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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

FUNDAMENTALS OF AGRONOMY

[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 | First agronomic research was started by..... | 1 Mark | L2 | CO1 |
| 2 | refers to the mechanical manipulation of the soil. | 1 Mark | L3 | CO2 |
| 3 | Father of Agricultural Chemistry is | 1 Mark | L1 | CO3 |
| 4 | The term "Green Revolution" coined by | 1 Mark | L2 | CO4 |
| 5 | Soil Moisture Depletion Approach is based on the soil moisture | 1 Mark | L1 | CO5 |
| 6 | Operation being done during summer season in tropics to destroy weeds is called | 1 Mark | L2 | CO6 |
| 7 | 95 to 99.5% portion of plant tissues are made up of | 1 Mark | L3 | CO1 |
| 8 | A weed with a balloon structure for effective dissemination | 1 Mark | L2 | CO2 |
| 9 | The movement of water from the surface into the soil is called | 1 Mark | L3 | CO3 |
| 10 | is done to cut open/break the subsoil hard pan. | 1 Mark | L1 | CO4 |
| 11 | A vertical section of the soil through all its horizons are | 1 Mark | L2 | CO5 |
| 12 | The water requirement of sugarcane | 1 Mark | L3 | CO6 |
| 13 | The first agricultural university in India is | 1 Mark | L2 | CO1 |
| 14 | are used for leveling operations. | 1 Mark | L3 | CO2 |
| 15 | Anaerobic environment of paddy soil is responsible for gaseous loss of fertilizer nitrogen by | 1 Mark | L1 | CO3 |
| 16 | Hans Molish is associated with | 1 Mark | L2 | CO4 |
| 17 | Paleolithic age is divided into | 1 Mark | L3 | CO5 |
| 18 |refers to tillage done after seeding or planting the crop. | 1 Mark | L2 | CO6 |
| 19 | Who is the father of the soil testing | 1 Mark | L3 | CO1 |
| 20 | In unsaturated soil moisture movement, also called | 1 Mark | L1 | CO2 |

PART - B

Answer any Ten Questions

All Questions Carry Equal Marks

- II** **10 x 3 = 30 Marks**
- | | | | | |
|----|------------------------------------------------------------------------------------------|---------|----|-----|
| 1 | How would you classify the branches of agriculture? | 3 Marks | L2 | CO1 |
| 2 | List out the characteristics for choosing good quality seeds. | 3 Marks | L2 | CO2 |
| 3 | Differentiate between bulky organic manure and concentrated organic manure. | 3 Marks | L1 | CO3 |
| 4 | Write water requirement for any 5 cereal crops. | 3 Marks | L1 | CO4 |
| 5 | Explain important cultural or crop husbandry methods of weed control. | 3 Marks | L2 | CO5 |
| 6 | Discuss about crop rotation and its principles. | 3 Marks | L2 | CO6 |
| 7 | Write your opinion on shifting agriculture. | 3 Marks | L2 | CO1 |
| 8 | What would be the advantages if we use good quality seeds? | 3 Marks | L2 | CO2 |
| 9 | Give an over view about Liebig's law of minimum. | 3 Marks | L2 | CO3 |
| 10 | Write about effective rainfall. | 3 Marks | L2 | CO4 |
| 11 | Define parasitic weeds. Classify these weeds. Give detailed account on control measures. | 3 Marks | L2 | CO5 |
| 12 | What are the crop management technologies in problematic areas? | 3 Marks | L2 | CO6 |



