	PO1
	b)	Explain the different methods used for controlling superheated steam temperature.	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	Explain the control furnace draft in combustion chamber.	7 Marks	L1	CO3	PO1
	b)	Explain the operation of metered cross limited air fuel ratio control with neat diagram.	7 Marks	L1	CO3	PO1

UNIT-IV

7.	a)	With neat block diagram, explain the principle parts of steam turbine.	7 Marks	L1	CO4	PO2
	b)	Describe the operation lubrication system for a turbo-alternator.	7 Marks	L1	CO4	PO1
		(OR)				
8.	a)	Explain various process parameters in the measurement of turbine in power plant.	7 Marks	L1	CO4	PO1
	b)	Describe the operation of condensate turbo alternator cooling system.	7 Marks	L1	CO4	PO1

UNIT-V

9.	a)	Explain about various types of maintenances used in power plant.	7 Marks	L1	CO5	PO1
	b)	Compare maintenance costs and life cycle costs in power plants.	7 Marks	L3	CO5	PO2
		(OR)				
10.	a)	Explain in detail about intrinsic safety measures in power plant.	7 Marks	L1	CO5	PO1
	b)	Why interlocks are important in power plant boilers? List and explain basic safety interlocks used in boilers.	7 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April – 2024

SENSORS AND SIGNAL CONDITIONING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss the difference between an active and passive transducer and how each type can be used in a biomedical setting.	7 Marks	L2	CO1	PO1
	b)	Design a system that uses an LDR to control the intensity of a light source.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Design a system that uses a Resistive Hygrometer to measure the humidity of a room.	7 Marks	L3	CO1	PO2
	b)	How does the sensitivity of a bonded strain gauge compare to that of other types of strain gauges?	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain why the capacitance of a capacitor can vary with frequency.	7 Marks	L2	CO1	PO1
	b)	Compare and contrast the advantages and disadvantages of using Hall effect sensors versus other types of magnetic sensors, such as magneto-resistive sensors or fluxgate sensors.	7 Marks	L4	CO1	PO2
		(OR)				
4.	a)	A capacitor has a capacitance of 10 nF and is connected in series with a 5 kΩ resistor. What is the cutoff frequency of this circuit?	6 Marks	L3	CO1	PO1
	b)	Design a circuit that uses an LVDT to measure the displacement of an object. What factors would you need to consider in designing this circuit?	8 Marks	L3	CO1	PO2
		UNIT-III				
5.	a)	Explain how a thermocouple generates a voltage.	6 Marks	L2	CO2	PO1
	b)	Compare and contrast the principles of operation of a magnetostrictive sensor and a piezoelectric sensor. How does the shape and material of the sensing element affect the performance of each type of sensor?	8 Marks	L3	CO2	PO2
		(OR)				
6.	a)	In what kind of applications are piezoelectric transducers commonly used?	7 Marks	L3	CO2	PO1
	b)	What are the different types of photoelectric sensors?	7 Marks	L2	CO2	PO1
		UNIT-IV				
7.	a)	How does an absolute encoder differ from a relative encoder in terms of providing position information?	7 Marks	L2	CO3	PO1
	b)	A silicon diode-based temperature sensor has a resistance of 10 kΩ at 25°C and a temperature coefficient of -2 mΩ/°C. What will be the resistance of the sensor at a temperature of 100°C?	7 Marks	L3	CO3	PO2

(OR)

8.	a)	How does a tachometer encoder work and how does it provide feedback for motor control?	7 Marks	L2	CO3	PO1
	b)	How do the components of a smart sensor block diagram work together to provide enhanced functionality and feedback for automated control systems?	7 Marks	L3	CO3	PO2

UNIT-V

9.	a)	A communication system requires a carrier amplifier to amplify a modulated signal with a carrier frequency of 1 GHz. The modulated signal has maximum voltage amplitude of 2 V and a frequency range of 1 MHz to 10 MHz. The system requires a minimum gain of 20 dB, a maximum noise figure of 3 dB, and a maximum output power of 10 dBm. Design a carrier amplifier circuit that meets these requirements.	9 Marks	L4	CO4	PO1
	b)	How does an instrumentation amplifier circuit work to amplify small signals while rejecting noise, and what are the key design considerations for implementing an instrumentation amplifier?	5 Marks	L3	CO4	PO2

(OR)

10.	a)	What are the components included in a typical block diagram of signal conditioning, and what is the purpose of each component?	5 Marks	L2	CO4	PO2
	b)	A Wheatstone bridge consists of three resistors R_1 = 500 Ω, R_2 = 1 kΩ, and R_3 = 2 kΩ. A strain gauge with a nominal resistance of 1 kΩ and a gauge factor of 2 is connected in one arm of the bridge. If the bridge is excited with a 5 V source and the strain gauge resistance changes by 20 Ω due to a applied force, what is the output voltage of the bridge?	9 Marks	L4	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

CLOUD COMPUTING

[Information Technology, Computer Science and Business Systems, Computer Science and Engineering (IoT), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Compare and Contrast between Cloud Consumer, Provider, Service and Service Consumer.	7 Marks	L2	CO1	PO2
	b)	Illustrate Risks and Challenges in Cloud Computing.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	List and Explain the benefits of Virtualization.	7 Marks	L	CO1	PO1
	b)	Explain about desktop and server editions of VMware.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.		Compare and Contrast between NIST and Cloud Cube model.	14 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Compare and Contrast activities between Cloud delivery models.	7 Marks	L2	CO2	PO2
	b)	Illustrate about Private and Hybrid Clouds with neat diagram.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	List and explain the characteristics of SaaS.	7 Marks	L1	CO3	PO1
	b)	Create a set of resource utilization curves for any individual server type using Resource ceilings concepts.	7 Marks	L2	CO3	PO3
		(OR)				
6.	a)	Illustrate load testing and the load generation tools.	7 Marks	L2	CO3	PO2
	b)	Illustrate the concept of Server and instance types with an example of Amazon Machine Instance (AMI).	7 Marks	L2	CO3	PO2
		UNIT-IV				
7.	a)	Distinguish between Indexed search and the dark web in Google service portfolio.	7 Marks	L4	CO4	PO4
	b)	Demonstrate PaaS application development suite using Long Jump platform.	7 Marks	L3	CO4	PO4
		(OR)				
8.	a)	Summarize Windows/Azure Live Services.	7 Marks	L4	CO4	PO4
	b)	Demonstrate Square space and Wave Maker tools to explore the PaaS application frameworks.	7 Marks	L2	CO4	PO4
		UNIT-V				
9.		Explain in detail about Cloud Front.	14 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Categorize Amazon web services.	7 Marks	L2	CO5	PO2
	b)	Demonstrate the different Instance Classes for an Amazon RDS database.	7 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

INFORMATION RETRIEVAL SYSTEMS

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is the concept of information retrieval system (IRS)? Explain Objectives of the IRS.	7 Marks	L2	CO1	PO1
	b)	Describe and Discuss the Functional overview elements IRS with neat sketch	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	What is a term Masking? Explain types of Term Masking with suitable kind of data.	7 Marks	L2	CO1	PO1
	b)	Briefly discuss the N-grams Data structure with suitable example.	7 Marks	L4	CO2	PO2
		UNIT-II				
3.	a)	What are the successor stemmers? Explain the Porter Stemming Algorithm.	7 Marks	L2	CO3	PO3
	b)	Write short notes on : i) Citational Metadata ii) Categorization	7 Marks	L1	CO3	PO2
		(OR)				
4.	a)	What is use of Automatic Indexing of Multimedia? Explain audio and indexing process.	7 Marks	L4	CO3	PO3
	b)	Explain In detail Manual Indexing Process?	7 Marks	L2	CO3	PO2
		UNIT-III				
5.	a)	Discuss different Ranking Algorithms	7 Marks	L4	CO4	PO2
	b)	Explain in detail multimedia search	7 Marks	L2	CO4	PO4
		(OR)				
6.	a)	Discuss the K – means clustering with suitable example.	7 Marks	L2	CO4	PO2
	b)	Explain Manual and automatic term Clustering with suitable examples.	7 Marks	L2	CO4	PO2
		UNIT-IV				
7.	a)	Explain cluster and network view presentation of Hits with examples.	7 Marks	L2	CO5	PO3
	b)	Discuss Visualization Information Visualization Techniques	7 Marks	L2	CO5	PO5
		(OR)				
8.	a)	Explain how present multimedia video presentation.	7 Marks	L2	CO5	PO5
	b)	Discuss the Page Ranking algorithms by using Collaborative Filtering.	7 Marks	L4	CO5	PO2
		UNIT-V				
9.	a)	Explain different Measures used in system evaluation.	7 Marks	L3	CO6	PO2
	b)	Discuss different hardware text search systems	7 Marks	L2	CO6	PO5
		(OR)				
10.	a)	Explain how to create champion list in index search optimization.	7 Marks	L2	CO6	PO3
	b)	Discuss Knuth-Morris Pratt algorithm with suitable example.	7 Marks	L4	CO6	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

IOT ARCHITECTURE AND PROTOCOLS

[Computer Science and Systems Engineering, Computer Science and Engineering(Data Science) Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the different characteristics of IoT.	7 Marks	L2	CO1	PO1
	b)	What are some good resources to learn about Machine-to-Machine communication (M2M)?	7 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	Discuss about the Business process and data management in IoT.	7 Marks	L1	CO1	PO2
	b)	What kind of information do Internet of Things (IoT) objects communicate?	7 Marks	L2	CO1	PO1 PO2
		UNIT-II				
3.	a)	Write a short note on IoT reference model.	7 Marks	L3	CO2	PO2
	b)	Discuss about deployment view in IoT.	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Explain about functional view in IoT.	7 Marks	L2	CO2	PO2
	b)	Discuss the Interaction and remote control in IoT.	7 Marks	L1	CO2	PO2
		UNIT-III				
5.	a)	Write a short note on Bluetooth Low Energy.	7 Marks	L4	CO3	PO1
	b)	Discuss in detailed about CORPL.	7 Marks	L1	CO3	PO2
		(OR)				
6.	a)	Discuss about Z-Wave protocol for smart energy in IoT.	7 Marks	L1	CO3	PO1
	b)	Write a short note on CARP.	7 Marks	L4	CO3	PO1
		UNIT-IV				
7.	a)	Explain the roles and functionality of MQTT protocol with a neat diagram.	7 Marks	L4	CO4	PO1 PO8
	b)	Discuss in detail about generic web based protocols.	7 Marks	L1	CO4	PO2
		(OR)				
8.	a)	Explain about CoAP.	7 Marks	L2	CO4	PO1
	b)	Write about the importance of AMQP.	7 Marks	L4	CO4	PO1
		UNIT-V				
9.	a)	Discuss the security consideration in MAC 802.15.4	7 Marks	L1	CO5	PO1
	b)	Explain the importance of RPL in IoT security.	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Explain about security challenges in IoT.	7 Marks	L4	CO5	PO3
	b)	Illustrate the IoT architecture for Smart House.	7 Marks	L3	CO5	PO2 PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April– 2024

INFORMATION SECURITY

[Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Summarize the different types of cryptanalysis attacks possible as per the type of information available to the attacker.	7 Marks	L2	CO1	PO1
	b)	Enumerate the different types of malware providing relevant countermeasure to overcome the threats.	7 Marks	L2	CO2	PO2
		(OR)				
2.	a)	List the different security services that are essential for securing an information system.	7 Marks	L2	CO1	PO2
	b)	Describe the role played by the following standard organizations: i) ISO ii) NIST iii) ITU-T	7 Marks	L1	CO1	PO2
		UNIT-II				
3.	a)	Outline the different kinds of threats possible on Web security and suggest suitable countermeasures.	7 Marks	L2	CO3	PO6
	b)	Illustrate the working of SSL Record protocol.	7 Marks	L2	CO3	PO2
		(OR)				
4.	a)	Interpret how HTTPS secures communication between a web client and a web server.	7 Marks	L3	CO3	PO3
	b)	Demonstrate how sessions are established using a SSL handshake protocol.	7 Marks	L3	CO3	PO1
		UNIT-III				
5.	a)	List the applications and benefits of IPSec.	7 Marks	L1	CO4	PO1
	b)	Illustrate the different security services provided by PGP for email security.	7 Marks	L2	CO4	PO3
		(OR)				
6.	a)	List the parameters in a SAD entry which define a Security Association.	7 Marks	L2	CO4	PO1
	b)	Draw the header format for an Internet Key Exchange message and explain the fields present in it.	7 Marks	L4	CO4	PO2
		UNIT-IV				
7.	a)	Outline the four basic techniques used for an efficient password selection strategy.	7 Marks	L2	CO5	PO1
	b)	Summarize the functioning of application-level gateways, and circuit-level gateways.	7 Marks	L2	CO5	PO5
		(OR)				
8.	a)	Describe briefly about the two common approaches for intrusion detection.	7 Marks	L2	CO5	PO2
	b)	What is the role of a Bastion host in network security and list the common characteristics of a Bastion host.	7 Marks	L2	CO5	PO1

UNIT-V

9.	a)	Illustrate the steps to encrypt your files seamlessly.	7 Marks	L3	CO6	PO3
	b)	Enumerate the installation procedure and working of SpoofGuard.	7 Marks	L2	CO6	PO7
		(OR)				
10.	a)	List and explain the steps involved in Encrypting Your Email with Thunderbird.	7 Marks	L2	CO6	PO5
	b)	Describe briefly about PwdHash and Remote PwdHash.	7 Marks	L2	CO6	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

CLOUD MICRO SERVICES AND APPLICATIONS

[Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss in detail Monolithic service and give limitations.	7 Marks	L2	CO1	PO1
	b)	Explain different dashboards used in the micro service environment.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain how to Building cloud computing environment.	7 Marks	L2	CO1	PO1
	b)	Describe and discuss the micro service benefits.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	What is Aneka Container? Describe three services installed in the Aneka container and discuss the Fabric Services.	7 Marks	L2	CO2	PO2
	b)	Explain in details logical organization of Aneka Clouds and master node configuration details.	7 Marks	L2	CO2	PO5
		(OR)				
4.	a)	Discuss different models offered by the Aneka SDK Programming environment.	7 Marks	L2	CO2	PO2
	b)	What is the use of Aneka thread? Explain Programming applications with Aneka threads.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	Explain Microsoft Windows Azure Platform Architecture with neat sketch.	7 Marks	L4	CO3	PO1
	b)	Discuss different Google App Engine (GAE) Application services Applications hosted on AppEngine	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Discuss Amazon Cloud Front content delivery network in AWS Framework.	7 Marks	L4	CO3	PO3
	b)	Explain in details Azure additional services such as virtual networking and content delivery.	7 Marks	L1	CO3	PO3
		UNIT-IV				
7.	a)	Explain A cloud environment for Geoscience: satellite data processing with neat sketch.	7 Marks	L2	CO4	PO1
	b)	Discuss Cloud desktop Application: Xcerion XML Internet OS/3 (XIOS/3).	7 Marks	L4	CO4	PO3
		(OR)				
8.	a)	Discuss in detail e architecture of the SalesForce.com platform	7 Marks	L3	CO4	PO2
	b)	Explain Multiplayer online gaming in cloud environment.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Explain MetaCDN architecture with neat sketch.	7 Marks	L2	CO5	PO1
	b)	Discuss the RESERVOIR stack components with neat setch.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Explain indetail cloudbus toolkit.	7 Marks	L2	CO5	PO3
	b)	Discuss the layers of Cloud federation reference stack.	7 Marks	L2	CO5	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

SERVICES MARKETING

[Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	How does strategic marketing differ from traditional marketing approaches?	7 Marks	L2	CO1	PO1
	b)	Discuss the factors that influence consumer behavior when purchasing services.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Define marketing and explain its significance in today's business environment.	7 Marks	L2	CO1	PO1
	b)	Describe the process of developing a target market strategy.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Analyze the concept of retailing in product management and explain the effective retail strategies in today's market environment?	7 Marks	L4	CO2	PO2
	b)	Describe the nature of pricing in product management.	7 Marks	L2	CO2	PO2
		(OR)				
4.		Explain the concept of Vertical Marketing Systems (VMS) and their importance in modern marketing practices.	14 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Explain the role of advertising in attracting a customer to a service firm.	7 Marks	L2	CO3	PO2
	b)	Briefly outline various component of services promotion mix with suitable illustrations	7 Marks	L2	CO3	PO2
		(OR)				
6.		Explain the significance of sales promotion and publicity in marketing.	14 Marks	L2	CO3	PO2
		UNIT-IV				
7.	a)	Explain the concept of the "Flower of Service" and its significance in designing service products.	7 Marks	L2	CO4	PO2
	b)	Write a short notes on Revenue Management.	7 Marks	L2	CO4	PO1
		(OR)				
8.		Discuss the importance of integrated service marketing communications in building a strong brand presence and engaging customers.	14 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Discuss strategies for reducing customer defections and increasing customer retention in service-oriented businesses.	7 Marks	L2	CO5	PO2
	b)	How can service quality be measured?	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Provide examples of businesses that have successfully implemented service quality and productivity strategies to enhance customer relationships.	7 Marks	L4	CO5	PO2
	b)	Explain the importance of learning from customer feedback in improving service quality.	7 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

MARKETING MANAGEMENT

[Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	How does Societal Marketing approach differ from traditional marketing approaches, and what are its implications for companies and society?	7 Marks	L3	CO1	PO1
	b)	List out and explain the different types of core marketing concepts.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Define social responsibility. Discuss the importance of corporate social responsibility (CSR) in today's marketing environment	7 Marks	L2	CO1	PO1
	b)	What is meant by Capturing Marketing Insights? Explain its key components.	7 Marks	L1	CO1	PO1

UNIT-II

3.	a)	What is Value Chain? Discuss its significance in business operations.	7 Marks	L1	CO2	PO3
	b)	Define Core Competencies in the context of marketing. How do Core Competencies distinguish a company from its competitors and contribute to its competitive advantage?	7 Marks	L1	CO2	PO3
		(OR)				
4.	a)	Define Organizational Culture and its Significance in the context of Marketing Management	7 Marks	L1	CO2	PO3
	b)	Discuss the role of Strategic Planning in guiding resource allocation and investment decisions.	7 Marks	L1	CO2	PO5

UNIT-III

5.	a)	Analyze the strategies that companies employ to build and maintain a reputation for superior customer satisfaction and service excellence.	7 Marks	L4	CO3	PO3
	b)	What is meant by Maximizing Customer Lifetime Value? List out and explain the strategies for Maximizing Customer Lifetime Value.	7 Marks	L2	CO3	PO2
		(OR)				
6.		Define Customer Relationship Management. Discuss the stages involved in implementing CRM strategies and methodologies within an organization	14 Marks	L2	CO3	PO3

UNIT-IV

7.	a)	Explain in detail the Micro and Macro Marketing Environment.	7 Marks	L1	CO4	PO4
	b)	Define what constitutes a Modern Marketing Information System (MkIS) and its significance in contemporary business environments.	7 Marks	L1	CO4	PO4
		(OR)				
8.	a)	Describe the stages of the Business Buying Process and the key activities involved in each stage.	7 Marks	L1	CO4	PO4
	b)	Explore the process of identifying and analyzing key participants in the Business Buying Process.	7 Marks	L1	CO4	PO5

UNIT-V

9.	a)	Describe the process of designing services to meet customer needs and expectations	7 Marks	L2	CO5	PO6
	b)	Define self-service technologies (SSTs) and their role in enhancing service delivery, convenience and efficiency along with suitable examples.	7 Marks	L1	CO5	PO7

(OR)

10.	a)	How does online marketing enable businesses to reach wider audiences, target specific demographics and track campaign performance more effectively?	7 Marks	L3	CO5	PO3
	b)	List out and explain the various options and channels available for online marketing communication	7 Marks	L1	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April – 2024

SOFTWARE ENGINEERING PRINCIPLES

[Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is a myth? Give a focus on various software myths regarding Management and Practitioner.	7 Marks	L1	CO1	PO1
	b)	Draw and explain the spiral model with its advantage and disadvantages.	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	"Software engineering is a layered technology". Justify.	7 Marks	L5	CO1	PO1
	b)	What is the use of software development process models? Explain.	7 Marks	L1	CO1	PO2
		UNIT-II				
3.	a)	Distinguish between functional and nonfunctional requirements with a block diagram. Explain non function requirements types.	7 Marks	L3	CO2	PO2
	b)	What is requirements elicitation? Explain various activities performed in it with watch system that facilitates to set time and alarm as an example.	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Differentiate data-oriented requirements analysis and object-oriented requirement analysis.	7 Marks	L3	CO2	PO2
	b)	What are the goals of requirement engineering? What are the tasks performed in requirement engineering?	7 Marks	L1	CO2	PO2
		UNIT-III				
5.	a)	Identify the stake holders of ATM system and classify them according to view points.	7 Marks	L1	CO3	PO3
	b)	What is modularity? For a good quality software modularity is important. Why? Justify.	7 Marks	L1	CO3	PO3
		(OR)				
6.	a)	Briefly explain software design process.	7 Marks	L1	CO3	PO2
	b)	Face book is one of the largest social networking website available with billions of users. As a user of the face book write a class diagram to represent the basic functionality of the system. Note the diagram should make use of relationships and multiplicity concept.	7 Marks	L2	CO3	PO3
		UNIT-IV				
7.	a)	Explain black-box testing and white box-testing.	7 Marks	L1	CO4	PO1
	b)	Explain strategic approach for software testing.	7 Marks	L1	CO4	PO1

(OR)

8.	a)	What is black box testing? Is it necessary to perform this? Explain various test activities.	7 Marks	L3	CO4	PO1
	b)	What is cyclomatic complexity? Explain with an example how to construct a flow graph for a program (Fibonacci series) and compute cyclomatic Complexity.	7 Marks	L3	CO4	PO1

UNIT-V

9.	a)	Discuss Reactive and proactive risk strategies.	7 Marks	L3	CO5	PO3
	b)	What is meant by SQA? Discuss in detail SQA activities.	7 Marks	L3	CO5	PO2

(OR)

10	a)	Discuss the concept of Risk assessment and Risk control.	7 Marks	L3	CO5	PO3
.	b)	Explain about formal technical reviews.	7 Marks	L1	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

ARTIFICIAL NEURAL NETWORKS

[Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Artificial Intelligence & Machine Learning)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Compare and contrast between classification and regression.	7 Marks	L5	CO1	PO2
	b)	Explain preprocessing Techniques with an example.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Illustrate the process of polynomial curve fitting with necessary explanation.	7 Marks	L3	CO1	PO1
	b)	Analyze the process of finding the values of the parameter using the maximum likelihood approach.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Discuss various Linear discriminant functions.	7 Marks	L2	CO1	PO1
	b)	Explain the perceptron learning process with necessary mathematical equations.	7 Marks	L2	CO1	PO2
		(OR)				
4.	a)	Define learning rate and analyze the use of learning rate decay mechanism.	7 Marks	L1	CO1	PO1
	b)	Discuss Polyak Averaging with examples.	7 Marks	L2	CO1	PO2
		UNIT-III				
5.	a)	Explain the perceptron learning process with necessary discriminant functions.	10 Marks	L2	CO2	PO2
	b)	Explain error back propagation with example.	4 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Analyze the Weight-space symmetries problem in Multi Layer Perceptron.	7 Marks	L4	CO2	PO3
	b)	Explain Threshold units in detail with an example.	7 Marks	L2	CO2	PO2
		UNIT-IV				
7.	a)	Explain in detail about the gradient descent optimization algorithm.	7 Marks	L2	CO3	PO2
	b)	Discuss about cross entropy for two classes and multiple class.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Justify the advantage of using cross-entropy error function for multiple classes.	7 Marks	L5	CO3	PO3
	b)	Explain Modeling conditional distribution.	7 Marks	L2	CO3	PO2
		UNIT-V				
9.	a)	Explain Soft weight sharing technique; Explain how to use to reduce the effective complexity of a network with a large number of weights.	7 Marks	L2	CO4	PO2
	b)	Define the over fitting and under-fitting problem in neural networks and explain corresponding solutions.	7 Marks	L1	CO4	PO1
		(OR)				
10.	a)	Explain Growing and pruning algorithms in detail.	7 Marks	L2	CO4	PO2
	b)	One of the simplest forms of regularizer is called weight decay. Justify and its use in bias and variance minimization.	7 Marks	L5	CO4	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

EMBEDDED SYSTEM DESIGN AND ARCHITECTURE

[Computer Science and Engineering (Internet of Things)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain about the history of embedded systems.	7 Marks	L2	CO1	PO1
	b)	Explain about the classification of embedded systems.	7 Marks	L5	CO1	PO1
		(OR)				
2.	a)	What are the different types of memories used in Embedded System design? Explain the role of each.	7 Marks	L2	CO1	PO1
	b)	Explain the difference between embedded systems and general computing systems.	7 Marks	L5	CO1	PO1

UNIT-II

3.	a)	Discuss about the priority of the interrupts in 8051, and state for which interrupt highest priority is given?	7 Marks	L1	CO2	PO1
	b)	Explain the timer and counter operations of 8051 Microcontroller.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Write an assembly language program using 8051 microcontroller instructions to generate a square wave at port 1, pin 0 (i.e., P 1.0). The frequency of the generated square wave is to be 1 kHz.	7 Marks	L3	CO2	PO5
	b)	Explain about the process of assembly language programming.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Explain the role of Integrated Development Environment (IDE) for embedded Software development.	7 Marks	L2	CO3	PO2
	b)	Write an Embedded C program for Interfacing the Keyboard and display with microcontroller to display the character of "WELCOME".	7 Marks	L3	CO3	PO5
		(OR)				
6.	a)	Explain the various details held by a Map file generated during the process of cross-compiling an embedded C project.	7 Marks	L2	CO3	PO1
	b)	Write and Embedded C program to for interfacing of 8 LED's with 8051 microcontroller.	7 Marks	L3	CO3	PO5

UNIT-IV

7.	a)	Explain Round Robin process scheduling with interrupts.	7 Marks	L2	CO4	PO1
	b)	Define message passing. Explain how the message passing is classified.	7 Marks	L1	CO4	PO1
		(OR)				
8.	a)	Explain the advantages and limitations of simulator based debugging.	7 Marks	L2	CO4	PO1
	b)	What is testing? Explain the types of testing.	7 Marks	L1	CO4	PO1

UNIT-V

9.	a)	Explain about the memory organization of ARM processor.	7 Marks	L2	CO5	PO1
	b)	Explain in detail about ARM vs thumb programming model?	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Explain the Programmers Models of ARM processor in detail.	7 Marks	L2	CO5	PO1
	b)	Explain about the CAN bus protocol.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

DIGITAL FORENSICS

[Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the computer's roles in crimes.	7 Marks	L2	CO1	PO1
	b)	Explain the Types of Digital Forensics.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain the types of cybercrime.	7 Marks	L2	CO1	PO2
	b)	Explain about the challenges for Evidence Handling.	7 Marks	L2	CO1	PO3
		UNIT-II				
3.	a)	Difference between Hacking and Ethical hacking.	7 Marks	L4	CO2	PO2
	b)	Explain about Incident Response Methodology.	7 Marks	L2	CO2	PO3
		(OR)				
4.	a)	Explore some tools for ethical hacking.	7 Marks	L2	CO3	PO3
	b)	Explain Initial Response in detail.	7 Marks	L2	CO3	PO1
		UNIT-III				
5.	a)	Describe the process of Live Data Collection on Microsoft Windows Systems.	7 Marks	L2	CO4	PO5
	b)	Briefly explain about Forensic Image Formats.	7 Marks	L2	CO4	PO5
		(OR)				
6.	a)	Explain about Live Data Collection on Unix-Based Systems.	7 Marks	L2	CO4	PO2
	b)	List out the Forensic image formats and explain them.	7 Marks	L2	CO4	PO5
		UNIT-IV				
7.	a)	Explain the concept of Forensic Analysis of File Systems.	7 Marks	L2	CO5	PO2
	b)	Explain about Investigating Applications of Data analysis	7 Marks	L2	CO5	PO1
		(OR)				
8.	a)	Explain about various Storage Layers.	7 Marks	L2	CO5	PO3
	b)	Differentiate Static and Dynamic Analysis.	7 Marks	L4	CO5	PO2
		UNIT-V				
9.	a)	Briefly explain about Intrusion Detection systems.	7 Marks	L2	CO6	PO1
	b)	What are the Types of IDS Understanding Network intrusion and attacks?	7 Marks	L2	CO6	PO2
		(OR)				
10.	a)	Explain about the Investigating Routers.	7 Marks	L2	CO6	PO3
	b)	Explain the process of Collecting Network based evidence.	7 Marks	L2	CO6	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations, April-2024

INTERNET OF THINGS

[Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain about Technology behind IoT.	7 Marks	L2	CO1	PO1
	b)	Write about Data consolidation and Device management at Gateway.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	What is M2M communication? Justify the statement with an illustrative scenario:"IoT is much more than M2M communication".	7 Marks	L1	CO1	PO2
	b)	Elaborate the role of IoT in pollution control systems	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Explain the following terms: i) Datagram; ii) Hypertext, Hyperlink; iii) XML; iv) Web services.	7 Marks	L3	CO2	PO1
	b)	Write a short note on Internet-Based Communications.	7 Marks	L4	CO2	PO2
		(OR)				
4.	a)	Write about MQTT and REST Application Layer Protocols.	7 Marks	L4	CO2	PO1
	b)	Explain the importance of IP Addressing in the IoT.	7 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Explain Arduino. What are the things need to be considered for developing on the Arduino?	7 Marks	L4	CO3	PO2
	b)	Describe the IoT cloud based services provided by Thing Speak platform.	7 Marks	L4	CO3	PO3
		(OR)				
6.	a)	What are the main components of AWS IoT?	7 Marks	L2	CO3	PO2
	b)	List the common and distinct features and applications of Arduino, Galileo and Edison boards.	7 Marks	L2	CO3	PO3

UNIT-IV

7.	a)	List out the different steps in Design methodology.	7 Marks	L2	CO4	PO5
	b)	Explain the implementation of IoT technology in home Automation.	7 Marks	L2	CO4	PO4
		(OR)				
8.	a)	What are the limitations of open source tools for IoT development?	7 Marks	L2	CO4	PO4
	b)	Explain the implementation of IoT technology in smart parking.	7 Marks	L1	CO4	PO5

UNIT-V

9.	a)	Explain about using Hadoop YARN.	7 Marks	L2	CO5	PO3
	b)	List some Hadoop Configuration files.	7 Marks	L4	CO5	PO4
		(OR)				
10.	a)	Explain Profiles and Protocols for IoT Security Models.	7 Marks	L2	CO5	PO3
	b)	List the focus areas of OWASP and importance of each in IoT security.	7 Marks	L4	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular& Supplementary Examinations April – 2024

BLOCKCHAIN TECHNOLOGIES

[Information Technology, Computer Science and Engineering (IoT), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the Various technical definitions of blockchains.	4 Marks	L2	CO1	PO1
	b)	Illustrate and explain various features and applications of block chain technology.	10 Marks	L3	CO1	PO3
		(OR)				
2.	a)	List out and explain various tiers and types of blockchain technology.	10 Marks	L3	CO1	PO3
	b)	Explain in detail about CAP theorem and blockchain.	4 Marks	L2	CO1	PO1
		UNIT-II				
3.		Examine in detail about transaction life cycle and transaction structure in bitcoin ecosystem.	14 Marks	L4	CO2	PO3
		(OR)				
4.	a)	List out and discuss in detail about various wallet types used in bitcoin ecosystem.	5 Marks	L3	CO2	PO2
	b)	Make use of a neat sketch and illustrate about block chain structure and structure of a block header.	9 Marks	L3	CO2	PO3
		UNIT-III				
5.	a)	List out and explain the types of accounts in Ethereum.	4 Marks	L2	CO3	PO3
	b)	Illustrate in brief about various components of Ethereum blocks and explain in detail about valuable information in the block header.	10 Marks	L3	CO3	PO5
		(OR)				
6.		Discuss in detail about the following: i) Ethash ii) CPU Mining iii) GPU Mining	14 Marks	L3	CO3	PO3
		UNIT-IV				
7.		Explain in detail about different categorization of transactions.	14 Marks	L3	CO4	PO4
		(OR)				
8.	a)	Discuss in detail about Application development and deployment using BlockApps.	9 Marks	L4	CO4	PO3
	b)	Examine in detail about Eris blockchain-based ecosystem application.	5 Marks	L3	CO4	PO2
		UNIT-V				
9.	a)	Making use of an example to illustrate the dark side of block chain technology.	7 Marks	L4	CO5	PO3
	b)	Discuss in detail about the following. i) Indistinguishability obfuscation ii) Homomorphic encryption	7 Marks	L4	CO5	PO3
		(OR)				
10.		Discuss in detail about the following: i) Consensus Algorithms ii) Scalability iii) Code Obfuscation iv) Block chain as a service	14 Marks	L3	CO5	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

BIOMEDICAL INSTRUMENTATION

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is biomedical Instrumentation? Explain briefly?	7 Marks	L2	CO1	PO1
	b)	Draw the block diagram of the man instrument system and explain its operation.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Explain the resting and action potentials with the figures.	7 Marks	L2	CO1	PO1
	b)	What are the sources of Bioelectric Potentials Explain?	7 Marks	L1	CO1	PO1
		UNIT-II				
3.	a)	Explain the standard 12 lead configuration used for measurement of ECG.	7 Marks	L1	CO2	PO1
	b)	By utilizing electromagnetic technique explain how blood flow is measured with neat diagram?	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Explain the parameter that dictates the transducer capabilities?	7 Marks	L2	CO2	PO1
	b)	Explain Relation between electrical and mechanical activities of the heart.	7 Marks	L1	CO2	PO2
		UNIT-III				
5.	a)	With relevant diagram, explain how Korot Koff method is used for measurement of blood pressure.	7 Marks	L2	CO3	PO2
	b)	Explain about Spirometry.	7 Marks	L1	CO3	PO3
		(OR)				
6.	a)	Explain about human Respiratory System briefly?	7 Marks	L2	CO3	PO2
	b)	With neat sketch explain Pnemuo tacho graph Ventilators.	7 Marks	L1	CO3	PO3
		UNIT-IV				
7.		What is pace maker? Explain Need for Cardiac pacemakers. Explain operation of Atrial Synchronous pacemaker.	14 Marks	L2	CO4	PO5
		(OR)				
8.	a)	What is a defibrillator? Explain about AC and DC defibrillators.	7 Marks	L2	CO4	PO4
	b)	Explain Hemo Dialysis, Peritonal Dialysis.	7 Marks	L2	CO4	PO5
		UNIT-V				
9.	a)	Draw the block diagram of CT and explain the different blocks in it.	7 Marks	L2	CO5	PO3
	b)	Briefly discuss the different modes of ultrasonic scanning with suitable diagram.	7 Marks	L2	CO5	PO4
		(OR)				
10.	a)	Explain Cineangiogram used in Medical Imaging system.	7 Marks	L2	CO5	PO3
	b)	Explain briefly about Emission computerized tomography and MRI technique.	7 Marks	L2	CO5	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

MOBILE APPLICATION DEVELOPMENT

[Computer Science and Engineering (Artificial Intelligence),
Computer Science and Engineering (Artificial Intelligence & Machine learning)
Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Compare and contrast mobile applications with mobile web apps?	7 Marks	L3	CO1	PO2
	b)	Describe the major mobile platforms, such as iOS and Android, and their characteristics and user bases.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the development tools required for building mobile applications, such as IDEs and SDKs.	7 Marks	L3	CO1	PO2
	b)	Discuss the advantages and disadvantages of developing a mobile application versus a mobile web app.	7 Marks	L1	CO1	PO1

UNIT-II

3.	a)	Discuss the different components of a screen in mobile application development.	7 Marks	L2	CO2	PO2
	b)	Develop an android application and explain the significance of utilizing the action bar in mobile application development.	7 Marks	L4	CO2	PO4
		(OR)				
4.	a)	List the types of intents and Discuss the importance of linking activities using intents in mobile application development.	7 Marks	L2	CO2	PO3
	b)	Exemplify the role of the following user interface elements i) EditText ii) DatePicker iii) Image Button iv) TextView	7 Marks	L2	CO2	PO3

UNIT-III

5.	a)	Elaborate on the functionalities of Picker views in Android mobile application development.	7 Marks	L4	CO3	PO2
	b)	Compare different ways to save and load of User preferences.	7 Marks	L3	CO3	PO3
		(OR)				
6.	a)	Explain the process of persisting data to files in Android mobile application development.	7 Marks	L2	CO3	PO3
	b)	Illustrate the functionalities of Web views in Android mobile application development.	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Illustrate the process of displaying maps in mobile applications and the various API options available.	7 Marks	L2	CO3	PO3
	b)	Develop an application to send and receive SMS.	7 Marks	L3	CO3	PO5
		(OR)				
8.	a)	Explain how you can display current location of a user in android application	7 Marks	L2	CO3	PO1
	b)	Discuss how to use HTTP web services to send data in mobile applications.	7 Marks	L3	CO3	PO3

UNIT-V

9.	a)	Discuss the process of building an iOS app, using the "Derby" app as an example.	7 Marks	L2	CO4	PO1
	b)	Elaborate on the process of preparing an Android application for publishing.	7 Marks	L3	CO4	PO3
		(OR)				
10.	a)	Illustrate how to bind activities to services in an Android application.	7 Marks	L2	CO4	PO4
	b)	Demonstrate the creation of a "Hello World" app in iOS development.	7 Marks	L3	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

DATA ANALYTICS

[Computer Science and Engineering (Internet of Things)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Distinguish between BI and Data Science in several ways to compare groups of analytical techniques.	7 Marks	L4	CO1	PO2
	b)	What kinds of tools would be used in the following phases, and for which kinds of use scenarios? Phase 5: Communicate Results, Phase 6: Operationalize.	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Describing the emerging Big Data ecosystem and new roles needed to support its growth, explain with example of Big Data Analytics in different areas.	7 Marks	L2	CO1	PO1
	b)	Discusses how U.S. retailer Target used Big Data and advanced analytical methods to drive new revenue.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Discuss the importance visualization, exploration and presentation of data in Data analytics.	7 Marks	L2	CO2	PO1
	b)	Explain difference of Means in Statistical Methods for Evaluation in R programming.	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Illustrate the importance of Navie Bayesian classification in R Programming.	7 Marks	L1	CO2	PO1
	b)	Discuss the importance of Wilcoxon Rank-Sum Test.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Why use autocorrelation instead of auto covariance when examining stationary time series?	7 Marks	L1	CO3	PO1
	b)	What are the main challenges of text analysis and What is the definition of topic in topic models?	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	What is a caveat of IDF? How does TFIDF address the problem? Name three benefits of using the TFIDF.	7 Marks	L1	CO3	PO2
	b)	Fit an appropriate ARIMA model on the following datasets included in R. Provide supporting evidence on why the fitted model was selected, and forecast the time series for 12 time periods ahead. **a. faithful:** Waiting times (in minutes) between Old Faithful geyser eruptions **b. Johnson:** Quarterly earnings per J&J share **c. sunspot. month:** Monthly sunspot activity from 1749 to 1997	7 Marks	L3	CO3	PO1

UNIT-IV

7.	a)	What is the focus of a presentation for a project sponsor.	7 Marks	L2	CO4	PO3
	b)	What is the focus of Creating the Final Deliverables for stakeholders?	7 Marks	L2	CO4	PO3

(OR)

8.	List out the key outputs for each of the main stakeholders of an analytics project and what they usually expect at the conclusion of a project.	14 Marks	L1	CO4	PO1

UNIT-V

9.	Explain in details about web mining with an example	14 Marks	L3	CO5	PO4

(OR)

10.	What are the different recommendation techniques that are available in the data analytics explain with an example for each technique.	14 Marks	L4	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Regular & Supplementary Examinations April – 2024

BIG DATA TECHNOLOGIES

[Computer Science and Engineering (IoT), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the Data storage and analysis in Hadoop.	7 Marks	L2	CO1	PO1
	b)	Write short note on Hadoop releases.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Discuss the evolution of Big Data in detail.	7 Marks	L2	CO1	PO1
	b)	Explain the advantages of Big Data.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Discuss Data Integrity in HDFS in detail	7 Marks	L2	CO2	PO1
	b)	Describe HDFS Architecture with neat skecth	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Describe the two types of nodes opearting in HDFS Cluster.	7 Marks	L2	CO2	PO1
	b)	Discuss the File-Based Data Structures.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	List and explain Features of Map Reduce.	7 Marks	L4	CO3	PO2
	b)	Categorize Map Reduce Library Classes.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Discuss the Side Data Distribution in detail.	7 Marks	L2	CO3	PO2
	b)	Describe Map Reduce types in brief.	7 Marks	L2	CO3	PO2
		UNIT-IV				
7.	a)	Explain the Pig Latin commands.	7 Marks	L2	CO4	PO1
	b)	Compare and Contrast HBase with RDBMS.	7 Marks	L2	CO4	PO2
		(OR)				
8.	a)	Describe the Pig Latin Data Processing Operators.	7 Marks	L2	CO4	PO2
	b)	Distinguish between HIVE vs. Traditional Databases.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Describe working with imported data in Sqoop.	7 Marks	L2	CO5	PO2
	b)	Illustrate the services of Zookeeper.	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Explain about Sqoop in detail.	7 Marks	L2	CO5	PO2
	b)	Write short note on building applications with Zookeeper.	7 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-16) Supplementary Examinations, May - 2024

FINITE ELEMENT METHOD
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

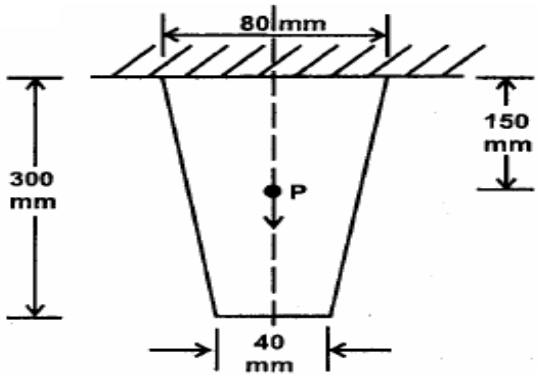
UNIT-I

1. a) Explain in detail the fundamental steps involved in FEM for solving a problem. Also mention the applications of FEM. CO1 7 Marks

   b) Differentiate between Plane strain and Plane stress conditions with examples. Write the stress- strain relationships for the both plane stress and plane strain problems. CO1 7 Marks

(OR)

2. A tapered bar of uniform thickness t = 10 mm as shown in figure. Find the displacements at the nodes by forming into two element model. The bar has a mass density $\rho = 7800$ kg/m^3, the young's modulus E = 2 x10^5 MN/m^2. In addition to self weight, the bar is subjected to a point load P = 1 kN at its centre. Also determine the element stresses and reaction force at the support. CO1 14 Marks



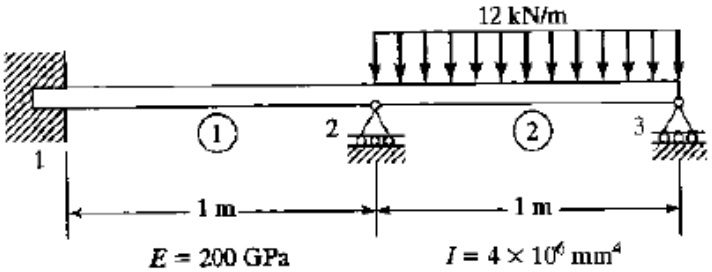
UNIT-II

3. a) Briefly explain how the beam element is different from bar and truss elements. CO2 5 Marks

   b) Explain the role of transformation matrix in truss and derive stiffness matrix of truss element. CO2 9 Marks

(OR)

4. A continuous beam subjected to loading as shown in figure. Determine CO2 14 Marks
   i) the slopes at nodes 2 and 3 and
   ii) the vertical deflection at the midpoint of the distributed load.