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

INTRODUCTORY AGRO-METEOROLOGY & CLIMATE CHANGE

[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 | Agro-meteorology is the study of _____ and use of weather and climate information to enhance or expand agricultural crops and/or to increase crop _____. | 1 Marks | L2 | CO1 |
| 2 | Based on the distribution of _____ received in two rainy seasons namely the south-west monsoon (_____) and northeast monsoon (_____) seasons. | 1 Marks | L1 | CO1 |
| 3 | Expand IMD. | 1 Marks | L3 | CO2 |
| 4 | Checking crop health and growth performance of a crop, and suitable meteorological tools is called _____ | 1 Marks | L6 | CO2 |
| 5 | Expand CSA. | 1 Marks | | CO2 |
| 6 | _____, _____ and _____ are 3 pillars of CSA. | 1 Marks | L6 | CO1 |
| 7 | Expand GHG. | 1 Marks | L2 | CO1 |
| 8 | _____ is the gradual shifting of the existing weather patterns | 1 Marks | L1 | CO1 |
| 9 | Gases exist in the lower atmosphere with lower concentrations are called _____ | 1 Marks | L1 | CO1 |
| 10 | A huge amount (13.5%) of the total Green House Gases are emitted from the _____ sector. | 1 Marks | L2 | CO2 |
| 11 | _____ is highly dependent on weather and climate. | 1 Marks | L4 | CO1 |
| 12 | Expand WMO _____ | 1 Marks | L1 | CO1 |
| 13 | Expand IPCC _____ | 1 Marks | L2 | CO1 |
| 14 | Expand FAO _____ | 1 Marks | L2 | CO1 |
| 15 | Expand UNFCCC _____ | 1 Marks | L1 | CO2 |
| 16 | Expand HFC _____ | 1 Marks | L1 | CO1 |
| 17 | The study of the atmosphere over the poles is _____ | 1 Marks | L1 | CO1 |
| 18 | The studies of the environmental comfortability of humans, animals etc., is _____ | 1 Marks | L2 | CO1 |
| 19 | The study of the atmospheric conditions which leads to droughts is ___ | 1 Marks | L2 | CO1 |
| 20 | The study of the atmosphere in relation to the crops is _____ | 1 Marks | L1 | CO2 |

PART - B

Answer any Ten Question

All Questions Carry Equal Marks

- II** **10 x 3 = 30 Marks**
- | | | | | |
|---|-------------------------------------------------------------|---------|----|-----|
| 1 | What is the Atmosphere and what is its composition? | 3 Marks | L1 | CO1 |
| 2 | What is the Atmosphere and what are its divisions? | 3 Marks | L1 | CO1 |
| 3 | What is the transition zone between two spheres called? | 3 Marks | L1 | CO1 |
| 4 | How would you compare and contrast rotation and revolution? | 3 Marks | L2 | CO1 |
| 5 | How can you explain equinoxes? | 3 Marks | L2 | CO1 |

6	What is radiation? Explain various types of radiation.	3 Marks	L1	CO2
7	How would you compare and contrast meteorology and agro-meteorology?	3 Marks	L2	CO1
8	What is the importance of agro-meteorology and crop production?	3 Marks	L4	CO1
9	What are the factors affecting insolation?	3 Marks	L1	CO1
10	What are the major objectives of Meteorological Observatories?	3 Marks	L2	CO1
11	What are major Agro-meteorological Weather Elements/parameters?	3 Marks	L1	CO2
12	Classify different types of Agro-meteorological instruments	3 Marks	L2	CO2



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

AGRICULTURAL HERITAGE

[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 famous book written by Chanakya is	1 Mark L2 CO1
2 The period of the Chalcolithic age ranges between to BCE.	1 Mark L3 CO2
3 The invention of the plough was noted in age.	1 Mark L1 CO3
4 The people started using metals like and during the Chalcolithic period.	1 Mark L2 CO4
5 is a high value spice.	1 Mark L1 CO1
6 Ifugao Rice Terrace farming is followed in the country of	1 Mark L2 CO2
7 Village tank system is observed in	1 Mark L1 CO3
8 was one of the important literary resources to study the agriculture of the Buddhist period.	1 Mark L2 CO4
9 Maurya ruler Asoka excavated lake to facilitate irrigation.	1 Mark L1 CO1
10 Sericulture flourished in some localities during Buddhist period are ...	1 Mark L1 CO2
11 Who is the author of Arthashastra?	1 Mark L2 CO3
12 Expand ITK.....	1 Mark L3 CO4
13 Expand IHR	1 Mark L2 CO4
14 CTRI is located at.....	1 Mark L3 CO4
15 Example for C ₃ plant	1 Mark L1 CO3
16 Cotton belongs to family	1 Mark L1 CO4
17 Expand PMFBY	1 Mark L1 CO1
18 Scientific name for paddy	1 Mark L1 CO2
19 The thing which is composed of non living things are called	1 Mark L1 CO3
20 Coconut development board was established in..... year.	1 Mark L1 CO4