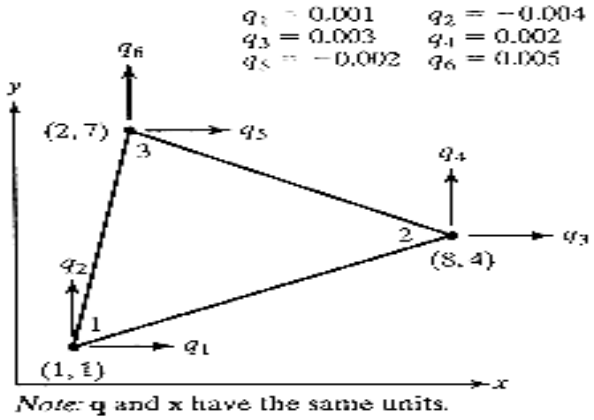


UNIT-III

5. Derive stiffness matrix for a CST element. CO3 14 Marks

(OR)

6. a) Obtain the strain-displacement relation matrix and determine the strains ε_x, ε_y and γ_{xy} and stresses for the triangular element shown in figure. CO3 9 Marks



Note: q and x have the same units.

b) State the conditions to be satisfied in order to use axisymmetric elements and briefly explain finite element formulation of axi-symmetric problems. CO3 5 Marks

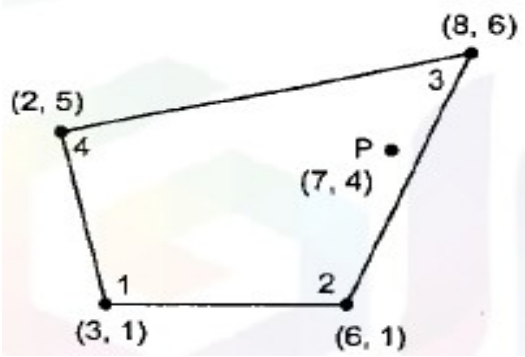
UNIT-IV

7. a) Briefly explain the following: CO1 5 Marks

i) Purpose of Isoparametric elements

ii) Shape functions of four noded quadrilateral element

b) For the isoparametric quadrilateral element shown in figure, determine the natural co-ordinates of the point P which has cartesian co-ordinates (7,4). CO1 9 Marks



(OR)

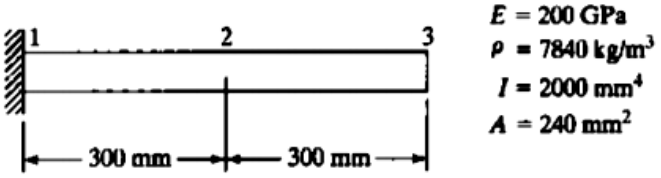
8. A uniform aluminum circular fin of diameter 0.8 cm and 6 cm length is extruded from the surface whose temperature is 100 °C. The convection takes place from the lateral surface and tip of the fin. Assuming k = 20 W/mK, h = 100 W/m^{2}K and T_∞ = 20°C, determine the temperature distribution in the pin using three element idealization. CO4 14 Marks

UNIT-V

9.	a)	Derive the mass matrix for CST element.	CO5	7 Marks
	b)	Discuss the methodology to solve the Eigen value problem for the estimation of natural frequencies of a stepped bar.	CO5	7 Marks

(OR)

10.		Evaluate the lowest Eigen value and the corresponding Eigen mode for the beam shown in figure.	CO6	14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-16) Supplementary Examinations, May - 2024

PRODUCTION AND OPERATIONS MANAGEMENT
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) List and explain the international dimensions of productivity. CO3 7 Marks
   b) Write a brief note on information and nonmanufacturing systems. CO3 7 Marks

(OR)

2. a) Enumerate operations Management with a block diagram. CO5 7 Marks
   b) Give a brief note on the significance of production systems decisions. CO5 7 Marks

UNIT-II

3. a) Alpha company has the following sales pattern. Compute the sales forecast for the Year 10 using simple linear regression model. CO4 7 Marks

Year	1	2	3	4	5	6	7	8	9
Sales (In Lakhs)	6	8	11	23	29	34	40	45	56

   b) List the various measures of forecast accuracy? Calculate squared error and absolute Percent error errors for the following data. CO4 7 Marks

Demand D_t	150	160	165	175	180
Forecast F_t	165	165	165	165	165

(OR)

4. a) A firm uses simple exponential smoothing with $\alpha = 0.02$ to forecast demand. The forecast for the first week of January was 400 units, whereas actual demand turned out to be 450 units. CO4 7 Marks
      i) Forecast the demand for the second week of January.
      ii) Assume that the actual demand during the second week of January turned out to be 460 units. Forecast the demand upto February third week, assuming the subsequent demands as 465, 434, 420, 498 and 462 units.
   b) Kids toys (P) Ltd. Is a toy marketing company at Mumbai? The sales figures (in units) of a particular toy during the past 20 weeks are given in table. Calculate the four week and eight week moving average forecasts for the given 20 weeks. CO4 7 Marks

Week	1	2	3	4	5	6	7	8	9	10
Actual Demand (units)	1634	1821	2069	1952	2178	1597	1834	1852	1771	2014

Week	11	12	13	14	15	16	17	18	19	20
Actual Demand (units)	2395	2683	1936	2076	2103	1699	2387	1854	1521	1726

UNIT-III

5. Manager T.C. Downs of Plum Engines, a producer of lawn mowers and leaf blowers, Must develop an aggregate plan for the engine department for the forecast shown below

Period	1	2	3	4	5	6
Forecast	120	135	140	120	125	125

The department has a normal capacity of 130 engines per period. The costs are shown below:

Output Costs:

Regular time (normal output) = $60 per engine
Overtime : $90 per engine
Inventory Costs : $2 per engine per period on average inventory
Backorder Costs : $90 per engine per period

Beginning inventory : 0 engines.

a) Develop a chase strategy using normal output and overtime. Show your plan in the following table. (**Note**: you do not need to enter cells which have a value of 0.) — CO1 — 6 Marks

b) Develop a level capacity plan that uses inventory to absorb fluctuations. Show your plan in the table. Note: you do not need to enter cells which have a value of 0. **(Note**: half units are acceptable.) — CO1 — 4 Marks

c) Compare the cost of the plan in a. and b. — CO1 — 4 Marks

(OR)

6. a) Discuss the need for aggregate production planning. — CO1 — 7 Marks

b) Briefly explain the basic strategies for aggregate production planning. — CO1 — 7 Marks

UNIT-IV

7. a) "MRP just prepares shopping lists. It doesn't do the shopping or cook the dinner". Comment. — CO4 — 7 Marks

b) Explain the evolution of ERP from MRP and Manufacturing Resource Planning. — CO4 — 7 Marks

(OR)

8. Give the difference between MRP & MRP II and explain MRP – II with Block diagram. — CO4 — 14 Marks

UNIT-V

9. a) List the rules generally used in single machine scheduling for minimizing the number of tardy jobs and elapsed time. — CO3 — 7 Marks

b) Give the procedure for scheduling two jobs on 'm' machines. — CO3 — 7 Marks

(OR)

10. Solve the following scheduling problem using CDS heuristic Technique. Find the make span of this scheduling process and also goodness of this problem with respect to Heuristic solution. Consider the following flow shop scheduling problem where there are 5 jobs & 3 machines. — CO6 — 14 Marks

	A	**B**	**C**
J1	18	12	16
J2	10	11	14
J3	20	15	13
J4	15	19	19
J5	16	16	15

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-19) Supplementary Examinations, May – 2024

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	Define demand. Explain the determinants of demand.	12 Marks	L2	CO1	PO1
	(OR)				
2.	What is business economics? Report the nature and scope of business economics.	12 Marks	L2	CO1	PO1
	UNIT-II				
3.	Execute determination of Break-even analysis.	12 Marks	L3	CO2	PO2
	(OR)				
4.	Discuss the following : i) Total cost ii) Average cost iii) Fixed cost vs variable costs	12 Marks	L2	CO2	PO10
	UNIT-III				
5.	Demonstrate the market structure in competitive environment.	12 Marks	L3	CO3	PO2
	(OR)				
6.	Explain about the objectives and policies of pricing.	12 Marks	L2	CO3	PO2
	UNIT-IV				
7.	Define accounting. Describe about the accounting cycle.	12 Marks	L2	CO4	PO2
	(OR)				
8.	For the following transactions pass necessary Journal entries in the books of Raju for the month of October 2016. Oct. 1 Raju commenced a business with Cash Rs. 80.000/-, and furniture Rs. 20,000/-. Oct. 5 Bought goods from Madhav Rs. 22,700/- Oct. 7 Cash deposited into bank Rs. 8,700/- Oct. 9 Purchase of old Machinery Rs. 38,000/- Oct. 16 Sold goods to Diya Rs. 50800/- Oct. 18 postal charge paid by Mahesh Rs. 800/- Oct. 25 Cash received from Diya Rs. 50,000/- in full settlement of her account. Oct. 31 Rent received through cheque Rs. 4,800/-	12 Marks	L4	CO4	PO12

UNIT-V

9.	Compare and Contrast "Manual Accounting Vs Computerized Accounting".	12 Marks	L4	CO5	PO2

(OR)

10.	The Trail balance of Kamal as on March 31, 2018 revealed the following balances:	12 Marks	L4	CO5	PO12

Particulars	Amount Rs.	Particulars	Amount Rs.
Plant & machinery	150,000	Capital Account	200,000
Purchases	126,000	Sales	230,000
Sales returns	2,000	Purchase returns	6,550
Opening Stock	60,000	Discount Received	1,600
Discount Allowed	700	Sundry Creditors	30,000
Bank charges	150		
Sundry debtors	80,000		
Salaries	13,600		
Wages	10,000		
Freight	1,500		
Carriage outwards	2,400		
Rent and Rates	4,000		
Advertisements	4,000		
Cash in hand	13,800		
	568,150		**568,150**

Adjustments:

1) Closing Stock was valued at Rs. 80,000/-
2) Provide for depreciation on plant @10% per Annum.
3) Salaries yet to be paid Rs.1000/-

Prepare Trading, Profit and Loss A/c for the year 31st March 2018 and a balance sheet as on that date.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-19) Supplementary Examinations, May – 2024

CLOUD COMPUTING

[Computer Science and Engineering,
Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the primary business drivers that fostered modern cloud based technology.	6 Marks	L2	CO1	PO1
	b)	Outline with a neat sketch about Cloud Consumer and Provider.	6 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Compare and Contrast between traditional and virtual architecture.	6 Marks	L2	CO1	PO2
	b)	Explain about Type I and Type II hypervisors with the help of a neat diagram.	6 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Compare and Contrast control levels between Cloud delivery models.	4 Marks	L1	CO2	PO2
	b)	Define Communication Protocols. List and illustrate about the WS-* extensions.	8 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Define Deployment model. Illustrate about Public and Community Clouds with neat diagram.	8 Marks	L1	CO2	PO2
	b)	Demonstrate Software as a service (SaaS) model with an example.	4 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Demonstrate with a neat diagram on Pods, aggregation, and silos in IaaS.	6 Marks	L2	CO3	PO2
	b)	Illustrate the difference between defining PaaS and SaaS.	6 Marks	L3	CO3	PO1
		(OR)				
6.	a)	Define System Metrics. A machine instance (physical or virtual) is primarily defined by four essential resources, Explain it.	6 Marks	L3	CO3	PO2
	b)	Outline LAMP Performance Monitoring Tools.	6 Marks	L2	CO3	PO1

UNIT-IV

7.		With a case study on Drupal, Demonstrate how content management system (CMS) that is used as the backend to a large number of Web sites worldwide.	12 Marks	L4	CO4	PO4
		(OR)				
8.	a)	Demonstrate PaaS application development suite using Long Jump platform.	6 Marks	L4	CO4	PO4
	b)	Summarize Windows/Azure Live Services.	6 Marks	L4	CO4	PO4

UNIT-V

9.	a)	Define Amazon Elastic Compute Cloud. Demonstrate Amazon Machine Image Instance Types.	6 Marks	L4	CO5	PO2
	b)	Develop a catalogue web page for online book store and also create a Simple Storage Service (S3) bucket on Amazon Web Services (AWS) cloud and upload Signup web page into S3 bucket.	6 Marks	L4	CO5	PO5
		(OR)				
10.	a)	Create a virtual machine instance with 4GB RAM and 200 GB hard disk configuration on Amazon Web Services (AWS) cloud through Elastic Compute Cloud (EC2) service and develop a Signup web page for online book store information.	6 Marks	L4	CO5	PO5
	b)	Demonstrate the different Instance Classes for an Amazon RDS database.	6 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-19) Supplementary Examinations, May – 2024

EMBEDDED SYSTEMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss memory classification in a typical embedded system.	6 Marks	L1	CO1	PO1
	b)	Analyze various functional blocks in MSP430.	6 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Generalize the characteristics of a typical Embedded system.	6 Marks	L1	CO1	PO2
	b)	Interpret with an example embedded system where MSP430X can fit.	6 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Discuss MSP430 instructions which can be used to control program flow.	6 Marks	L1	CO2	PO5
	b)	Interrupts are like functions that are called by hardware rather than software – support the statement with suitable reasoning.	6 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Discuss various shift and rotate instructions possible in assembly programming.	6 Marks	L1	CO2	PO5
	b)	Give out example instructions for binary arthimetic instructions with two operands.	6 Marks	L2	CO2	PO4
		UNIT-III				
5.	a)	Summarize the Architecture and operation of ADC10 in MSP430.	6 Marks	L2	CO3	PO8
	b)	Discuss in detail about ADC12 in MSP430.	6 Marks	L2	CO3	PO8
		(OR)				
6.	a)	Compose configuring Real Time Clock and associate control register to handle interrupt from basic timer 1.	6 Marks	L2	CO3	PO2
	b)	Develop mechanism to measure charging and discharging times of RC circuit using Comparator_A and Timer_2.	6 Marks	L3	CO3	PO3
		UNIT-IV				
7.	a)	Discuss various modes of operation of USCI-A.	6 Marks	L2	CO3	PO1
	b)	Explain in detail about MSP430 Communication Interface USART.	6 Marks	L1	CO3	PO1
		(OR)				
8.		Write short notes on the following: i) SPI ii) Inter-integrated Circuit Bus	12 Marks	L4	CO3	PO8
		UNIT-V				
9.	a)	Discuss in detail about Processor Technology.	6 Marks	L4	CO4	PO6
	b)	Explain in detail about IC Technology.	6 Marks	L4	CO4	PO6
		(OR)				
10.		Illustrate Embedded system modeling using. i) Data Flow Model ii) HCFSM	12 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-19) Supplementary Examinations, May – 2024

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	An air-filled rectangular waveguide has dimension of a=6cms and b=4cms.The signal frequency is 3 GHz. Compute the following for the TE_{11} mode. i) Cut off frequency ii) Wavelength in the waveguide iii) Group velocity iv) Phase constant v) Phase velocity vi) Wave impedance of the waveguide.	6 Marks	L3	CO1	PO5
	b)	Derive the expressions for the fields in rectangular waveguide in case of Transverse Magnetic (TM) wave.	6 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Calculate the average power transmitted through a rectangular wave guide in TE_{mn} mode.	6 Marks	L4	CO1	PO4
	b)	Determine the cutoff wavelength and wave impedance in case of rectangular waveguide with dimensions of 5 x 2 cm propagating TM11 mode at f = 9GHz.	6 Marks	L3	CO1	PO5
		UNIT-II				
3.	a)	Discuss about coupling mechanisms.	6 Marks	L2	CO2	PO2
	b)	Derive S-Matrix for H - Plane Tee junction.	6 Marks	L2	CO2	PO3
		(OR)				
4.	a)	Differentiate the E plane and H plane Tee. How they are used to combine or divide the microwave power.	6 Marks	L4	CO2	PO4
	b)	Suggest a microwave device that can be used to measure unknown impedance. Derive its S-Matrix.	6 Marks	L4	CO2	PO5
		UNIT-III				
5.		Design a microwave solid state device for producing oscillations using the principle of travelling wave electromagnetic field.	12 Marks	L3	CO3	PO4
		(OR)				
6.	a)	Explain the working principle of two cavity klystron amplifier.	6 Marks	L2	CO3	PO2
	b)	Derive the Hartree anode Voltage equation for linear magnetron.	6 Marks	L3	CO3	PO4
		UNIT-IV				
7.		Describe in detail about TRAPATT diode along with its characteristics and show how its exhibits negative resistance.	12 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Compare different Microwave solid state devices.	6 Marks	L4	CO3	PO4
	b)	Describe in detail about Gunn Oscillation Modes.	6 Marks	L2	CO3	PO2

UNIT-V

9.	a)	Determine the attenuation for the given attenuator, if the power meter reads 10mW with attenuator and 26mW after removing it.	6 Marks	L3	CO4	PO6
	b)	Develop the procedure for measuring high VSWR using slotted line section.	6 Marks	L3	CO4	PO5
		(OR)				
10.	a)	Using micro wave bench set up explain frequency measurement.	6 Marks	L2	CO4	PO2
	b)	Draw the bench setup for measuring low VSWR and explain its operation.	6 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	Define Business Economics and explain its nature and scope.	14 Marks	L2	CO1	PO1
	(OR)				
2.	What is meant by the Law of Demand? Explain exemptions of law of demand and changes in demand with graphs.	14 Marks	L2	CO1	PO2
	UNIT-II				
3.	Discuss "Production Function" and explain the classification of Factors of Production.	14 Marks	L2	CO2	PO2
	(OR)				
4.	Contrast between: i) Opportunity Costs Vs Outlay Costs ii) Separable Costs Vs Joint Costs.	14 Marks	L4	CO2	PO2
	UNIT-III				
5.	Describe different types of monopolies.	14 Marks	L2	CO3	PO2
	(OR)				
6.	What is perfect competition? Explain pricing under perfect competition.	14 Marks	L2	CO3	PO11
	UNIT-IV				
7.	Define "Accountancy". Discuss the accounting concepts.	14 Marks	L2	CO4	PO1
	(OR)				
8.	Journalize the following transactions in the books of Mr. Ramu. Jan. 1 Mr. Ramu commenced a business with Rs. 1,10,000/- Jan. 4 Goods sold to Manoj Rs.18, 200/- Jan. 9 Cash withdrawn from bank for office use Rs. 2,500/- Jan. 10 Bought furniture for Rs. 20,400/- Jan. 18 Cash received form Rani Rs. 22,200/- Jan. 21 Rent paid to Anand Rs. 3,400/- Jan. 24 Cash deposited into Bank Rs. 21,300/- Jan. 31 Commission paid through cheque Rs. 1,570/-	14 Marks	L4	CO4	PO11
	UNIT-V				
9.	Sketch a "Balance Sheet". Elucidate various elements of Balance Sheet.	14 Marks	L3	CO5	PO10

(OR)

10. The following Trial Balance is extracted from the books of Mr. Rajesh as on March 31, 2007. Prepare Trading and Profit and Loss account for the year ended 31.3.2007 and a Balance Sheet as on that date: — 14 Marks L4 CO5 PO11

Drawings	72,000	Capital	3,00,000
Buildings	60,000	12% Bank Loan	60,000
Furniture and fittings	30,000	Sales	4,50,000
Motor Van	1,00,000	Commission	20,000
Interest on Bank loan	3,600	Creditors	80,000
Purchases	2,50,000		
Opening Stock	1,00,000		
Establishment Exp	50,000		
Wages	8,000		
Insurance	4,000		
Debtors	1,52,400		
Cash at Bank	80,000		
	8,90,000		**8,90,000**

Adjustments:

i) Closing stock was Rs. 2, 28,000/-

ii) Outstanding wages Rs. 4,000/- and Prepaid Insurance Rs.2,200/-

iii) Depreciate buildings @ 5%, Furniture @ 15% and Motor Van @ 20%.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

IMAGE PROCESSING

[Electrical and Electronics Engineering, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Sketch the block diagram of Image Processing System and explain each block in detail.	8 Marks	L2	CO1	PO1
	b)	Derive the necessary equations in Haar Transform for N=4.	6 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain Sampling and Quantization.	7 Marks	L2	CO1	PO2
	b)	Compare Slant Transform and KL Transforms	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Analyze various filters in neighbourhood processing of Image enhancement.	7 Marks	L4	CO2	PO3
	b)	Distinguish Image smoothening and sharpening.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Perform histogram equalization of the 5x5 image [4 4 4 4 4:3 4 5 4 3:3 5 5 5 3:3 4 5 4 3:4 4 4 4 4].	8 Marks	L4	CO2	PO4
	b)	Discuss the low pass filtering using suitable mask.	6 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Write a brief note on Weiner Filtering.	6 Marks	L2	CO3	PO1
	b)	Briefly explain the approach of inverse filtering method used for image restoration.	8 Marks	L2	CO3	PO6
		(OR)				
6.	a)	How to estimate the degradation function using Constrained least squares filtering?	6 Marks	L3	CO3	PO7
	b)	Compare enhancement and restoration processes. Explain the restoration technique employing inverse filter?	8 Marks	L2	CO3	PO2
		UNIT-IV				
7.	a)	Analyze various image compression standards.	6 Marks	L2	CO4	PO8
	b)	Develop an algorithm for 'Huffman coding' to compress an 4x4 image [3 3 3 2:2 3 3 3:3 2 2 2:2 1 1 0].	8 Marks	L4	CO4	PO3
		(OR)				
8.	a)	What is meant by Error-free compression? Discuss about variable-length coding.	8 Marks	L2	CO4	PO2
	b)	What is redundancy and explain various types of redundancies with examples	6 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Explain RGB color model using Cartesian coordinate system with supporting diagram.	7 Marks	L2	CO6	PO1
	b)	Suggest an operator to perform edge detection in 2-D and explain its significance.	7 Marks	L3	CO5	PO5
		(OR)				
10.	a)	Define segmentation and explain about region growing.	7 Marks	L2	CO5	PO1
	b)	Identify various color models used in the digital representation of a color image.	7 Marks	L2	CO6	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

MACHINE LEARNING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define Machine Learning. Discuss in brief about some successful applications of machine learning.	7 Marks	L2	CO1	PO1
	b)	Explain in detail about inductive bias.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Discuss in detail the four modules of the checkers learning system.	7 Marks	L2	CO1	PO1
	b)	Illustrate the List-Then-Eliminate algorithm with an example.	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Write a short note on the decision tree representation.	7 Marks	L2	CO2	PO1
	b)	Enumerate and brief the most suited problems for decision tree learning.	7 Marks	L2	CO3	PO1
		(OR)				
4.	a)	Explain the classification process in a Support Vector Learning with necessary mathematical equations.	7 Marks	L2	CO2	PO2
	b)	Analyze the use of kernels in SVM and which kernel can be used in the case of non-linear data.	7 Marks	L4	CO2	PO2

UNIT-III

5.	a)	Illustrates the neural network representation and briefly discuss its different layers.	7 Marks	L2	CO4	PO3
	b)	Is ANN well-suited to problems in which the training data corresponds to noisy and complex data? Analyze	7 Marks	L4	CO4	PO2
		(OR)				
6.	a)	Explain the architecture of a typical multilayer neural network and illustrate its decision surface.	7 Marks	L2	CO4	PO2
	b)	Solve the learning problem in Perceptron model using an iterative training rule.	7 Marks	L3	CO4	PO2

UNIT-IV

7.	a)	Explain the bayesian approach for classifying the new instance using Naive Bayes Classifier.	7 Marks	L2	CO3	PO2
	b)	Illustrate the naive baye's classification for a concept learning task.	7 Marks	L2	CO2	PO2
		(OR)				

8.	a)	Explain the two steps of the EM algorithm and describe its general statement.	7 Marks	L2	CO2	PO2
	b)	Discuss the Bayesian belief network which represents the joint probability distribution for a set of variables.	7 Marks	L2	CO2	PO2

UNIT-V

9.	a)	Illustrates the operation of the k-NEAREST NEIGHBOR algorithm with an example.	7 Marks	L2	CO2	PO2
	b)	How can an agent learn an optimal policy n* for an arbitrary environment?	7 Marks	L3	CO3	PO3

(OR)

10.	a)	Describe the operations of the Q learning algorithm with necessary explanations.	7 Marks	L2	CO2	PO1
	b)	Discuss the architecture of the radial basis function network.	7 Marks	L2	CO2	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May - 2024

ESTIMATION AND QUANTITY SURVEYING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Estimate the following items for the plan and section given in Fig.1 using long wall and short wall method. i) Earthwork for excavation ii) I class brickwork for sub structure iii) Inside plastering in CM (1:5) with 12 mm thickness.	14 Marks	L5	CO1	PO1 PO2 PO4 PO5 PO8

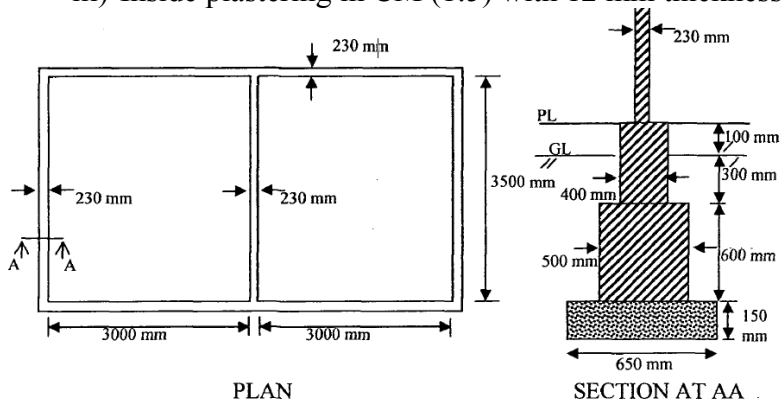

Fig.1

(OR)

2.	Find out the quantities of the following items of work from the drawing shown in fig.2 below using centre line method. i) Random Rubble masonry in CM 1:6 for footing and basement ii) Earth filling in basement iii) Damp proof course in CM 1:3, 20mm thick	14 Marks	L5	CO1	PO1 PO2 PO4 PO5

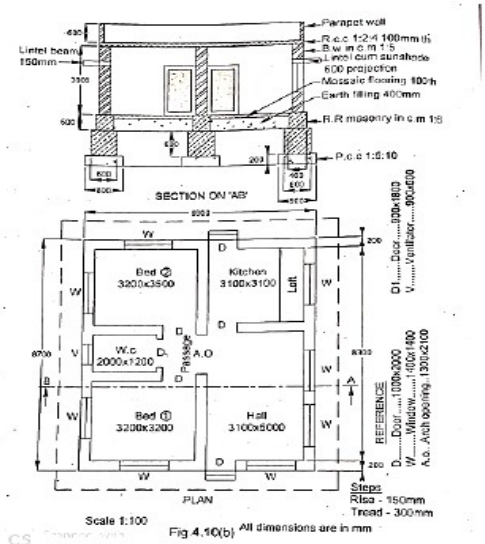

Fig.2

UNIT-II

3.		Prepare a detailed estimate for supplying, laying and jointing RCC Hume pipe line for drainage of 230 mm dia. jointing with RCC collars in CM (1:2), sand filling with 30 cm depth around the pipe. Measurement of the trench is 1000 m x 0.6 m x 1.2 m.	14 Marks	L5	CO2	PO1 PO2
		(OR)				
4.	a)	Estimate the quantity of earth work for 200 m length for a portion of a road in a uniform ground the heights of banks at the two ends being 1.00 m and 1.60 m. The formation width is 1.0 m and side slopes 2:1 (H:V). Assume that there is no transverse slope. Use the following methods and justify which method is good. i) Mid - sectional area method and ii) Prismoidal formula.	7 Marks	L5	CO2	PO1 PO2 PO4 PO5
	b)	A canal is to be constructed from reservoir to agricultural field at a distance of 3 km with a depth of 2.50 m from the ground level and side slopes of 1: 1.5. Maintain the bottom bed width of the canal throughout the length is 3.50 m and also provide banking on both left and right side of the canal at a height of 1.50 m from the ground level with the side slopes are 1: 1.5. Take banking bed width on both side is 3.50 m. Estimate the quantity of earth work on banking and cutting of the canal.	7 Marks	L5	CO2	PO1 PO2 PO4

UNIT-III

5.	a)	What is the necessity and importance of the specification related to civil engineering constructions?	7 Marks	L2	CO3	PO1 PO6 PO8
	b)	Analyze the necessity of lead statement. Determine the cost of the plastering with CM (1:4) of 12 mm thickness.	7 Marks	L4	CO3	PO1 PO2 PO4 PO11
		(OR)				
6.	a)	Determine the cost of the following items of the work as per SSR. i) Brick masonry in super structure with CM (1:6). ii) Plain cement concrete (1:4:8) for bed concrete.	7 Marks	L4	CO3	PO1 PO2 PO8 PO11
	b)	Write the general specification for first class buildings?	7 Marks	L2	CO3	PO1 PO6 PO8

UNIT-IV

7.	a)	A building is to be constructed on a site of dimensions 60’ x 40’. Prepare a contract document for the construction of the building.	7 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8
	b)	Summarize the contents of contract document.	7 Marks	L2	CO4	PO1
		(OR)				
8.		Prepare a tender document for a three storied building as been constructed on a plot of land measuring 1200 m^2. The plinth area of each storey is 1000 m^2. The life of the building structure may be taken as 75 years. The building fetches a gross rent of Rs 9000/-month. Calculate the capitalized value of the property on the basis of 14% net yield. For sinking fund 5% compound interest may be assumed. Cost of land may be taken as Rs 800/-	14 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6

		per m^2, other data required may be assumed suitably.				PO7 PO8 PO11

UNIT-V

9.	a)	Explain the concept of sinking fund.	4 Marks	L2	CO5	PO1 PO11
	b)	A leasehold property is to produce a net income of Rs. 6000/- per annum for the next 60 years. Prepare the contract for the estimated value of the property. Assume that the owner requires a return of 6% on his capital and that a sinking fund to replace the capital is also to be accumulated at 6%.	10 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO6 PO11
		(OR)				
10.	a)	Explain capitalized value with example.	7 Marks	L2	CO5	PO1
	b)	An old building has been purchased by a person @ a cost of Rs 12,00,000. Excluding the cost of land. Calculate the amount of annual sinking fund @ 7% interest assuming the life of the building as 30 years and the scrap value of the building as 10% of the purchase.	7 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO6 PO11

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

INDUSTRIAL WASTEWATER TREATMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the physical and chemical characteristics of wastewater.	7 Marks	L2	CO1	PO1 PO2
	b)	Draw a typical oxygen sag curve in a stream subjected to pollution and explain briefly the features of it.	7 Marks	L2	CO1	PO1 PO2 PO7 PO10
		(OR)				
2.	a)	Write tolerance limits for the disposal of effluent standards at least for any six parameters to dispose into inland surface water bodies and on land for irrigation.	7 Marks	L2	CO1	PO1 PO2 PO6 PO7 PO8
	b)	Define self-purification of a stream. How is it useful for the society, describe it.	7 Marks	L2	CO1	PO1 PO2 PO6 PO7

UNIT-II

3.	a)	Draw a neat sketch and describe four stages of growth of micro-organisms in the batch process reactor.	7 Marks	L2	CO2	PO1 PO2 PO10
	b)	Draw a flow sheet diagram of secondary treatment plant and explain briefly the working principle of the conventional activated sludge process.	7 Marks	L2	CO2	PO1 PO2 PO5 PO10
		(OR)				
4.	a)	Design a complete mixed activated sludge process aeration tank for treatment of 6 MLD sewage having BOD concentration of 280 mg/L. The treated sewage should have BOD less than or equal to 20 mg/L. Consider the following data for design of aeration tank: MLSS in the aeration tank = 3000 mg/l. Return sludge SS concentration = 10000 mg/l. Mean cell residence time adopted in design is 10 days, Yield coefficient = 0.65, and Decay coefficient = 0.23 d^{-1}. Assume that the BOD removed is 35% in the primary treatment.	7 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO8
	b)	List out the different types of aeration devices. Describe their role in treatment of aerobic biological treatment units.	7 Marks	L2	CO2	PO1 PO2

UNIT-III

5.	a)	What is the need for nitrification and de-nitrification process in the wastewater treatment? Discuss how it benefits in disposal of treated wastewater into water bodies.	7 Marks	L4	CO3	PO1 PO2 PO6 PO7
	b)	Describe about the working principle of Up-flow and Down-flow type of anaerobic filters with neat sketch.	7 Marks	L2	CO3	PO1 PO2 PO5 PO10
		(OR)				
6.	a)	Write a short note on the following treatment processes. i) Microfiltration ii) Reverse-osmosis	7 Marks	L2	CO3	PO1 PO2
	b)	Explain about the working of Electro-dialysis process in wastewater treatment with neat sketch.	7 Marks	L2	CO3	PO1 PO2 PO10

UNIT-IV

7.	a)	Write short notes on origin and characteristics of wastewater produced from the pulp and paper mill industry.	7 Marks	L2	CO4	PO1 PO2
	b)	Explain how the treatment of brewery wastewater is carried out in different steps with a flow sheet diagram of a typical wastewater treatment plant.	7 Marks	L2	CO4	PO1 PO2 PO10
		(OR)				
8.	a)	Explain the conventional treatment of dairy wastewater with flow sheet of a typical diary effluent treatment plant.	7 Marks	L2	CO4	PO1 PO2 PO10
	b)	A combined effluent from tannery industry has the following characteristics. pH = 8.5, Temperature = 25°C, Turbidity = 100 NTU, BOD = 1000 mg/L, COD = 2000 mg/L, Total Dissolved Solids = 3000 mg/L and Chromium (VI) = 2 mg/L. Suggest a suitable treatment method by interpreting the above data and draw a suggested treatment flow sheet diagram for the same.	7 Marks	L5	CO4	PO1 PO2 PO4 PO5 PO8 PO10

UNIT-V

9.	a)	List out the different types of waste management techniques? Discuss their merits and demerits.	7 Marks	L2	CO5	PO1 PO2 PO5
	b)	Discuss the modern water conservation methods useful for the society.	7 Marks	L4	CO5	PO1 PO2 PO5 PO6
		(OR)				
10.	a)	Explain the 4R's principle of waste management with latest technologies.	7 Marks	L4	CO5	PO1 PO2 PO5 PO7 PO12
	b)	Describe the hierarchy of waste management options with latest examples that are useful for the protection of environment.	7 Marks	L4	CO5	PO1 PO2 PO5 PO6 PO7

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss Hansen's bearing capacity theory.	7 Marks	L2	CO1	PO1 PO5
	b)	Calculate the net allowable bearing pressure and ultimate load of rectangular footing 2 m x 4 m in plan, founded at a depth of 1.8 m below ground surface. The load on footing acts at an angle of 15° to the vertical and is eccentric in the direction of width and length by 20 cm and 30 cm respectively. The saturated unit weight of the soil is 18 kN/m^3. Natural water table is at a depth of 2 m below ground level. The unit cohesion of soil is 30 kN/m^2 and soil friction angle is 27°.	7 Marks	L4	CO1	PO1 PO2 PO4 PO6 PO8 PO10
		(OR)				
2.	a)	Where do you provide a combined footing? Discuss the procedure for the design of rectangular combined footing.	7 Marks	L4	CO1	PO1 PO2 PO5 PO10
	b)	The Fig. 1 shows a shallow foundation in clay. The following data are given: B=1.2 m; D_f=1.2 m; b=0.8 m; H=6.3 m; slope angle=30°, unit weight of soil=17.5 kN/m^3, φ=0 and c=50 kN/m^2. Determine the gross allowable bearing capacity with a factor of safety 4. N_c=6.3.	7 Marks	L4	CO1	PO1 PO2 PO4 PO6 PO8 PO10

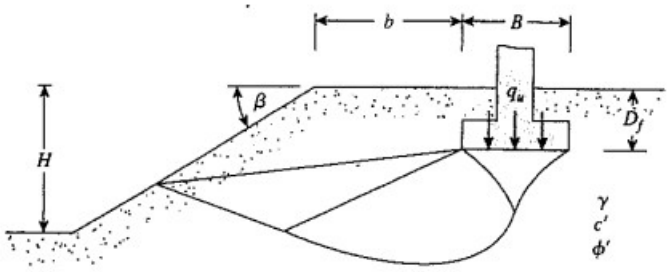

Fig.1

UNIT-II

3.	a)	Describe briefly Reese and Matlocks theory of analysis and design of laterally loaded piles.	7 Marks	L4	CO2	PO1 PO2 PO5
	b)	A concrete pile of 13 m length and 405 mm x 405 mm in cross section is embedded in saturated clay (c_u =85 kN/m^2, γ = 18 kN/m^3). Determine the allowable load that the pile can carry(F.S = 4). Use the α method for determining the skin resistance (α = 0.6).	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO6 PO8

(OR)

4.	a)	Discuss the β method of estimating the skin friction resistance of pile in clay.	7 Marks	L2	CO2	PO1 PO5
	b)	A friction pile group is carrying a load of 3000 kN including the weight of the pile cap at a site where the soil is uniform clay to a depth of 20 m, underlain by rock. The clay may be assumed to be of normal sensitivity and normally loaded, with liquid limit 60%. Number of piles =16, length of pile = 11 m, diameter of pile = 0.5, spacing of piles = 1.5 m centre to centre, unit weight = 16 kN/m3, initial void ratio = 1.0. Compute the settlement of the group.	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO6 PO8 PO10

UNIT-III

5.	a)	Write about the cantilever sheet piling in granular soils.	7 Marks	L2	CO3	PO1 PO5 PO8 PO10
	b)	A cantilever sheet pile is to be constructed to retain sandy soil to a depth of 6 m. The dry unit weight of sand is 16 kN/m^3 and the saturated unit weight is 20 kN/m^3. The angle of shearing resistance of sand is 32°. The water level is 3 m above the dredge line. Design the depth of embedment of the sheet pile.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO8 PO10

(OR)

6.	a)	Sketch a typical section of a braced cut and show the various components.	7 Marks	L2	CO3	PO1 PO10
	b)	Design an anchored bulkhead for its depth and determine the force in the tie rod of the anchored bulkhead shown in Fig. 2. The backfill and the soil below the dredge line is sand, having the following properties: G=2.6, e=1.0 and Ø=30°. Use the free earth support method.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

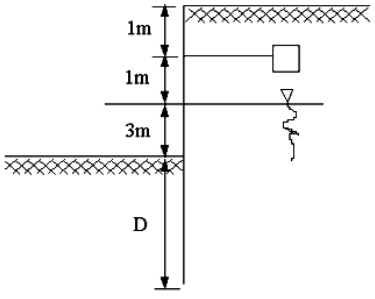

Fig. 2

UNIT-IV

7.	a)	How to classify an expansive soil based on its liquid limit, plasticity index, shrinkage limit and percentage of clay fraction?	7 Marks	L4	CO5	PO1 PO2 PO8
	b)	How lime column technique minimizes the swelling and shrinkage characteristics of expansive soils?	7 Marks	L4	CO5	PO1 PO2 PO5 PO6 PO7 PO8

(OR)

8.	a)	Describe the method of replacement of the expansive soil with a good quality soil. How would you solve the problem of constructing a footing using this method?	7 Marks	L4	CO5	PO1 PO2 PO10
	b)	Determine the load carrying capacity of 4 m long single under reamed pile of 400 mm stem diameter in a clayey soil with average cohesion value both within the strata of pile depth and below the toe is 70 kN/m^2.	7 Marks	L4	CO4	PO1 PO2 PO8 PO10

UNIT-V

9.	a)	What are the different types of marine structures? Explain types and choice of breakwaters in brief.	7 Marks	L2	CO6	PO1 PO10
	b)	Write a brief note on the design of Rubble Mound Breakwaters as per IS code.	7 Marks	L2	CO4	PO1 PO10

(OR)

10.		Write short notes on the following: i) Breakwaters ii) Wharves iii) Jetties iv) Ship Impact.	14 Marks	L2	CO6	PO1 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

BRIDGE ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the basic forms of a bridge structure.	6 Marks	L2	CO1	PO1
	b)	Describe the IRC standard loadings and mention the conditions under which they are used.	8 Marks	L2	CO1	PO6 PO8
		(OR)				
2.	a)	List the loads to be considered in the design of railway bridge.	7 Marks	L2	CO1	PO1 PO6 PO8
	b)	What is the importance of subsoil exploration in the design of bridges and list the data to be obtained such an exploration.	7 Marks	L2	CO1	PO1 PO6 PO8

UNIT-II

3.	Design simply supported RCC deck slab of a road bridge for IRC class AA tracked wheel load for the following data. Clear span = 8.0 m Clear road width = 6.6 m Thickness of pier = 1.0 m Kerb width = 225 mm Thickness of wear coat = 80 mm Materials: M20 concrete and Fe415 steel.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10
	(OR)				
4.	Design a RCC box culvert with clear vent way of 3 m x 3 m, the super imposed dead load in the culvert is 13 kN/m^2. The live load on the culvert is 50 kN/m^2. The density of soil at the site is 18 kN/m^3, angle of repose is 30^o Use M20 and Fe415 materials.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

UNIT-III

5.	Design the interior slab panel of a reinforced concrete T– beam bridge using the following data. Clear width of road way = 8.5 m Effective span = 20 m Use M20 grade concrete and Fe415 steel.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

(OR)

6.		Use Courbon's method, design main girder of RCC T-beam bridge with the following data: Clear width of road way = 7.5 m Width of Kerbs = 750 mm Effective span = 22 m Live load = IRC class AA tracked vehicle. Thickness of wearing coat = 80 mm Number of main girders = 4 M20concrete and Fe415 steel Spacing of main girders = 2.5 m.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

UNIT-IV

7.	a)	Briefly explain the types of bearings with neat sketches.	6 Marks	L2	CO4	PO1 PO6 PO8 PO10
	b)	Design a mild steel rocker bearing for transmitting the super structure reactive load of 1500 kN. Allocable pressure on bearing block = 5 MPa Permissible bending stress = 165 MPa Permissible bearing stress = 100 MPa Permissible shear stress = 105 MPa.	8 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

(OR)

8.		Design an elastomeric pad bearing to support a tee beam girder using the following data. Max. dead load reaction per bearing =300kN Max. live load reaction per bearing =700kN Longitudinal force due to friction per bearing = 45kN Effective span of the girder = 16m Estimated rotation at bearing of the girder due to dead and live loads is 0.002rad, Concrete for tee beam and bed block is M-20 grade and Total estimated shear strain due to creep, shrinkage and temperature is 6 x10^{-4} units	14 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

UNIT-V

9.	a)	List out the various forces acting on piers.	7 Marks	L2	CO5	PO1 PO6 PO8
	b)	Explain briefly the stability analysis of abutment.	7 Marks	L4	CO5	PO1 PO2 PO6 PO8

(OR)

10.		Write short notes on: i) Bed block ii) Types of wing walls iii) Types of bridge foundations	14 Marks	L2	CO5	PO1 PO6 PO8 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B. Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

GEOSPATIAL TECHNOLOGIES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define : i) Tilt ii) Focal length iii) Mosaic	7 Marks	L2	CO1	PO1
	b)	Calculate the scale of photographs, if the flying height of the aircraft is 1500m, the elevation of terrain is 500m and the focal length of the camera is 100mm.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		(OR)				
2.	a)	Define aerial photogrammetry and its types.	7 Marks	L2	CO1	PO1
	b)	Calculate the flying height of the aircraft if the terrain elevation is 750m above MSL, the camera's focal length is 150mm and the scale of image required is 1:2000.	7 Marks	L4	CO1	PO1 PO2 PO4
		UNIT-II				
3.		What are the various elements of Remote Sensing? Analyze the Electromagnetic spectrum in brief.	14 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO6
		(OR)				
4.	a)	Compare the spectral reflectance characteristics of water and vegetation.	7 Marks	L4	CO2	PO1 PO2 PO7
	b)	Define Resolution. Classify the resolutions of the sensors .	7 Marks	L4	CO2	PO1 PO2 PO7
		UNIT-III				
5.		Analyze the fundamental operations of GIS in detail.	14 Marks	L4	CO3	PO1 PO2 PO5 PO6
		(OR)				
6.		Distinguish between Raster GIS and vector GIS.	14 Marks	L4	CO3	PO1 PO2

UNIT-IV

7.	Evaluate various surface analysis tools and explain the slope analysis in GIS.	14 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO7
	(OR)				
8.	Evaluate the various network analysis tools used in GIS.	14 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6

UNIT-V

9.	Discuss the process of Land use and Land cover mapping with help of RS and GIS.	14 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO6
	(OR)				
10.	Discuss the role of RS and GIS and give suitable recommendations for sustainable watershed management.	14 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

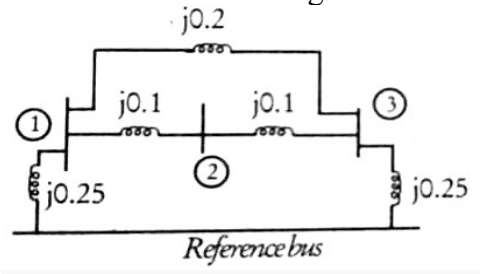
UNIT-I

1.	a)	A 100 MVA, 13.2 kV generator (G) having a synchronous reactance of 10% is connected to a star-star transformer T_1 which feeds a 132 kV line having an impedance per phase of 20+j50Ω. At the receiving end of the line there is a star-star step down transformer T_2. A load drawing 60 MVA at 0.9 power factor lagging is connected to the secondary of transformer T_2. The transformer ratings are as follows: Transformer T_1: 120MVA, 13.2/132kV, XT1=12%. Transformer T_2: 100MVA, 138/33kV, XT2=15%. Using a base of 100 MVA and a voltage base of 33 kV in the load side of the circuit, draw a one line impedance diagram for the above power system showing all the equipment parameters and the voltage base in different sections of the system.	7 Marks	L3	CO1	PO2
	b)	The line data for a sub-urban area is mentioned in the table shown, draw the layout and model the network using a bus admittance matrix.	7 Marks	L3	CO1	PO5

Bus Code	Line Impedance	HLCA pu	Off nominal tap ratio
1-2	0.05+j0.12	j0.025	-
2-3	0+j0.4	-	1.05
3-4	0.075+j0.25	j0.02	-
1-3	0.045+j0.45	j0.015	-
1-4	0.015+j0.05	-	-

(OR)

2.	a)	Using the method of building algorithm, find the bus impedance matrix for the network shown in the figure.	14Marks	L4	CO1	PO5



UNIT-II

3. a) Carry out one iteration of power flow analysis for the power system with the following data and given the voltages in polar form at the end of first iteration by NR method. — 14Marks — L4 — CO2 — PO5

Bus data:

Bus No.	Bus type	V (pu)	Generation PU		Load PU	
			P	Q	P	Q
1	Slack	1.01	---	---	---	---
2	PV	1.0	0.7	---	---	---
3	PQ	---	---	---	1.0	0.4

Line data

Bus code	Impedance
1-2	0.15j
2-3	0.15j
3-1	0.15j

(OR)

4. a) Write down the assumptions made in reducing decoupled method to fast decoupled method of power flow solution. — 7 Marks — L3 — CO2 — PO1

   b) Compare GS-method, NR, decoupled and FDLF methods with respect to: Number of iterations, convergence characteristic and memory requirements. — 7 Marks — L3 — CO2 — PO1

UNIT-III

5. a) With neat sketch, explain the significance of Thevinin's theorem in determining the fault calculations. — 7Marks — L2 — CO3 — PO1

   b) A three phase fault with a fault impedance of 0.16 p.u. occurs at bus 3 , for which Z_{BUS} is given by : — 7 Marks — L3 — CO3 — PO2

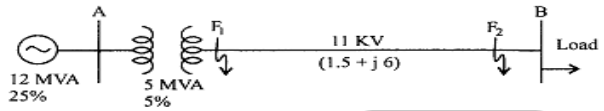
$$Zbus = \begin{bmatrix} 0.016j & 0.08j & 0.12j \\ 0.08j & 0.24j & 0.16j \\ 0.12j & 0.16j & 0.34j \end{bmatrix}$$

Compute the fault current, the bus voltages and the line currents during the fault. Assume pre-fault bus voltages 1.0 per unit.

(OR)

6. a) Why do we use reactors in the power system? Discuss their advantages. — 5 Marks — L4 — CO3 — PO1

   b) A 3-phase line shown in figure, operating at 11 kV and having a resistance of 1.5 Ohms and reactance of 6 Ohms is connected to a generating station bus bars through a 5 MVA step-up transformer having reactance of 5%. The bus bars are supplied by a 12 MVA generator having 25% reactance. Calculate the short circuit kVA fed into a symmetric fault i) at the load end of the transformer and ii) at the h.v. terminals of the transformer. — 9 Marks — L4 — CO3 — PO4

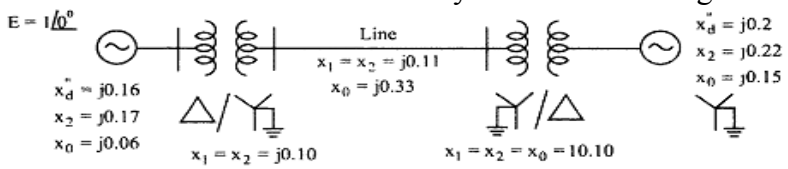


UNIT-IV

7. a) Derive the equation of sequence impedance of loaded generator and sketch the sequence networks. — 7 Marks — L2 — CO3 — PO1

   b) The line currents in a 3-phase supply to an unbalanced load are I_a = - 10+ j 20 , I_b = 12 - j10 and I_c = - 3 - j5 amperes respectively**.** The phase sequence is *abc*. Determine the sequence components of currents. — 7 Marks — L2 — CO3 — PO2

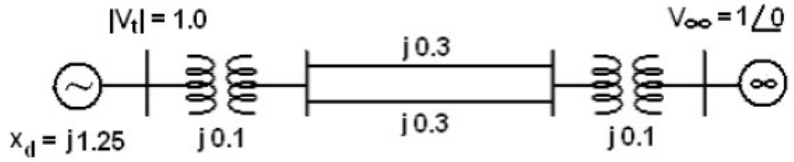
(OR)

8.	a)	Calculate the sub-transient fault current in each phase for a dead short circuit when a single phase to ground fault occurs after the second transformer for the system shown in figure.  All the reactance's are given in p.u. on the generator base.	14Marks	L4	CO3	PO4

UNIT-V

9.	a)	With relevant equations, Derive the solution for Swing equation using point by point method.	7 Marks	L2	CO4	PO1
	b)	An alternator supplies 50MW to an infinite bus bar, the steady state limit of the system being 75 MW. Determine whether the alternator will remain in synchronism if the prime mover input is abruptly increased to 25MW. (Assuming losses are neglected).	7 Marks	L3	CO4	PO2

(OR)

10.	a)	How the equal area criterion is applied when there is a sudden i) increase in power input, and ii) decrease in power output due to a three-phase fault?	7 Marks	L3	CO4	PO1
	b)	A generator supplies 1.0 pu. Power to an infinite bus as shown in figure. The terminal voltage and infinite bus voltage are 1.0 pu. All the reactance's are on a common base.  Determine steady state stability limit when both lines are in and when one line is switched off.	7 Marks	L4	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

SOLID STATE DRIVES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Define the term 'electric drive'. Examine the functional block diagram of an electric drive system. Also, mention the key advantages of an electric drive system.	9 Marks	L1	CO1	PO1
	b)	Analyze and derive the fundamental torque equation of electric drive.	5 Marks	L4	CO1	PO2
		(OR)				
2.	a)	List the load torque components, types and characteristics with a relevant expressions and sketch.	7 Marks	L1	CO1	PO1
	b)	Why are feedback loops required in a closed loop industrial electric drive system? Discuss closed loop torque and speed control in detail.	7 Marks	L2	CO1	PO6
		UNIT-II				
3.		Analyze the operation and characteristics of a single phase full-controlled DC motor in continuous and discontinuous conduction using relevant expressions and characteristics. Also sketch the speed-torque characteristics.	14 Marks	L3	CO2	PO1
		(OR)				
4.	a)	A 220 V, 1500 rpm, 50 A separately excited DC motor has an armature resistance of 0.5Ω is fed from a three phase fully controlled rectifier. Available AC source has a line voltage of 440 V, 50 Hz. A star delta connected transformer is used to feed the armature so that motor terminal voltage equals rated voltage when converter firing angle is zero. i) Calculate transformer turns ratio. ii) Determine the value of firing angle when: (A) motor is running at 1200 rpm and rated torque; (B) when motor is running at -800 rpm and twice the rated torque. Assume continuous conduction.	9 Marks	L1	CO2	PO4
	b)	List the controlled fed DC drives with simplified controlled-rectifier circuit and V_a-I_a plane.	5 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	An industrial application demands regenerative control. Suggest a suitable arrangement of chopper fed motor meeting the requirements. Justify your suggestion with relevant proof.	9 Marks	L4	CO2	PO6
	b)	A 230 V, 960 rpm and 200 A separately excited DC motor has an armature resistance of 0.02 Ω. Calculate the duty ratio of the chopper for monitoring operation at rated torque and 350 rpm.	5 Marks	L1	CO2	PO4
		(OR)				

6.		Discuss in detail of closed loop chopper control of separately excited DC motor during below and above speed.	14 Marks	L2	CO2	PO1
		UNIT-IV				
7.	a)	Explain in detail of slip-speed control of induction motor, torque-power limitations and modes of operation with a neat sketch.	7 Marks	L1	CO3	PO1
	b)	Compare the voltage source and current source inverter fed drives.	7 Marks	L2	CO3	PO2
		(OR)				
8.		Discuss static rotor resistance control in detail using a circuit diagram, expressions, and also describe in detail of closed loop speed control.	14 Marks	L3	CO3	PO1
		UNIT-V				
9.		Discuss the closed loop speed control of load commutated inverter synchronous motor drive with a neat sketch.	14 Marks	L2	CO4	PO1
		(OR)				
10.	a)	Summarize a short note on variable frequency control of synchronous motor with a neat sketch.	7 Marks	L1	CO4	PO1
	b)	How to make an efficient drive system for a stepper motor? Also design and explain about basic driver circuit for a stepper with a neat sketch.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ELECTRIC VEHICLES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Comprehend the evolution of modern transportation.	7 Marks	L1	CO1	PO1
	b)	With neat block diagram, explain parallel hybrid electric vehicles.	7 Marks	L2	CO1	PO1
		(OR)				
2.		Discuss in detail about the various types of electric vehicles based on propulsion system.	14 Marks	L2	CO1	PO1
		UNIT-II				
3.		Analyze the operations of non- isolated bidirectional DC-DC converter and non-isolated converter in attaining higher performance characteristics for EVs.	14 Marks	L3	CO2	PO2
		(OR)				
4.		With suitable diagram explain the performance characteristics of bidirectional battery chargers and contact less charging techniques used in EV system.	14 Marks	L3	CO2	PO5
		UNIT-III				
5.		Analyze the characteristics of magnet less flux switching motor drives to ensure sustainability for electric vehicles.	14 Marks	L2	CO3	PO7
		(OR)				
6.		Explain the different types of control techniques associated with outer rotor flux mnemonic permanent magnet drives.	14 Marks	L2	CO3	PO5
		UNIT-IV				
7.	a)	Explain the principle behind the operation of the ultra-capacitor and mention its advantages and disadvantages.	7 Marks	L2	CO4	PO1
	b)	Discuss briefly about hybrid fuel cell energy storage system.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Explain briefly about the battery modeling.	7 Marks	L2	CO4	PO1
	b)	Explain the principle behind the operation of the flywheel and mention its advantages and disadvantages.	7 Marks	L2	CO4	PO1
		UNIT-V				
9.		Explain the types, principle and modelling concepts of magnetic gear machines with suitable pictorial representation and necessary equations.	14 Marks	L2	CO5	PO1
		(OR)				
10.		List out the applications and also explain the operation of magnetic gear EVT systems	14 Marks	L2	CO5	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DIGITAL SIGNAL PROCESSING FOR ELECTRICAL ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Test the stability of the system whose impulse response $h(n) = \left(\frac{1}{2}\right)^n u(n)$	7 Marks	L2	CO1	PO2
	b)	Find the natural response of the system described by difference equation y(n)+2y(n-1)+y(n-2)=x(n)+x(n-1) with initial conditions y(-1)=y(-2)=1.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Find the Forced response of the system described by difference equation y(n)+2y(n-1)+y(n-2)=x(n)+x(n-1) for input $x(n) = \left(\frac{1}{2}\right)^n u(n)$	7 Marks	L2	CO1	PO2
	b)	Define signal. Discuss in detail about different types of signals.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.		Find the DFT of a sequence x(n)={0.5, 0.5,0.5,0.5,0,0,0,0} using DFT algorithm.	14 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Find the circular convolution of two finite duration sequences $x_1(n)=\{1,-1,-2,3,-1\}$ $x_2(n)=\{1,2,3\}$.	7 Marks	L3	CO2	PO5
	b)	Evaluate IDFT of the sequence x(K)={5,0,1-j,0,1,0,1+j,0} by direct method.	7 Marks	L3	CO2	PO5
		UNIT-III				
5.		Synthesize Direct form-I and Direct Form –II realizations of system described by the difference equation, $y(n) = 2r\cos(\omega_0)y(n-1) - r^2y(n-2) + x(n) - r\cos(\omega_0)x(n-1)$	14 Marks	L4	CO3	PO3
		(OR)				
6.	a)	For the given specifications α_p=1dB, α_s=30dB, Ω_p = 200 rad/sec and Ω_s=600 rad/sec. determine the order of filter.	7Marks	L2	CO3	PO2
	b)	For the analog transfer function $H(s) = \frac{2}{(s+1)(s+2)}$. Determine H(z) using impulse invariance method. Assume T=1sec.	7 Marks	L2	CO3	PO2

UNIT-IV

7.		Design an ideal high pass filter using Hamming window with a frequency response. $H_d\left(e^{jw}\right) = 1 \; for \; \frac{\pi}{4} \leq |w| \leq \pi$ $= 0 \; for |w| \leq \frac{\pi}{4}$ Find the values of h(n) for N=11.	14 Marks	L4	CO3	PO3
		(OR)				
8.	a)	Discuss the Fourier series method of designing FIR filters in detail.	7 Marks	L2	CO3	PO2
	b)	Give the expressions for the frequency response of Blackmann window and Rectangular window.	7 Marks	L2	CO3	PO1

UNIT-V

9.		List the internal peripherals of LF2407DSP controller. Explain any three in detail.	14 Marks	L1	CO4	PO1
		(OR)				
10.		With neat diagram, explain the internal memory segmentation and mapping of LF2407DSP.	14 Marks	L2	CO4	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

INDUSTRIAL INTERNET OF THINGS

[Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence) Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Explain the architecture and enabling technologies of IoT.	14 Marks	L2	CO1	PO1 PO5
		(OR)				
2.		Differentiate between functional and operational characteristics of IIoT Reference Architecture.	14 Marks	L2	CO1	PO1 PO2 PO5
		UNIT-II				
3.		Explain wireless communication technologies in detail with a neat sketch.	14 Marks	L2	CO2	PO1 PO5
		(OR)				
4.		Explain access Network Technology and in detail explain about protocols involved in it with a neat sketch.	14 Marks	L2	CO2	PO1 PO5
		UNIT-III				
5.		Explain the design principles and building blocks of industry 4.0 with required illustrations.	14 Marks	L2	CO3	PO1 PO2 PO3
		(OR)				
6.		Explain GE's brilliant factory and through some light on strategies and technical know-hows involved in it.	14 Marks	L3	CO3	PO1 PO6 PO10
		UNIT-IV				
7.		Explain IOT market perspective. Discuss IOT value chains in detail.	14 Marks	L3	CO4	PO1 PO8
		(OR)				
8.	a)	Explain the constructional features of Identity Access Management.	7 Marks	L3	CO4	PO1 PO5
	b)	Differentiate between PLCs and DCS.	7 Marks	L3	CO4	PO1 PO2
		UNIT-V				
9.		Discuss real world IOT design constraints, elaborately.	14 Marks	L3	CO5	PO1 PO4 PO6
		(OR)				
10.		Explain the constructional features of Service-oriented architecture-based device integration.	14 Marks	L3	CO5	PO1 PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

EMBEDDED SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering Information Technology, Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Classify SSI, MSI & LSI based microcontrollers and comment on their usage in embedded products.	7 Marks	L1	CO1	PO1
	b)	Discuss the anatomy of a typical industry standard microcontroller.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	List various registers in CPU of MSP430.	7 Marks	L1	CO1	PO1
	b)	Identify various oscillators used to generate clock for MSP430.	7 Marks	L2	CO1	PO5
		UNIT-II				
3.	a)	Compose program for recording the state of push button switch.	7 Marks	L4	CO2	PO3
	b)	List various sources available for the clock in MSP430 variants.	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Write short notes on usage of i) VLO ii) DCO.	7 Marks	L1	CO2	PO1
	b)	Summarize MSP430 Low power modes.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Illustrate Timer_A structure in MSP430 and associate control registers for its usage.	7 Marks	L2	CO3	PO4
	b)	Discuss in detail about Watchdog Timer.	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	Write short notes about Temperature Sensor on ADC10.	7 Marks	L1	CO3	PO8
	b)	Compare the differences between ADC10 and ADC12.	7 Marks	L3	CO3	PO8
		UNIT-IV				
7.		Summarize the usage of following communication peripherals available in MSP430. i)USI ii)USCI iii)USART	14 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Compose the hardware for establishment communication between master and slave using USI.	7 Marks	L2	CO3	PO2
	b)	Discuss in detail about communication protocol CAN.	7 Marks	L1	CO3	PO8
		UNIT-V				
9.	a)	Explain in detail about IC Technology.	7 Marks	L1	CO4	PO6
	b)	Discuss the Tradeoffs between Processor Technology and Design Technology.	7 Marks	L2	CO4	PO6
		(OR)				
10.	a)	Explain in detail about FSM system modelling.	7 Marks	L1	CO4	PO1
	b)	Write short notes on Model Vs Language.	7 Marks	L1	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

MICROWAVE ENGINEERING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Show that a TEM wave cannot propagate in a waveguide by making use of Maxwell's equations.	7 Marks	L4	CO1	PO2
	b)	A rectangular hollow metal waveguide has internal dimensions as 2.286cm and 1.016cm.Find frequency range for single mode operation.	7 Marks	L3	CO1	PO4
		(OR)				
2.	a)	Show that the TM_{01} and TM_{10} modes in a rectangular waveguide do not exist.	7 Marks	L4	CO1	PO2
	b)	Design a rectangular wave guide with dimension a=1.5 cm, b=1 cm for a TE_{10} mode with a frequency of 8GHz and dielectric constant of 4.	7 Marks	L3	CO1	PO4
		UNIT-II				
3.	a)	Suggest a microwave device that can act as Duplexer.	7 Marks	L4	CO2	PO5
	b)	Derive the S - matrix of an ideal E - plane Tee	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Determine the Scattering parameters for a 10 dB directional coupler. The directivity D=30dB. Assume that it is lossless and the VSWR at each port is 1.0 under matched condition	7 Marks	L3	CO2	PO3
	b)	Identify a microwave device which offers a phase shift 180 degrees in forward and 0 degrees in reverse. Explain the same.	7 Marks	L4	CO2	PO4
		UNIT-III				
5.		Explain the operation of a reflex klystron using neat sketches of construction details and an Applegate diagram.	14 Marks	L2	CO3	PO2
		(OR)				
6.	a)	Derive the expressions for output power and efficiency of a two-cavity Klystron Amplifier.	7 Marks	L3	CO3	PO4
	b)	Justify the role of Magnetron in microwave communication system.	7 Marks	L4	CO3	PO6
		UNIT-IV				
7.		Using the principle of Two valley theory, Explain operation of Gunn diode.	14 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Classify different IMPATT diodes and explain in detail.	7 Marks	L4	CO3	PO4
	b)	Write the applications of microwave solid state devices.	7 Marks	L1	CO3	PO6
		UNIT-V				
9.	a)	Using slotted line section. Explain impedance measurement.	7 Marks	L2	CO4	PO5
	b)	Develop a bench setup for measuring VSWR of a wave guide.	7 Marks	L3	CO4	PO6

(OR)

10.	a)	How are microwave measurements different from low frequency measurements? Describe the sources of error and the respective precautions.	7 Marks	L4	CO4	PO6
	b)	Using Bolometer method and explain about power measurement.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

CELLULAR AND MOBILE COMMUNICATIONS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain each element involved in the operation of Basic Cellular System.	7 Marks	L2	CO1	PO1
	b)	Using the concept of Frequency Reuse channels, Derive the relation for Frequency Reuse distance 'D' as a function of Reuse pattern and Cell size.	7 Marks	L3	CO1	PO2
		(OR)				
2.		Evaluate the Co-channel Cell Interference measurement design of antenna system in worst cases.	14 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Categorize handoff strategies and discuss its characteristics.	7 Marks	L4	CO3	PO2
	b)	Demonstrate how Carrier, Interference and Noise is measured by exploring co-channel interference areas in a system.	7 Marks	L2	CO1	PO4
		(OR)				
4.	a)	Evaluate the scenario in which Intersystem Handoff is a best choice.	7 Marks	L2	CO3	PO2
	b)	Explain various channel assignment techniques used in mobile communications.	5 Marks	L2	CO4	PO1
		UNIT-III				
5.	a)	Illustrate GPRS support nodes and interfaces in detail.	6 Marks	L2	CO4	PO2
	b)	Explain the architecture of GSM with subsystems	8 Marks	L1	CO4	PO1
		(OR)				
6.	a)	Explain Mobility Management in GPRS.	7 Marks	L2	CO4	PO2
	b)	Recall the characteristics and specifications of GSM and GPRS.	7 Marks	L5	CO4	PO2
		UNIT-IV				
7.	a)	List out the features of 3G standard systems and its services.	7 Marks	L1	CO4	PO2
	b)	Summarize the protocol architecture of UMTS.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Outline the concept of Channelization in WCDMA.	7 Marks	L1	CO4	PO1
	b)	Illustrate the Handover procedure in UMTS.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Discuss about the Radio interface of LTE systems.	7 Marks	L3	CO4	PO2
	b)	Describe the mobility aspects in LTE systems.	7 Marks	L1	CO4	PO2
		(OR)				
10.	a)	Illustrate the architecture of Evolved packet system.	9 Marks	L2	CO4	PO2
	b)	Write the difference between LTE and VoLTE.	5 Marks	L1	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

LOW POWER CMOS VLSI DESIGN

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	A 32 bit off-chip bus operating at 5V and 66MHz clock rate is driving a capacitance of 25pF/bit. Each bit is estimated to have a toggling probability of 0.25 at each clock cycle. What is the power dissipation in operating the bus?	7 Marks	L3	CO1	PO1
	b)	Elaborate the impact of transistor sizing, gate oxide thickness and technology scaling on low power electronics.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	The chip size of a CPU is I5mm x 25mm with clock frequency of 300MHz operating at 3.3V. The length of the clock routing is estimated to be twice the circumference of the chip. Assume that the clock signal is routed on a metal layer with width of I.2um and the parasitic capacitance of the metal layer is I fF/um ^{2} .What is the power dissipation of the clock signal?	7 Marks	L3	CO1	PO2
	b)	Identify the technology and device innovations for novel high speed low power VLSI devices.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.	a)	Design and analyze a Circuit level, switch level and tabular model representation of a discrete transistor modeling.	7 Marks	L4	CO2	PO3
	b)	Summarize the Architecture Level power Analysis	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Derive the statistical estimation of mean with its normal distribution curve in Monte Carlo power simulation.	7 Marks	L3	CO2	PO2
	b)	Distinguish the dynamic energy dissipation events and static power dissipation states of 2-input CMOS NAND Gate.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Discuss Bus invert encoding to achieve low power with relevant equations	7 Marks	L2	CO3	PO1
	b)	Explain in detail about latch based pre computation architecture.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Justify why Gray code encoding is preferred than binary encoding to achieve low power	7 Marks	L4	CO3	PO1
	b)	Define encoding of state machine	7 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	Design a 4T and 6T SRAM cell with read write operation and discuss.	7 Marks	L4	CO4	PO3
	b)	Illustrate the delay balancing method in array multiplier with its architecture.	7 Marks	L3	CO4	PO1

(OR)

8.	a)	Elaborate the way to solve floating node problem in hibernation mode.	7 Marks	L3	CO4	PO1
	b)	How to limit bit line swing in SRAM explain with neat sketch.	7 Marks	L1	CO4	PO4

UNIT-V

9.	a)	Asses the techniques to reduce hardware resources in digital systems.	7 Marks	L5	CO	PO4
	b)	Analyze power efficiency in pipeline architecture.	7 Marks	L4	CO4	PO1

(OR)

10.	a)	Analyze the technique of Adiabatic model of Quantum computation.	7 Marks	L4	CO4	PO2
	b)	Synthesize the Power and Performance Management in low power CMOS systems.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May - 2024

COMPUTER VISION

[Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Derive an algorithm for finding the edges of binary picture objects by applying a shrink operation and combining the result with the original image.	7 Marks	L2	CO1	PO1
	b)	Apply a 3-element median filter on 1-D cross-section of an image has the following intensity profile: [1 2 1 1 2 3 0 2 2 3 1 1 2 2 9 2 2 8 8 8 7 8 8 7 9 9 9].	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Distinguish between mean and median filtering. Explain why a mean filter would be expected to blur an image, while a median filter would not have this effect.	7 Marks	L2	CO1	PO2
	b)	With an example, explain how rank order filtering is applied.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Describe how the Problem of Bias in Threshold Selection can be tackled?	7 Marks	L3	CO2	PO2
	b)	Judge the performance of Variance-Based Thresholding and derive the expression for calculating variance.	7 Marks	L2	CO2	PO3
		(OR)				
4.	a)	Discuss 3×3 Template Operators for edge detection tasks.	7 Marks	L2	CO2	PO3
	b)	Demonstrate the Laplacian operator for edge detection and mention its merits.	7 Marks	L3	CO2	PO3
		UNIT-III				
5.	a)	What are the factors which postdate the main Gestalt movement?	7 Marks	L2	CO3	PO4
	b)	Construct short boundary detection algorithm for performing segmentation task on image.	7 Marks	L3	CO3	PO4
		(OR)				
6.	a)	Interpret how the image background can be eliminated using Divisive Clustering with a Graph approach?	7 Marks	L3	CO3	PO4
	b)	Describe the Canny edge detector. What are the steps involved in edge detection using this detector. Use diagrams where necessary in your explanation.	7 Marks	L2	CO3	PO4
		UNIT-IV				
7.	a)	Write a short note on spots and bars.	7 Marks	L2	CO4	PO5
	b)	Demonstrate how the local texture can be represented using filters.	7 Marks	L3	CO4	PO5
		(OR)				
8.	a)	Discuss in detail the following in image classification i) Training Error, ii) Test Error, and iii) Overfitting	7 Marks	L2	CO4	PO5
	b)	Interpret the sliding window technique in detecting the objects in an image.	7 Marks	L3	CO4	PO5

UNIT-V

9.	a)	Discuss: i) Categorization ii) Selection	7 Marks	L2	CO5	PO6
	b)	Write short note on Semantic questions.	7 Marks	L2	CO5	PO6
		(OR)				
10.	a)	Give your insights in Classifying Scenes application.	7 Marks	L2	CO5	PO6
	b)	Give your insights in Classifying Materials application.	7 Marks	L2	CO5	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DATA SCIENCE

[Computer Science and Engineering, Computer Science and Systems Engineering , Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Illustrate the use of Data Science with an example.	7 Marks	L3	CO1	PO1
	b)	Compare the terms data analysis and analytics.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	List out the areas in which Data Science can be applied.	7 Marks	L2	CO1	PO1
	b)	Compare R and Python.	7 Marks	L2	CO1	PO4
		UNIT-II				
3.	a)	Discuss random forest with suitable algorithms and examples.	7 Marks	L3	CO2	PO2
	b)	Write short notes on forward selection, backward elimination, and combined approach.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Explain Principal component analysis in data science.	7 Marks	L3	CO2	PO2
	b)	Write a python program to compute Single value decomposition.	7Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Give routine to display a histogram.	7 Marks	L1	CO3	PO2
	b)	Give the features of NumPy.	7 Marks	L1	CO3	PO2
		(OR)				
6.	a)	Discuss Matplotlib with an example.	7 Marks	L2	CO3	PO1
	b)	Give features of Matplotlib.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Explain normal distribution with an example.	7 Marks	L2	CO3	PO1
	b)	Justify the need for normal distribution.	7 Marks	L2	CO3	PO1
		(OR)				
8.	a)	Describe the use of statistics in Data Science.	7 Marks	L2	CO3	PO1
	b)	Evaluate Probability mass function.	7 Marks	L3	CO3	PO2
		UNIT-V				
9.	a)	Explain how time series analysis makes predictions.	7 Marks	L2	CO4	PO1
	b)	Identify how to fill missing data in a moving average in time series analysis.	7 Marks	L3	CO4	PO1
		(OR)				
10.	a)	Discuss plotting in time series analysis.	7 Marks	L2	CO4	PO2
	b)	Explain Auto correlation in data science.	7 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

BLOCKCHAIN TECHNOLOGIES

[Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss Byzantine General's Problem with the practical implementation of its solution.	7 Marks	L2	CO1	PO2
	b)	List and explain the Methods of Decentralization	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Define Blockchains. Discuss various Tiers and Types of Blockchains.	7 Marks	L1	CO1	PO1
	b)	Illustrate the Blockchain Full ecosystem Decentralization	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Demonstrate structure of Bitcoin and its various types of Bitcoin payment Tools.	7 Marks	L3	CO2	PO5
	b)	List and Explain the Bitcoin Limitations.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Define Bitcoin and list various types of Transactions.	7 Marks	L2	CO2	PO3
	b)	Articulate Theoretical Foundations in Alternative Coins.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	A browser sends its public key to the server and requests for some data. The server encrypts the data using browser's public key and sends the encrypted data. Browser receives this data and decrypts it. With proper justification, determine a Smart Oracle or a Smart Contract for the benefit of security in the said ecosystem.	7 Marks	L4	CO5	PO6
	b)	Infer ethical issues with Blockchain platforms and explain how the Ethereum stands strong supporting safe chaining	7 Marks	L4	CO4	PO8
		(OR)				
6.	a)	Estimate the legal importance of Smart Contract Templates in DSLs over GPLs.	7 Marks	L2	CO4	PO8
	b)	Formulate a Contract for Clients & Wallets to develop Blockchains in Ethereum for sustained economical applications.	7 Marks	L3	CO5	PO7
		UNIT-IV				
7.	a)	Differentiate Architecture of Hyper ledger Fabric with Corda.	7 Marks	L2	CO2	PO3
	b)	Apply Proof of Stake (PoS) Algorithm for rewarding in Tezos Blockchains	7 Marks	L3	CO2	PO2
		(OR)				
8.	a)	Distinguish the Payments and Orders in Kadena Blockchain in terms of their Transactions.	7 Marks	L2	CO2	PO2
	b)	Demonstrate Hyper ledger as Protocol based on Reference Architecture.	7 Marks	L3	CO2	PO1

UNIT-V

9.	a)	Explain Scalability issues in Blockchains.	7 Marks	L1	CO3	PO1
	b)	Identify the trends of Homomorphic Encryption and Confidential Transactions in Blockchains.	7 Marks	L2	CO3	PO1

(OR)

10.	a)	Interpret the Projected Issues in Smart Contracts and Centralization in Blockchains.	7 Marks	L2	CO3	PO1
	b)	Discuss the impact of the following in Blockchains growth: i) Sidechains ii) Subchains iii) Tree Chains	7 Marks	L2	CO3	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

PROGRAMMABLE LOGIC CONTROLLERS

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the architecture PLC with neat diagram and mention any of its two applications.	7 Marks	L2	CO1	PO1
	b)	Compare Ladder logic diagram and Relay ladder diagram with examples.	7 Marks	L3	CO1	PO1
		(OR)				
2.		Explain the principle of operation of discrete ac input and output modules used in PLC with suitable diagrams	14 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain the on-delay timer with timing diagram.	7 Marks	L2	CO2	PO2
	b)	Describe in detail about Input group register scheme.	7 Marks	L2	CO1	PO1
		(OR)				
4.		Develop a PLC program For a package dual stamping operation. Write ladder logic program for this condition where stamping times of 8 and 14 sec. are required. When the package arrives in place INOO1, is actuator and stop the conveyor. The end is stamped for 8 sec., output (M), and the top for 14sec., output (N). Turning of IN001 and IN002 releases the package to continuous along with the conveyor.	14 Marks	L2	CO3	PO3
		UNIT-III				
5.		Construct the PLC program using the ADD function for a conveyor part count. Two conveyors feed a main conveyor to make a count. The counters on each feeder conveyor are input pulsed by a proximity detector once for each part leaving the conveyors. The count of total parts entering the main conveyor is then determined by adding the two feeder conveyor counts.	14 Marks	L2	CO4	PO5
		(OR)				
6.	a)	Explain the programming, operation and utilization of the repetitive clock.	7 Marks	L3	CO2	PO2
	b)	Select a suitable PLC to perform binary-to-BCD and BCD-to-binary conversion.	7 Marks	L2	CO2	PO2
		UNIT-IV				
7.	a)	Explain the ONE SHOT (ONS) function with an application.	7 Marks	L3	CO4	PO5
	b)	Use matrix functions in combination to simulate combination gates such as NAND and NOR in PLC.	7 Marks	L2	CO2	PO2
		(OR)				
8.	a)	Explain how Bit patterns in registers can be used in machine control?	7 Marks	L3	CO2	PO2
	b)	Explain PLC SEQUENCER function?	7 Marks	L3	CO2	PO2

UNIT-V

9.	a)	How does proportional integral process control improve control compared to proportional control only explain in detail?	7 Marks	L2	CO3	PO3
	b)	Apply the analog IN PLC function operation to convert into Discrete output.	7 Marks	L3	CO2	PO2
		(OR)				
10.	a)	Describe PID tuning functions and methods.	7 Marks	L2	CO4	PO1
	b)	Explain how the MONITOR function is made operational and what data and functions may be observed.	7 Marks	L2	CO4	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

ANALYTICAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Specify the purpose of pH measurement. Discuss the working of direct-reading type pH meter with temperature compensation arrangement	7 Marks	L1	CO1	PO2
	b)	List the gas analyzers used in industries and with a neat sketch explain the working of silica analyzer in detail.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Analyze the hydrogen concentration by using hydrogen analyzer.	7 Marks	L3	CO1	PO2
	b)	Define ion selective electrode. Identify and analyze a suitable electrode to determine the ammonia concentration present in a sample.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Explain how environmental pollution monitoring devices that provides environmental safety.	7 Marks	L2	CO2	PO1
	b)	Analyze CO concentration present in a sample by identifying the suitable techniques that meet industrial safety.	7 Marks	L2	CO2	PO5
		(OR)				
4.	a)	Discuss the safety measures in industrial power plants. Analyze ionizing radiations that are emitted from the nuclear power plants by using an ionization chamber.	7 Marks	L3	CO3	PO1
	b)	Compare Scintillation counter and proportional counter with respect to working principle.	7 Marks	L2	CO3	PO1

UNIT-III

5.	a)	List the characteristics of detection systems used in gas chromatography. Explain flame ionization detector that is used in gas chromatography.	7 Marks	L2	CO4	PO1
	b)	Classify liquid chromatography and explain columns used in liquid chromatography in detail.	7 Marks	L2	CO4	PO1
		(OR)				
6.	a)	Specify the purpose of detection system and discuss any one detection system that is used with liquid chromatography.	7 Marks	L2	CO4	PO1
	b)	Draw chromatogram and interpret how the chromatography separates the compounds from the sample mixture.	7 Marks	L2	CO4	PO1

UNIT-IV

7.	a)	Explain how beer Lambert's law is implemented in the analysis of chemical solution by using spectrometers.	7 Marks	L2	CO5	PO1
	b)	Draw the block diagram of an absorption instrument and analyze each component in detail.	7 Marks	L2	CO5	PO1
		(OR)				
8.	a)	Differentiate single beam and double beam spectrophotometers.	7 Marks	L2	CO5	PO1
	b)	Draw the block diagram of FTIR spectrophotometer and illustrate the analysis of biological fluids with an example.	7 Marks	L2	CO5	PO1

UNIT-V

9.	a)	Elaborate the working operation of atomic absorption spectrometer with neat block diagram.	7 Marks	L3	CO6	PO1
	b)	Discuss the working principle of ESR spectrometer with neat sketch.	7 Marks	L2	CO6	PO1
		(OR)				
10.	a)	Explain the necessity of X- ray detectors in day today life. Discuss the instrumentation for x-ray spectrometers in detail with the help of block diagram.	7 Marks	L2	CO6	PO1
	b)	Identify and analyze a suitable instrument that uses flame as light source to determine the concentration of Na present in Nacl solution.	7 Marks	L2	CO6	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May - 2024

MOBILE APPLICATION DEVELOPMENT

[Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Describe about Mobile web presence in detail.	7 Marks	L4	CO1	PO2
	b)	Explain the concept of long tail.	7 Marks	L5	CO1	PO1
		(OR)				
2.	a)	What are the components used for effective use of creen real estate.	7 Marks	L2	CO1	PO1
	b)	Explain Android architecture with a neat diagram.	7 Marks	L1	CO1	PO2
		UNIT-II				
3.	a)	Draw a diagram for activity life cycle and explain it.	7 Marks	L1	CO2	PO2
	b)	Develop an android application that takes input as a number and checks whether the given number is even or odd and displays the output in a dialog window.	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	What is the use of intent in android? Explain it with syntax.	7 Marks	L2	CO2	PO1
	b)	Explain about different types of Layouts.	7 Marks	L1	CO2	PO2
		UNIT-III				
5.	a)	Explain about different types of Menus in Android with an example.	7 Marks	L1	CO3	PO1
	b)	Explain how to create the DBAdapter Helper Class:. Explain with an example.	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	What is a view? Explain about different types of Basic views in mobile application.	7 Marks	L1	CO3	PO2
	b)	Discuss about Saving and loading user preferences.	7 Marks	L2	CO3	PO3
		UNIT-IV				
7.	a)	Explain the concept of SMS Messaging with a syntax.	7 Marks	L1	CO4	PO1
	b)	Explain how to Access Web services using the GET method.	7 Marks	L3	CO4	PO3
		(OR)				
8.		Write a program for Sending and Receiving SMS Messages using Intent.	14 Marks	L5	CO4	PO2
		UNIT-V				
9.		Explain about what are the steps involved in Binding activities to services.	14 Marks	L4	CO5	PO3
		(OR)				
10.		Explain about Threading.	14 Marks	L5	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DATA ANALYTICS

[Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What kinds of tools would be used in the following phases, and for which kinds of use scenarios? Phase 3:Model Planning, Phase 4: Model Building.	7 Marks	L2	CO1	PO2
	b)	In which phase would the team expect to invest most of the project time? Why? Where would the team expect to spend the least time?	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	What are the benefits of doing a pilot program before a full-scale rollout of a new analytical methodology? Discuss this in the context of the mini case study.	7 Marks	L3	CO1	PO2
	b)	Write R code to import and export data from .csv files.	7 Marks	L3	CO1	PO3

UNIT-II

3.	a)	Discuss the importance visualization, exploration and presentation of data in Data analytics.	7 Marks	L2	CO2	PO2
	b)	Explain difference of Means in Statistical Methods for Evaluation in R programming.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	With neat sketch explain how many sections does a box-and-whisker divide the data into? What are these sections?	7 Marks	L3	CO2	PO3
	b)	Illustrate the significance of different visualizing a single Variable and examining Multiple Variable.	7 Marks	L2	CO2	PO2

UNIT-III

5.	a)	What are the main challenges of text analysis and explain the trade-offs for precision and recall.	7 Marks	L2	CO3	PO2
	b)	Fit an appropriate ARIMA model on the following datasets included in R. Provide supporting evidence on why the fitted model was selected, and forecast the time series for 12 time periods ahead. i) **faithful:** Waiting times (in minutes) between Old Faithful geyser eruptions. ii) **Johnson:** Quarterly earnings per J&J share. iii) **c. sunspot.month:** Monthly sunspot activity from 1749 to 1997.	7 Marks	L3	CO3	PO3
		(OR)				
6.	a)	What is a corpus and What are common words (such as *a, and, of*) called and why can't we use TF alone to measure the usefulness of the words?	7 Marks	L3	CO3	PO3
	b)	Explain Autocorrelation Function (ACF) time series with a neat sketch?	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	As part of operationalizing an analytics project, which deliverable would you expect to provide to a Business Intelligence analyst?	7 Marks	L2	CO5	PO2
	b)	What is the focus of a presentation for a project sponsor.	7 Marks	L2	CO5	PO3
		(OR)				
8.	a)	Describe four common deliverables for an analytics project.	7 Marks	L2	CO5	PO2
	b)	What is the focus of Creating the Final Deliverables for stakeholders?	7 Marks	L2	CO5	PO2

UNIT-V

9.		Explain in details about web mining with an example.	14 Marks	L2	CO5	PO2
		(OR)				
10.		What is sentiment analysis? Explain in detail about different types of sentiment analysis techniques and its applications.	14 Marks	L3	CO5	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

BIG DATA TECHNOLOGIES

[Computer Science and Engineering, Information Technology, Computer Science and Engineering (Artificial Intelligence)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Describe the 4V model of Big Data.	7 Marks	L2	CO1	PO1
	b)	List out the Advantages of Big Data.	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Explain any two big data applications in detail.	7 Marks	L2	CO1	PO2
	b)	What are the major technological challenges in managing Big Data?	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain "A Client reading data from HDFS and A client writing data from HDFS" with a neat sketch.	7 Marks	L3	CO1	PO3
	b)	Explain Hadoop Archives and The java Interface in Hadoop.	7 Marks	L2	CO1	PO2
		(OR)				
4.	a)	Categorize and Explain Blocks, Name nodes and Data nodes and HDFS Federation in HDFS.	7 Marks	L2	CO1	PO2
	b)	Explain Serialization Concept in Hadoop I/O.	7 Marks	L2	CO1	PO1
		UNIT-III				
5.	a)	DefineMap Reduce and explain is logical flow with a neat sketch.	7 Marks	L2	CO2	PO1
	b)	List out Input formats of Map Reduce.	7 Marks	L1	CO2	PO2
		(OR)				
6.	a)	Define counters and explain different types of counters in Map Reduce.	7 Marks	L2	CO2	PO1
	b)	Demonstrate Hadoop streaming and hadoop pipes in Map Reduce.	7 Marks	L3	CO3	PO3
		UNIT-IV				
7.	a)	Distinguish between HIVE vs. PIG.	7 Marks	L2	CO3	PO2
	b)	Explain about Praxis.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Demonstrate in-Detail about data organization in HIVE.	7 Marks	L2	CO3	PO3 PO4
	b)	Explain PIG Architecture.	7 Marks	L2	CO3	PO2
		UNIT-V				
9.	a)	Describe SQOOP working with Imported Data in detail.	7 Marks	L2	CO4	PO5
	b)	Explain Building an application with Zookeeper.	7 Marks	L3	CO4	PO3
		(OR)				
10.	a)	Write Hive steps for creating Whatsapp Database.	7 Marks	L3	CO3	PO3 PO8
	b)	Describe a Survey on Analyzing Big data with Twitter.	7 Marks	L3	CO3	PO3 PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May - 2024

IT PROJECT MANAGEMENT

[Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Define Project management. Explain in detail objectives of Project management.	7 Marks	L2	CO1	PO1
	b)	Discuss in detail about Project Planning Process.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Define project management offices (POs). Explain project management offices (POs) support effective project management with an example.	7 Marks	L2	CO1	PO4
	b)	Explain Project organization structure with organization example.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Explain in detail about any five characteristics of organizational structure.	7 Marks	L2	CO2	PO1
	b)	Explain different kinds of information are included in a work package?	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Explain responsibility matrix with market research project example.	7 Marks	L2	CO2	PO1
	b)	Discuss two padding estimates influencing project factors.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Explain any three typical uses of building blocks for the Activity-On-node network construction.	7 Marks	L3	CO3	PO1
	b)	Explain two basic strategies of Mitigating Risk in Risk Response development.	7 Marks	L2	CO3	PO5
		(OR)				
6.	a)	Define risk breakdown structure. Explain risk break down structure with external parameters.	7 Marks	L2	CO3	PO1
	b)	Explain any four common methods to handle risk in contingency planning.	7 Marks	L2	CO3	PO5
		UNIT-IV				
7.	a)	Explain the process of resource smoothening with an example.	7 Marks	L2	CO4	PO1
	b)	Explain Time-Phased Budget with direct labour budget rollup example.	7 Marks	L2	CO4	PO2
		(OR)				
8.	a)	Distinguish Critical chain and traditional scheduling with air control project with resources.	7 Marks	L4	CO4	PO2
	b)	Explain the computer demonstration of resource-constrained scheduling using Electronic Medical (EMR) reference guide.	7 Marks	L3	CO4	PO1

UNIT-V

9.	a)	Explain Five-Stage Team development model with a neat sketch.	7 Marks	L2	CO5	PO2
	b)	Distinguish planning decisions and tracking decisions in project meetings in software company.	7 Marks	L4	CO5	PO2
		(OR)				
10.	a)	Define Earned value. Explain qualitative units for measuring progress and performance of monthly status report of earned value.	7 Marks	L2	CO5	PO2
	b)	Differentiate cost variance formula and schedule variance formula with example.	7 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2024

DEEP LEARNING ARCHITECTURES

[Computer Science and Engineering (Artificial Intelligence)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	List the applications to outlier detection.	7 Marks	L2	CO1	PO1
	b)	Discuss Least square regression in detail.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Deduce hierarchical softmax for many classes.	7 Marks	L3	CO1	PO3
	b)	Illustrate multilayer perceptron model.	7 Marks	L3	CO1	PO3
		UNIT-II				
3.	a)	Illustrate back propagation with post activation variable.	7 Marks	L3	CO2	PO3
	b)	Write short notes on learning rate decay.	7 Marks	L2	CO2	PO2
		(OR)				
4.		Explain in detail about Gradient clipping.	14 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Assess the hold-out method with an example.	7 Marks	L5	CO1	PO3
	b)	Discuss variations of unsupervised pretraining.	7 Marks	L2	CO1	PO2
		(OR)				
6.	a)	Explain in detail about de-noising auto encoders.	7 Marks	L2	CO2	PO2
	b)	Assess whether $L1$- or $L2$-regularization is desirable?	7 Marks	L5	CO2	PO3
		UNIT-IV				
7.	a)	Illustrate bidirectional recurrent neural networks.	7 Marks	L3	CO3	PO3
	b)	Discuss recurrent neural networks in detail.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Describe the application to Sentence-Level Classification.	7 Marks	L2	CO5	PO2
	b)	Explain in detail about End-to-End Speech Recognition.	7 Marks	L2	CO3	PO1
		UNIT-V				
9.	a)	Demonstrate the padding stage in convolutional network.	7 Marks	L3	CO4	PO3
	b)	Discuss data augmentation in detail.	7 Marks	L2	CO4	PO2
		(OR)				
10.	a)	Discuss Object Detection with an example.	7 Marks	L2	CO4	PO2
	b)	Illustrate the basic structure of Convolutional Network.	7 Marks	L3	CO4	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations May - 2024

TRANSFORMATION TECHNIQUES AND PARTIAL DIFFERENTIAL EQUATIONS

[CIVIL ENGINEERING,MECHANICAL ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1. Prove that $x^2 = \frac{\pi^2}{3} + 4\sum_{n=1}^{\infty}(-1)^n \frac{\cos nx}{n^2}$, $-\pi < x < \pi$ and hence show that $\sum \frac{1}{n^2} = \frac{\pi^2}{6}$. 14 Marks

(OR)

2. Define Fourier series of f(x) in the interval $(0, 2\pi)$ and Express $f(x) = e^{-x}$ as Fourier series for $0 < x < 2\pi$. 14 Marks

UNIT-II

3. Show that $\int_0^{\infty} \frac{1-\cos \pi\lambda}{\lambda} \sin x\lambda \; d\lambda = \begin{cases} \pi/2, & if \;\; 0 < x < \pi \\ 0, & if \;\; x > \pi \end{cases}$ making use of Fourier integral 14 Marks

(OR)

4. State Fourier transform of f(x) and develop a Fourier transform of $f(x) = \begin{cases} 1 & for \;\; |x| < 1 \\ 0 & for \;\; |x| > 1 \end{cases}$ and hence evaluate $\int_0^{\infty} \frac{\sin x}{x} dx$ 14 Marks

UNIT-III

5. a) Find L(e^{4t} sin 2t cos t) 7 Marks
   b) Find L(cosh at sin bt) 7 Marks

(OR)

6. Write the change of scale property and applying it evaluate L ($\sin^2$ at) 14 Marks

UNIT-IV

7. State shifting principle of z - transform and applying it find $Z\left[(n+1)^2\right]$ given that $Z(n^2) = \frac{z^2+z}{(z-1)^3}$. 14 Marks

(OR)

8. a) Define z-transform and find the inverse Z-transform of $\frac{z}{(z-1)(z-2)}$. 7 Marks

   b) State shifting principle. Find $z\left(\frac{1}{n}\right)$ and applying the shifting principle evaluate $Z\left(\frac{1}{n+3}\right)$. 7 Marks

UNIT-V

9. a) Obtain the partial differential equation by eliminating the arbitrary function from $xy + yz + zx = f\left(\frac{z}{x+y}\right)$. 7 Marks

   b) By the technique of separation of variables derive a solution for $u_x = 4u_y, u(0,y) = e^{-3y}$ 7 Marks

(OR)

10. a) Design a partial differential equation of the family of the spheres having their centers lie on z-axis with a given radius "r". 7 Marks

    b) A rod of length l with insulated sides is initially at a uniform temperature u_0. Its ends are suddenly cools to 0^0 C and kept at that temperature. Construct an expression to find the temperature at time t at a point distant x from one end of the rod. 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations May - 2024

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

[CIVIL ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Derive an expression for determining the equivalent inductance of two inductors L_1 and L_2 connected in series & parallel. 4 Marks

   b) In the circuit shown in Fig.1.3, find i_x 3 Marks

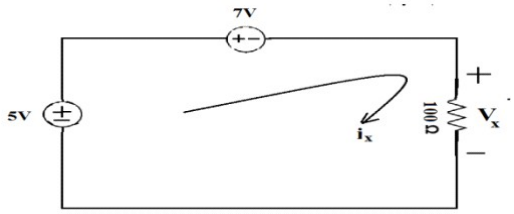

Fig. 1.3

   c) A 20V battery with an internal resistance of 5Ω is connected to a resistor of x ohms. If an additional 6Ω resistor is connected across the battery, find the value of x so that the external power supplied by the battery remains the same. 7 Marks

(OR)

2. a) Find the resistance between the points B and C of the circuit shown Fig.1.2. 10 Marks

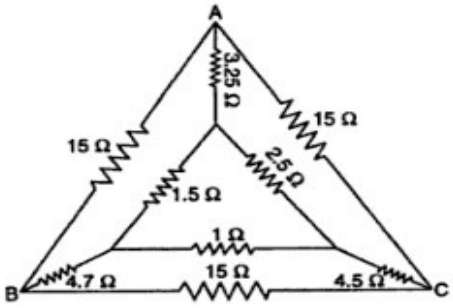

Fig. 1.2

   b) Define the terms: potential difference, mmf, emf, current and power. 4 Marks

UNIT-II

3. Establish the phase relationship between voltage and current in series and parallel combinations of 14 Marks
   a) RL circuit, b) RC circuit and c) RLC circuits.
   Sketch the phasor diagrams and impedance diagrams in all the cases.

(OR)

4. a) Explain the following terms with respect to alternating quantities 6 Marks
   i) Phase & phase difference ii) Frequency and period.

   b) With a neat schematic, explain the principle of generation of alternating voltage. 8 Marks

UNIT-III

5. a) Explain the principle of operation of a DC generator. 7 Marks

	b)	Derive the EMF equation of a DC generator.	7 Marks

(OR)

6.	a)	Explain the different types of DC generators and mention their applications.	7 Marks
	b)	A 4 pole, wave-wound DC generator has 50 slots and 24 conductors / slot. The flux/pole is 10mWb. Determine the induced emf in the armature if it is rotating at 600 rpm.	7 Marks

UNIT-IV

7.	a)	Describe the properties of materials used for piezo-electric transducers. Derive the expressions for voltage and charge sensitivities.	10 Marks
	b)	A barium pickup has the dimensions of 5 mm x 5mm x 1.25 mm. The force acting on it is 5 N. The charge sensitivity of barium titanate is 150 pC/n and its permittivity is 12.5×10^{-9} F/m. If the modules of elasticity barium titanate is 12×10^{6} N/m^2, calculate the strain, charge and capacitance.	4 Marks

(OR)

8.	a)	Explain the different parts in Data acquisition system in detail.	7 Marks
	b)	Explain about the data loggers.	7 Marks

UNIT-V

9.	a)	Explain in detail about frequency response of CE amplifier.	7 Marks
	b)	Explain how transistor acts as an amplifier.	7 Marks

(OR)

10.	a)	Derive the expressions for ripple factor of full wave rectifier with and without a capacitive filter.	10 Marks
	b)	A half wave rectifier is fed by 220 V, 50Hz via a step down transformer of turns ratio is 11:1. Find i) The output DC ii) Peak inverse voltage under no load condition.	4 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations May - 2024

DIGITAL LOGIC DESIGN

[COMPUTER SCIENCE AND ENGINEERING, INFORMATION TECHNOLOGY,COMPUTER SCIENCE AND SYSTEMS ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Determine the value of base *x* if(211)x=(152)8.	7 Marks
	b)	Define a signed binary number. Compare 1's and 2's complement methods of representation of negative numbers.	7 Marks
		(OR)	
2.	a)	Convert the given Gray code number to equivalent binary (1001001011110010)2.	7 Marks
	b)	Convert (A0F9.0EB) 16 to decimal, binary, octal number.	7 Marks

UNIT-II

3.	a)	Draw NAND Logic Diagram that implements the complement of the following function F(A,B,C,D)=∑(0,1,2,3,4,8,9,12).	7 Marks
	b)	Simplify the following Boolean expression using four variable map method *wxy + yz + xy'z + x'y*.	7 Marks
		(OR)	
4.	a)	Explain two -level and multi-level realization.	7 Marks
	b)	Compute the canonical sum of products and product of sums of A'B+ABC+C'B'.	7 Marks

UNIT-III

5.	a)	Draw and explain the operation of a multiplexer.	7 Marks
	b)	Design a priority encoder of 4-bit.	7 Marks
		(OR)	
6.	a)	With the help of a circuit diagram, explain the operation of series Full adder and compare its performance with parallel adder.	8 Marks
	b)	Describe the function of an Encoder and list its applications.	6 Marks

UNIT-IV

7.	a)	Compare the merits and demerits of ripple and synchronous counters.	7 Marks
	b)	Design a 4-bit ripple counter using T Flip-Flops.	7 Marks
		(OR)	
8.	a)	Explain the circuit diagram of a S-R Flip-Flop using 2- input NOR gates.	7 Marks
	b)	Draw and explain 4-bit shift register with an example.	7 Marks

UNIT-V

9.	a)	Explain the method of Error detection and correction.	7 Marks
	b)	Explain the features of PAL.	7 Marks
		(OR)	
10.	a)	Draw and explain the block diagram of PAL.	7 Marks
	b)	Differentiate in detail about SRAM and DRAM.	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC16) Supplementary Examinations, May - 2024

FLUID MECHANICS

[MECHANICAL ENGINEERING]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Discuss the following with neat figures: i) Piezometer, ii) U-tube Manometer, iii) U-tube Differential Manometer.	CO1	14 Marks
		(OR)		
2.	a)	Define and derive Newton's law of viscosity.	CO1	7 Marks
	b)	What is the pressure inside the droplet of water 0.05 mm in diameter at 20^0C? If the pressure outside the droplet is 103 kPa. Take surface tension is 0.0736N/m at 20^0C. .	CO4	7 Marks

UNIT-II

3.		What is venturimeter? Derive an expression for the discharge through venturimeter.	CO1	14 Marks
		(OR)		
4.		Derive the expressions total pressure and centre of pressure for a vertical plane surface.	CO3	14 Marks

UNIT-III

5.	a)	Define and explain terms: Hydraulic Gradient line and Total Energy line.	CO1	6 Marks
	b)	Draw velocity diagram for a moving plate with jet tangentially striking at one end. Specify each term related to the velocity diagram both at inlet and outlet.	CO4	8 Marks
		(OR)		
6.	a)	Outline the minor energy losses in pipes.	CO1	7 Marks
	b)	Derive an expression for the force exerted by a jet on an inclined flat plate in a direction normal to the plate.	CO5	7 Marks

UNIT-IV

7.		Explain the following : i) Water hammer; ii) Cavitation; iii) Surge tank	CO1	14 Marks
		(OR)		
8.	a)	Describe performance characteristics of different turbines.	CO6	7 Marks
	b)	Derive an expression for the specific speed of a turbine.	CO5	7 Marks

UNIT-V

9.		What are slip and negative slip of a reciprocating pump? Explain the reason for negative slip.	CO1	14 Marks
		(OR)		
10.	a)	What is the function of air vessels in a reciprocating pump?	CO1	7 Marks
	b)	Derive an expression for the work done by an impeller of a centrifugal pump with sketch.	CO6	7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech II Semester (SVEC16) Supplementary Examinations, May - 2024

JAVA PROGRAMMING

[COMPUTER SCIENCE AND ENGINEERING,INFORMATION TECHNOLOGY]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1.	a)	Explain different types of operators available in Java.	CO1	7 Marks
	b)	Illustrate constructor overloading with example.	CO2	7 Marks
		(OR)		
2.	a)	List and explain Java buzzwords. which factors are making Java famous language.	CO1	10 Marks
	b)	Write about garbage collections.	CO1	4 Marks

UNIT-II

3.	a)	What do you mean by static class and static method? Can we make an instance of an abstract class? Justify your answer with an example.	CO3	6 Marks
	b)	Describe how to implement the concept of multiple inheritances with example.	CO3	8 Marks
		(OR)		
4.	a)	What is the use of “Final “keyword in Java? Explain.	CO2	4 Marks
	b)	What is inheritance? Explain different forms of inheritance in Java.	CO1	10 Marks

UNIT-III

5.	a)	What is thread? Explain different ways of creating threads in java with examples.	CO1	7 Marks
	b)	List some of the most common types of exceptions that might occur in Java.	CO1	7 Marks
		(OR)		
6.	a)	What is thread synchronization? Discuss with an example.	CO2	8 Marks
	b)	What is the use of finally block? Explain.	CO2	6 Marks

UNIT-IV

7.	a)	With an example, explain how to create and run an applet program in Java.	CO4	7 Marks
	b)	What is the significance of Layout managers? Discuss briefly various layout managers.	CO4	7 Marks
		(OR)		
8.	a)	Explain applet life cycle with neat diagram.	CO4	8 Marks
	b)	Differentiate between swing components and AWT components.	CO4	6 Marks

UNIT-V

9.	a)	What is the role of event listeners in event handling? List the Java event listeners.	CO5	7 Marks
	b)	Describe the simple html file to pass the parameter to servlet and display the parameter values accepted by servlet.	CO5	7 Marks
		(OR)		
10.	a)	Explain delegation event model in detail.	CO5	7 Marks
	b)	What is a Java servlet? Explain with a neat illustration the life cycle of a servlet.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations, May – 2024

SOFTWARE ENGINEERING

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1	a)	Explain the layered technology of Software Engineering.	CO1	7 Marks
	b)	Explain in brief the process model which is used in satiations where the requirements are well defined and stable.	CO2	7 Marks
		(OR)		
2	a)	Define Software Engineering and state its applications.	CO1	7 Marks
	b)	Explain concurrent agile development model. Discuss at least one case study where this model is best suitable.	CO2	7 Marks
		UNIT-II		
3	a)	Imagine, what could be the consequence in the software development process, if requirements negotiation and requirements validation is not properly organized. Why negotiation and validation is much important. Discuss with case studies.	CO2, CO4	7 Marks
	b)	Explain the data modeling concepts.	CO2	7 Marks
		(OR)		
4	a)	Why eliciting of requirements is considered as a difficult task? Explain in detail.	CO2	7 Marks
	b)	What is a Use-Case? Explain how to develop use-cases for library management system.	CO2, CO4	7 Marks
		UNIT-III		
5	a)	Explain the concept of architectural design with a case study.	CO3	7 Marks
	b)	Define metrics. Explain about metrics for software quality.	CO5	7 Marks
		(OR)		
6	a)	Compare and contrast between process metrics and project metrics.	CO3	7 Marks
	b)	Explain various architectural styles.	CO3	7 Marks
		UNIT-IV		
7		Explain object-oriented testing methods in detail.	CO5	14 Marks
		(OR)		
8	a)	Explain the testing strategies for conventional software.	CO5	7 Marks
	b)	Define black box testing. Write the different black box testing techniques.	CO5	7 Marks
		UNIT-V		
9	a)	What is software risk? Elaborate on various risks associated with Software.	CO6	7 Marks
	b)	Consider that you have purchased a house in another state. You have never actually seen the property, but you acquired it at an amazingly low price, with the warning that it might have to be completely rebuilt. How would you proceed?	CO4, CO6	7 Marks
		(OR)		
10	a)	Define software quality. Write the different software quality factors.	CO6	7 Marks
	b)	Differentiate the forward engineering proceed for Client-Server Architectures and Object-Oriented Architectures.	CO6	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, May - 2024

FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Describe briefly with a neat sketch–wash boring method and Auger boring method of soil exploration.	CO1	6 Marks
	b)	Explain geophysical methods of investigation, with neat sketches.	CO1	8 Marks
		(OR)		
2.	a)	How do you judge the disturbing effect of soil–sampler?	CO2	6 Marks
	b)	What are the uses of Bore log report? How to write the soil investigation report?	CO1	8 Marks

UNIT-II

3.	a)	What are the various types of lateral earth pressures and discuss briefly with sketches?	CO1	4 Marks
	b)	A wall with a smooth vertical back 9 m high supports a purely cohesive soil with c= 20 kN/m^2 and γ= 18 kN/m^3. Determine: i) Depth of tension crack ii) Total active thrust per metre run iii) Total passive thrust and iv) Critical depth v) Points of action of active and passive thrusts from the base.	CO2	10 Marks
		(OR)		
4.	a)	Enumerate the different types of retaining walls that are commonly used.	CO1	5 Marks
	b)	A masonry retaining wall of trapezoidal section is 6m high and 1m wide at top, retaining soil level with its top. Find the minimum base width of the wall to avoid tension at the base. γ of masonry is 23 kN/m^3 and γ of the soil is 16 kN/m^3; φ=30^o. The back face of the wall is vertical.	CO2	9 Marks

UNIT-III

5.		Show that the factor of safety of an infinite slope in a cohesionless soil is independent of its height and the unit weight of the soil.	CO1	14 Marks
		(OR)		
6.	a)	What is Taylor's Stability Number with respect to stability of slopes? Explain.	CO1	6 Marks
	b)	In order to find a factory of safety of a slope of a earth dam during steady seepage, the section of the dam was drawn to a scale of 1:4 and the following results obtained on a trial slip circle. Area of N rectangle = 10 cm^2 Area of T rectangle = 8 cm^2 Are of U rectangle = 4.8 cm^2 Length of failure Arc = 12 cm The laboratory test on slope material produced c = 18 kN/m^3 and φ = 25^o. Determine the factory of safety of slope of unit weight of soil is 20 kN/m^3.	CO3	8 Marks

UNIT-IV

7.	a)	Give the general guidelines to distinguish general shear failure and local shear failure and explain the bearing capacity equation in case of local shear failure.	CO1	6 Marks
	b)	A circular footing is resting on stiff saturated clay with unconfined compression strength of 250 kN/m^2. The depth of foundation is 2 m. Determine the diameter of the footing if the column load is 700 kN. Assume a factor of safety as 2.5. The bulk unit weight of soil is 20 kN/m^3. What will be the change in ultimate, net ultimate and safe bearing capacity if the water table is at ground level?	CO2	8 Marks

(OR)

8.	a)	Explain different components of settlement, in detail.	CO1	4 Marks
	b)	A square footing, 2 m square, rests in a soft clay stratum at a depth of 1.5 m from ground surface. The thickness of clay layer is 3.5 m and has the following properties: w_L = 30%, w_n = 40%, $\varphi_u = 0^o$, cu =0.5 kg/cm^2. The clay stratum is underlain by firm sand stratum. The clay is known to be normally consolidated. The ground water table is quite close to the ground surface. Determine the net safe bearing capacity of footing using Skempton's analysis and thereby estimate the consolidation settlement of the clay layer.	CO2	10 Marks

UNIT-V

9.	a)	What is negative skin friction of piles? Explain.	CO1	6 Marks
	b)	For the following data, compute the settlement of the group assuming the load to be transferred at two–thirds the length of the pile: depth of clay layer = 18m, load on piles = 2500 kN, length of piles = 10.5 m, diameter of each pile = 0.4 m, spacing of piles = 1.20 m c/c, number of piles = 16, initial void ratio = 0.90, C_c = 0.45, and bulk density (γ_b) = 16 kN/m^3.	CO2	8 Marks

(OR)

10.	a)	What are the forces acting on a well foundation?	CO1	8 Marks
	b)	Write short notes on i) Floating caissons (ii) Sinking of wells (iii) Shifts and Tilts.	CO1	6 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, May - 2024

HIGHWAY AND TRAFFIC ENGINEERING
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write in detail about the engineering surveys conducted for highway alignment.	CO1	7 Marks
	b)	Explain in detail about the salient features of Nagpur road plan and its classification of roads.	CO1	7 Marks
		(OR)		
2.	a)	What are the factors affecting geometric design?	CO2	7 Marks
	b)	What is the super elevation to be provided on a horizontal curve on a National Highway in plain terrain (given: Design speed =100 Kmph), if the curve has a radius of 310 m?	CO2	7 Marks

UNIT-II

3.		What is all the modern construction materials used for construction of pavement? Explain the usage and characteristics in detail.	CO2	14 Marks
		(OR)		
4.	a)	Write in detail about the design of joints in rigid pavement.	CO5	7 Marks
	b)	Explain the various factors influencing design of Rigid pavements and the design procedure as per IRC 58.	CO6	7 Marks

UNIT-III

5.	a)	What are the different types of resistance that is offered by the vehicle when it is in motion? Explain.	CO1	7 Marks
	b)	Calculate the braking efficiency of the vehicle moving at 60 km/h was stopped by applying the brake and the length of the skid mark was10 m. Take the average skid resistance of the surface of the pavement is 0.68.	CO2	7 Marks
		(OR)		
6.	a)	What are the various vehicle characteristics which affect the road design and traffic performance?	CO2	9 Marks
	b)	Explain the relationship between speed, travel time, volume, density and capacity.	CO2	5 Marks

UNIT-IV

7.	a)	The average normal flow of traffic on cross roads A and B during design period are 400 PCU per hour and 250 PCU per hour respectively, the saturation flow values on these roads are estimated as 1250 PCU per hour and 1000 PCU per hour respectively. The all – red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with sketch by Webster's method.	CO3	7 Marks
	b)	What are the objects and scope of traffic engineering? Explain briefly.	CO1	7 Marks

(OR)

8.	a)	Discuss briefly the various factors affecting the practical capacity of road.	CO2	7 Marks
	b)	Estimate the basic capacity of traffic lane at a speed of 60 Kmph. Assume that all the vehicles are of average length 6m.	CO2	7 Marks

UNIT-V

9.	a)	What are the various aspects investigated during parking studies? What are the uses of these studies?	CO4	7 Marks
	b)	List out the various factors cause accidents in traffic engineering with IRC standards.	CO7	7 Marks

(OR)

10.	a)	With neat sketches show various types of traffic signs, classify them in proper groups.	CO8	7 Marks
	b)	What are the advantages and disadvantages of traffic signals?	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, May - 2024

STEEL STRUCTURES
[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

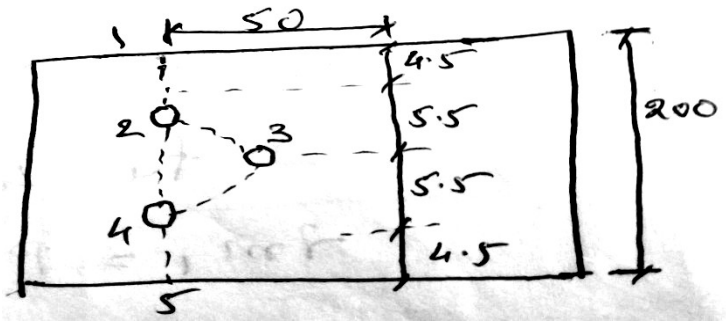
1.	a)	What are the merits and demerits of welded connection?	CO1	7 Marks
	b)	Write short note on i) Lap joint ii) Butt joint.	CO1	7 Marks
		(OR)		
2.		An Angle ISA 150 x 115 x 10 mm carrying an axial tension of 600 kN, is to be connected to a gusset plate of 12 mm thickness. Design the joint with ultimate shear stress of 410Mpa.	CO3	14 Marks

UNIT-II

3.		Design a rolled steel beam using I-section for simply supported beam of span 6 m, carries a UDL of 15kN/m excluding self-weight. The compression flange of beam is laterally supported. fy is 250Mpa, E is $2x10^5$ Mpa.	CO3	14 Marks
		(OR)		
4.	a)	Differentiate between bending and buckling of a beam.	CO2	7 Marks
	b)	What are the reasons for specifying deflection limitations?	CO2	7 Marks

UNIT-III

5.	a)	Classify the modes of failure in compression member.	CO1	7 Marks
	b)	Distinguish column and strut.	CO2	7 Marks
		(OR)		
6.		Three holes of 20mm dia are arranged in a staggered manner as shown in figure in a steel plate of 200 mm width and 10 mm thickness. Determine the design tensile strength of the plate if fu is 410 N/mm^2 and fy is 250 N/mm^2 for the material	CO3	14 Marks



UNIT-IV

7.		Design a laced column with two channels back to back length 10 m to carry an axial factored load of 1400 kN. The column may be assumed to have restrained in position but not in direction at both ends.	CO3	14 Marks
		(OR)		
8.		By using IS code, design a slab base for a column ISHB 300 @ 630 N/m to carry an axial factored load of 1200 kN. Assume Fe410 grade steel and M20 grade concrete is used. Provide welded connection between column and base plate	CO7	14 Marks

UNIT-V

9.	a)	Why are the Pratt trusses structurally better than Howe trusses?	CO1	4 Marks
	b)	What are the secondary stresses in roof trusses?	CO1	5 Marks
	c)	What is the correct orientation of placement of channel section purlins over roof trusses?	CO1	5 Marks
		(OR)		
10.		A Power plant structure having maximum dimension more than 60 m is proposed to be built on downhill side near Dehradun. The height of hill is 400 m with a slope of 1 in 3. If the location is 250 m from the crest of the hill on downward slope, and its eve board is at a height of 9 m, determine the design wind pressure.	CO2	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, May - 2024

GROUND WATER DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I		
1.	a)	Explain Groundwater hydrologic cycle with a neat sketch.	CO1	7 Marks
	b)	Discuss the origin of groundwater with a neat sketch.	CO1	7 Marks
		(OR)		
2.		Derive groundwater flow equation.	CO2	14 Marks
		UNIT-II		
3.	a)	Differentiate confined and unconfined aquifer with a neat sketch.	CO2	6 Marks
	b)	A well penetrates into an unconfined aquifer having a saturated depth of 100 meters. The discharge is 250 litres per minute at 12 meters drawdown. Assuming equilibrium flow conditions and a homogenous aquifer, estimate the discharge at 18 meters drawdown. The distance from the well where the drawdown influences are not appreciable may be taken to be equal for both the cases.	CO2	8 Marks
		(OR)		
4.	a)	Derive an expression to determine the discharge through confined aquifer using Theim's equation.	CO2	7 Marks
	b)	A 30cm diameter well penetrates 25 meters below the static water table. After 24 hours of pumping at 5400 litres per minute, the water level in a test well at 90 meters is lowered by 0.53 meters, and in a well 30 meters away the drawdown is 1.11 meters. What is the transmissibility of the aquifer? Also determine the drawdown in the main well.	CO2	7 Marks
		UNIT-III		
5.		Describe the occurrence of saline water intrusion.	CO6	14 Marks
		(OR)		
6.		Explain Ghyben-Herzberg relation between fresh and saline waters.	CO6	14 Marks
		UNIT-IV		
7.	a)	Explain the concept of artificial recharge of groundwater.	CO5	7 Marks
	b)	List artificial recharge methods and explain basin method with a neat sketch.	CO5	7 Marks
		(OR)		
8.		Describe the application of GIS and Remote Sensing in artificial recharge of groundwater along with a case study.	CO6	14 Marks
		UNIT-V		
9.		List surface methods in groundwater exploration and explain anyone with a neat sketch.	CO6	14 Marks
		(OR)		
10.		List sub surface methods in groundwater exploration and explain anyone with a neat sketch.	CO6	14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, May - 2024

RURAL TECHNOLOGY

[Civil Engineering, Mechanical Engineering, Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain the role of rural business hubs in improving rural infrastructure.	CO1	14 Marks
		(OR)		
2.		Explain the role of CAPART and NIF in rural development.	CO1	14 Marks

UNIT-II

3.	a)	Define Energy. Explain the structure and working of a biogas plant. State the uses of biogas for rural development.	CO2	7 Marks
	b)	State the disadvantages of incineration of biomass. Explain the significance of composting technology for effective utilization of organic wastes.	CO2	7 Marks
		(OR)		
4.	a)	Discuss briefly any three major types of alternative sources of energy and highlight their advantages.	CO4	7 Marks
	b)	Explain the concept of 3Rs with an appropriate example. Add a note on its significance in sustainable development.	CO4	7 Marks

UNIT-III

5.	a)	Discuss the salient features of building and construction technologies suitable for rural environment of India.	CO4	7 Marks
	b)	What is Tissue culture? Explain the advantages of tissue culture in propagation of economically useful plants.	CO4	7 Marks
		(OR)		
6.	a)	Enlist and explain any 4 initiatives of the governments for promoting cottage industries helpful in rural economic growth.	CO3	7 Marks
	b)	Write short notes on: i) Agro-based industries; ii) Building and Construction technologies.	CO6	7 Marks

UNIT-IV

7.	a)	Justify fresh water and more particularly ground water as a precious resource with respect to its availability for human activities.	CO5	7 Marks
	b)	Discuss the need for prevention of contamination of fresh water resource in rural environment. Suggest measures to ensure supply of safe drinking water in villages	CO5	7 Marks

(OR)

8.	a)	Define Apiculture. State the implications of undertaking apiculture for rural employment and the measures for ensuring the quality of the product for the consumers.	CO4	7 Marks
	b)	Discuss any two rain water harvesting technologies employed in India with suitable illustrations.	CO5	7 Marks

UNIT-V

9.		Write a detailed note on i) Saansad Adarsh Gram Yojana(SAGY), ii) Need and Necessity of technology in rural areas.	CO3	14 Marks

(OR)

10.	a)	Write a detailed note on private sector participation in development of employment in rural sector.	CO7	7 Marks
	b)	Write a detailed note in Impact of information technology in rural development.	CO7	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, May - 2024

ENERGY AUDIT AND CONSERVATION

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		What do you mean by 'Energy audit'? Discuss various types of energy audit in brief.	CO1	14 Marks
		(OR)		
2.	a)	Define energy audit and explain the steps involved in the energy audit process.	CO1	7 Marks
	b)	Discuss the significance of pie-charts, sankey diagrams and load profits with suitable example.	CO2	7 Marks

UNIT-II

3.	a)	What are the duties and responsibilities of energy manager as per energy conservation Act 2001?	CO1	6 Marks
	b)	Write down the various rules for efficient conservation techniques.	CO2	8 Marks
		(OR)		
4.	a)	What are the benefits of Energy Conservation? Explain in detail.	CO1	7 Marks
	b)	Discuss various energy saving schemes and current energy consumption in India.	CO2	7 Marks

UNIT-III

5.		What is a smart building? How does it benefit the society?	CO6	14 Marks
		(OR)		
6.		Explain about top seven Green Home Building Techniques.	CO1	14 Marks

UNIT-IV

7.	a)	Explain the working of wattmeter and data logger.	CO1	7 Marks
	b)	With neat diagram, explain the working principle of pyrometer.	CO1	7 Marks
		(OR)		
8.	a)	Explain the constructional details of energy efficient motors also explain its applications in industry.	CO3	7 Marks
	b)	Explain the factors that affect the efficiency of EEM.	CO1	7 Marks

UNIT-V

9.	a)	Briefly explain simple payback period and its advantages and disadvantages.	CO1	7 Marks
	b)	Discuss time value of money and rate of return.	CO1	7 Marks
		(OR)		
10.	a)	What are the different methods of depreciation and with a suitable example show that the depreciation will be almost same even though different methods are adopted?	CO1	7 Marks
	b)	What is the present worth of a replacement cost of Rs. 5000 that occurs at the end of 5 years when the discount rate is 5%, compounded yearly?	CO2	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, May - 2024

GAS TURBINES AND JET PROPULSION
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Illustrate the functioning of Re-heat Brayton cycle with a neat sketch.	CO1	4 Marks
	b)	An ideal air standard Brayton cycle operates with air. At the compressor inlet, the air is at 550K and at the turbine outlet the gas is at 1450K. The pressure ratio of the cycle is 7. Examine i) Net work done; ii) Thermal efficiency.	CO2	10 Marks
		(OR)		
2.		The Pressure ratio of an Open cycle gas turbine power plant is 6. Air is taken at 28^0C and 1.01 bar. The compression is carried out in two stages with perfect inter cooling in between. The maximum temperature of the cycle is limited to 700^0C.Assuming the isentropic efficiency of each stage compressor is 85% and Turbine is 85%.Estimate the power developed and efficiency of the power plant, if the air flow is 2kg/sec. Mass of the fuel may be neglected, and may be assumed that Cp=1.005kJ/kg K and gamma =1.4 & Illustrate its TS Chart and process?	CO2	14 Marks

UNIT-II

3.	a)	Illustrate the working principle of roots blower with neat sketch and plot TS diagram?	CO2	6 Marks
	b)	A centrifugal compressor handles 150kg/min of air .The suction pressure and temperature are 1 bar and 20 °C. The suction velocity is 80m/s. After compression in the impeller the conditions are 1.5 bar and 70°C and 220m/s. calculate the i) Isentropic efficiency ii) power required to drive the compressor iii) overall efficiency of the unit. It may be assumed that KE of air gained in the impeller is entirely converted in to pressure in the diffuser.	CO2	8 Marks
		(OR)		
4.	a)	Point out the classification of compressors.	CO2	4 Marks
	b)	In an eight stage axial flow compressor the overall stagnation pressure ratio achieved is 5:1 with an overall isentropic efficiency of 85 %.The inlet stagnation temperature and pressure are 293K and 0.1MPa. The work is divided between the stages equally. The mean blade speed is 185m/s and 50% reaction design is used. The axial velocity of compressor is constant and is equal to 110m/sec. Calculate : i). Blade angles ii).The power required**.**	CO2	10 Marks

UNIT-III

5.	a)	Explain in detail the combustion theory applied to a gas turbine combustion system?	CO1	7 Marks
	b)	What are the various forms of a combustion system?	CO3	7 Marks

(OR)

6.	a)	What are the various factors those affect the combustion chamber performance? Explain.	CO3	7 Marks
	b)	Describe briefly the factors affecting the combustion chamber design.	CO3	7 Marks

UNIT-IV

7.	a)	Outline the principle of jet propulsion engine with neat sketch.	CO1	7 Marks
	b)	Illustrate the terms of i) Thrust power ii) Propulsive power iii) Propulsive efficiency and iv) Thermal efficiency.	CO4	7 Marks

(OR)

8.		Illustrate the Operation of Pulse Jet engine with neat Schematic arrangement. Discuss the advantages and disadvantages.	CO4	14 Marks

UNIT-V

9.	a)	What are the basic difference between rocket propulsion and jet propulsion? Can rockets work in Vacuum?	CO1	7 Marks
	b)	How rockets are classified? What is the stage of development of each type?	CO5	7 Marks

(OR)

10.	a)	What are the factors which limit the thrust obtainable from chemical rockets?	CO5	7 Marks
	b)	What is the condition for the maximum thrust in a chemical rocket? Derive an expression for the same.	CO5	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-19) Supplementary Examinations, May - 2024

TRANSFORMATION TECHNIQUES AND LINEAR ALGEBRA

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Expand $f(x) = \sqrt{1-\cos x}$, $0 < x < 2\pi$ in a Fourier series.	6 Marks	L1	CO1	PO1
	b)	Find the Fourier transform of. $f(x) = \begin{cases} 1-x^2, & \lvert x\rvert \le 1 \\ 0, & \lvert x\rvert > 1 \end{cases}$	6 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Obtain a half range cosine series for $f(x) = x$ in $(0, l)$.	4 Marks	L1	CO1	PO1
	b)	Find the Fourier sine transform of $\frac{1}{x(x^2+a^2)}$.	8 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Find the Laplace transforms of $t^2 e^{-3t} \sin 2t$.	6 Marks	L2	CO1	PO1
	b)	Determine $L\left[\frac{\cos 2t - \cos 3t}{t}\right]$.	6 Marks	L3	CO1	PO2
		(OR)				
4.	a)	Applying Laplace transform, evaluate $\int_0^\infty \frac{e^{-\sqrt{2}t} \sinh t \sin t}{t} dt$.	6 Marks	L3	CO1	PO2
	b)	Find the Laplace transform of triangular wave of period of 2a given by $f(x) = \begin{cases} t, & 0 < t < a \\ 2a - t, & a < t < 2a \end{cases}$	6 Marks	L3	CO1	PO1

UNIT-III

5.	a)	Find the inverse Laplace transform of $\frac{s}{s^4+s^2+1}$.	6 Marks	L2	CO1	PO1
	b)	Using convolution theorem, find $L^{-1}\left(\frac{s}{(s^2+a^2)^2}\right)$.	6 Marks	L3	CO1	PO2

(OR)

6.		Solve the differential equation $\frac{d^2x}{dt^2} + n^2x = a\sin(nt + \alpha)$, subject to the conditions $x = Dx = 0$ at $t = 0$ by using Laplace transforms.	12 Marks	L3	CO1	PO2

UNIT-IV

7.	a)	For what value of k the equations $x + y + z = 1$, $2x + y + 4z = k$, $4x + y + 10z = k^2$ has a solution and solve them completely in each case.	6 Marks	L4	CO2	PO2
	b)	Find the eigen values and eigen vectors of the matrix $\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$.	6 Marks	L3	CO2	PO2

(OR)

8.	a)	Write the matrix of the quadratic form $3x^2+5y^2+7z^2+2xy+2xz-4yz$.	4 Marks	L1	CO2	PO2
	b)	Transform the quadratic form $x^2 + 3y^2 + 3z^2 - 2yz$ into the canonical form by orthogonal transformation.	8 Marks	L2	CO2	PO2

UNIT-V

9.	a)	Examine whether the vectors $\begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ 4 \\ 2 \end{bmatrix}$ are linearly independent or not.	4 Marks	L4	CO2	PO2
	b)	Define linear operator. Show that the linear operator T: $R^2 \rightarrow R^2$, $T(x, y) = (2x - 3y,\ 5x + 2y)$ is one-to-one and find its nullity.	8 Marks	L2	CO2	PO1

(OR)

10.	a)	Show that the polynomials 1, x+1 and 1+x+x^2 form a basis of the vector space $P_2(R)$.	6 Marks	L3	CO2	PO1
	b)	Define matrix of linear transformation. Find matrix of T: $R^3 \rightarrow R^3$, T(x, y, z) = (x –y, z) relative to the standard basis for R^3 and hence find T(1,1,2).	6 Marks	L4	CO2	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-19) Supplementary Examinations, May - 2024

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Determine the value of b for following. i) $16_{10} = 100_b$ ii) $292_{10} = 1204_b$	6 Marks	L2	CO1	PO1
	b)	Express F = (xy + z) (y + xz) in sum of minterms and product of maxterms.	6 Marks	L2	CO1	PO1
		(OR)				
2.	a)	The message below was coded in Hamming code and transmitted through a noisy channel. Decode the message assuming that a single bit error has occurred in the following code words. i) 1011001 ii) 1100011	6 Marks	L2	CO1	PO1
	b)	Convert the following binary numbers to Gray code. i) 1011 ii) 101010110101 iii) 110110010	6 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Obtain the minimal SOP expression F = Π M (0,1,4,6,8,9,11). d (2,7,13) using K-map and implement with NAND gates.	6 Marks	L3	CO1	PO2
	b)	Realize AND gate and EX-OR gate using minimum number of NOR gates.	6 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Minimize the expression F = Σm(0,1,4,5,6,7,9,11,15) +d (10,14) using K-map and implement with NOR gates.	6 Marks	L3	CO1	PO2
	b)	Reduce the expression $F = (A + B)(A + \overline{B} + C)(A + \overline{C})$ using K-map and implement with AND-OR logic.	6 Marks	L3	CO1	PO2

UNIT-III

5.	a)	A combinational circuit is defined by the following three Boolean functions. Design the circuit with a decoder and external gates. $F_1 = X'Y'Z' + XZ$; $F_2 = XY'Z' + X'Y$; $F_3 = X'Y'Z + XY$.	6 Marks	L4	CO2	PO4
	b)	Implement half subtractor using minimum number of NAND gates.	6 Marks	L4	CO2	PO2
		(OR)				
6.	a)	Design a combinational circuit with three inputs and one output. The output is equal to logic 1 when the binary value of the input is less than 3. The output is logic 0 otherwise.	6 Marks	L4	CO2	PO4
	b)	Implement a full adder function using 4 X 1 multiplexers.	6 Marks	L4	CO2	PO3

UNIT-IV

7.	a)	Illustrate the operation of SR NAND latch.	6 Marks	L4	CO2	PO1
	b)	Construct a 4-bit Johnson counter using JK flip-flops.	6 Marks	L4	CO2	PO4
		(OR)				
8.	a)	Show the excitation tables of D and T flip-flops.	6 Marks	L4	CO2	PO1
	b)	The contents of a serial-in/serial-out shift register are DCBA = 0101, where A is the least significant digit of the register. A serial input 10011 is moved into the shift register, from left to right, most significant bit first, by five successive clock pulses. Find the contents of shift register.	6 Marks	L4	CO2	PO2

UNIT-V

9.	a)	Implement the following two Boolean functions with a PLA: $F_1(A,B,C) = \sum m(0,1,2,4)$; $F_2(A,B,C) = \sum m(0,5,6,7)$.	6 Marks	L4	CO2	PO2
	b)	Explain the construction of a basic memory cell and also explain with diagram the construction of 4 X 4 RAM.	6 Marks	L4	CO2	PO1
		(OR)				
10.	a)	Implement the following Boolean functions using PAL: $F_1 = \sum m(0,2,5,7,8,10,12,13)$; $F_2 = \sum m(0,2,6,8,9,14,15)$	6 Marks	L4	CO2	PO2
	b)	Design an Excess-3 to BCD code converter using PROM.	6 Marks	L4	CO2	PO4

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-19) Supplementary Examinations, May - 2024

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Compare and contrast visibility controls and also compare with each of them.	6 Marks	L2	CO1	PO1
	b)	Java is platform independent. Justify?	6 Marks	L5	CO1	PO1
		(OR)				
2.	a)	Discuss about Command Line Arguments with an example program.	6 Marks	L2	CO1	PO1
	b)	List and explain any three features of Object Oriented Programming.	6 Marks	L1	CO1	PO2
		UNIT-II				
3.	a)	Explain the final keyword with all its usages with an example program.	6 Marks	L2	CO1	PO1
	b)	Write a program to find factorial of a given number using a while loop.	6 Marks	L1	CO1	PO1
		(OR)				
4.	a)	Elaborate on Wrapper Classes.	6 Marks	L1	CO1	PO1
	b)	List and explain all the decision making statements in Java.	6 Marks	L1	CO1	PO2
		UNIT-III				
5.	a)	Discuss how an interface is created.	6 Marks	L1	CO2	PO1
	b)	Distinguish between abstract classes and interfaces.	6 Marks	L2	CO2	PO1
		(OR)				
6.	a)	Classify different types of Inheritance in Java.	6 Marks	L2	CO2	PO1
	b)	What is a package? Explain it with an example and also write how to import packages?	6 Marks	L1	CO2	PO2
		UNIT-IV				
7.	a)	Explain the steps in creating a thread using a runnable interface.	6 Marks	L2	CO2	PO4
	b)	Design a java program that demonstrates how a high-priority thread using sleep makes way for the lower-priority threads to execute.	6 Marks	L3	CO2	PO3
		(OR)				
8.	a)	Construct a user-defined exception named check Argument to check the number of arguments passed through command line. If the number of arguments is less than five, throw the check Argument exception else print the addition of all the five numbers.	6 Marks	L2	CO2	PO3
	b)	Design a java program to perform the following on an Array List: i) Add an element ii) Remove an element iii) Trace the Array List.	6 Marks	L3	CO2	PO3

UNIT-V

9.	a)	Develop an Applet that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named "Compute" is clicked.	6 Marks	L3	CO3	PO5
	b)	With an example, explain how we can pass parameters to an Applet.	6 Marks	L2	CO3	PO2
		(OR)				
10.	a)	Describe various components in swings.	6 Marks	L2	CO3	PO1
	b)	List and explain about Mouse Listener Interfaces.	6 Marks	L1	CO3	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-19) Supplementary Examinations, May – 2024

AD HOC AND WIRELESS SENSOR NETWORKS

[Information Technology]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Mention the applicable Radio Propagation Mechanisms which are useful for Ad Hoc Wireless Networks.	6 Marks	L2	CO1	PO1
	b)	With a neat schematic diagram, Discuss about ad hoc wireless Internet.	6 Marks	L1	CO1	PO2
		(OR)				
2.	a)	"Fading and interference effects the performance of Ad Hoc Wireless Networks". Justify your answer.	6 Marks	L3	CO1	PO4
	b)	Draw and explain the architecture of multi-hop cellular networks.	6 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Recall the Design Goals Of A Mac Protocol.	6 Marks	L2	CO2	PO2
	b)	Explain any two Contention based protocols with scheduling mechanisms.	6 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Explain the Packet transmission in Media Access Protocol for Wireless LANs.	6 Marks	L2	CO2	PO2
	b)	Apply Busy Tone Multiple Access protocol to solve the Resource Allocation issue.	6 Marks	L3	CO3	PO4
		UNIT-III				
5.	a)	Discuss about Hidden and Exposed Terminal Problems in transport Layer.	6 Marks	L1	CO2	PO1
	b)	Mention Various Characteristics of an Ideal Routing Protocol for Ad Hoc Wireless Networks.	6 Marks	L1	CO2	PO1
		(OR)				
6.		Discuss in detail about any two Hybrid Routing Protocols.	12 Marks	L2	CO2	PO2
		UNIT-IV				
7.		What are the Major applications and Challenges of WSN's.	12 Marks	L2	CO1	PO4
		(OR)				
8.	a)	Mention the Vision of ambient intelligence for Sensor Networks?	6 Marks	L2	CO1	PO1
	b)	Write short notes on Hardware components of Sensor Networks?	6 Marks	L1	CO1	PO2
		UNIT-V				
9.		Illustrate any two Schedule based MAC protocols for WSN's with examples.	12 Marks	L4	CO3	PO2
		(OR)				
10.	a)	How Reliable MASN communication protocols in tele healthcare are useful.	6 Marks	L3	CO4	PO8
	b)	Correlate the standards of 802.11 and Bluetooth.	6 Marks	L4	CO3	PO6