PART - B

Answer any Ten Question

All Questions Carry Equal Marks

II	10 x 3 = 30 Marks
1 What is agricultural heritage? Why one should study the agricultural heritage?	3 Marks L1 CO1
2 Write a brief account of water management and irrigation practices in Indian sub-continent during Vedic period.	3 Marks L2 CO2
3 Define Indigenous Technical Knowledge (ITK). What are the constraints for scouting of ITK?	3 Marks L2 CO3
4 Write a note on scope of agriculture in India.	3 Marks L2 CO4
5 Write a brief note on the crops cultivated during Indus civilization.	3 Marks L2 CO1
6 How was the agricultural trade during Buddhist period?	3 Marks L2 CO2
7 What are the reasons for refusal for sharing of ITKs?	3 Marks L2 CO3
8 Write short notes on the following: a) ATMA; b) PKVY	3 Marks L1 CO4
9 What was the situation of fish farming during Indus period?	3 Marks L1 CO1
10 Write a short note on the situation of farm labourers during Vedic age.	3 Marks L1 CO2

- 11 Expand: a) SBI b) CTRI c) CIMMYT d) ICRISAT
12 Write about Soil erosion and conservation.

3 Marks L1 CO3
3 Marks L2 CO4



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B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

COMPREHENSION & COMMUNICATION SKILLS IN ENGLISH

[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	Write the contraction form of 'you are'.	1 Mark L1 CO3
2	He was happy, yet he wanted more. (Find the conjunction in the sentence).	1 Mark L1 CO3
3	Mention a channel of communication.	1 Mark L1 CO1
4	_____ is the ability to convey ideas and information in an uninhibited, clear, and direct way.	1 Mark L1 CO1
5	Write the synonym of the word 'exhausted'.	1 Mark L1 CO5
6	Nodding head, blinking eyes, shrugging shoulders, waving hands, and other such physical activities are all forms of _____.	1 Mark L1 CO1
7	Write the advanced vocabulary of the word 'gain'.	1 Mark L1 CO3
8	Write the meaning of the idiom 'raining cats and dogs'.	1 Mark L1 CO5
9	_____ is the study of how human beings communicate with their use to time.	1 Mark L1 CO1
10	I am an Indian. (Identify the type of sentence).	1 Mark L1 CO3
11	_____ I come in? (may/can). (Fill in the blanks with appropriate modal verb).	1 Mark L1 CO3
12	The response to the sender's message is called _____.	1 Mark L1 CO1
13	There are _____ parts of speech in English grammar.	1 Mark L1 CO3
14	The nouns that cannot be touched, seen or heard are called _____.	1 Mark L1 CO3
15	The girl _____ (quick) ran inside the house. (Fill in the blanks with appropriate adverb).	1 Mark L1 CO3
16	He said to me "I am happy to be here this evening". (Change the sentence into indirect speech).	1 Mark L1 CO3
17	Any word that adds more meaning to the noun is called an _____.	1 Mark L1 CO3
18	The message can be misinterpreted due to _____.	1 Mark L1 CO1
19	The _____ speech is also called reported speech.	1 Mark L1 CO3
20	Message is any signal that triggers the response of a _____.	1 Mark L1 CO1

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

II		10 x 3 = 30 Marks
1	List out the qualities of an assertive speaker.	3 Marks L1 CO1
2	What is kinesics?	3 Marks L1 CO1

3	Define comprehensive writing and precise writing.	3 Marks	L1	CO1
4	What are the main channels of communication?	3 Marks	L1	CO1
5	List out the important measures to be followed in order to read a passage in English effectively.	3 Marks	L1	CO1
6	Mention the types of barriers in communication.	3 Marks	L1	CO1
7	Recall the importance of listening.	3 Marks	L1	CO1
8	What is the need of advanced technological communication systems in the 21 st Century?	3 Marks	L1	CO1
9	List out the features of pronunciation of language.	3 Marks	L1	CO2
10	Define general writing and technical writing.	3 Marks	L1	CO4
11	List out the reasons for poor listening.	3 Marks	L1	CO1
12	What is the difference between psychological barrier and emotional barrier in communication?	3 Marks	L1	CO6



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

HUMAN VALUES & ETHICS

[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	Define human values.	1 Mark	L1	CO1
2	List the components of ethics.	1 Mark	L1	CO1
3	What are the ethical principles?	1 Mark	L1	CO2
4	Outline any three approaches to ethics.	1 Mark	L3	CO2
5	Define vision.	1 Mark	L1	CO2
6	How do you define mission?	1 Mark	L1	CO1
7	Outline any four steps in writing a Personal Mission Statement.	1 Mark	L1	CO1
8	List any four characteristics of goal.	1 Mark	L1	CO1
9	List any two key principles of goal setting.	1 Mark	L1	CO1
10	Name any three characteristics of goal.	1 Mark	L1	CO2
11	What are the principles to attain success?	1 Mark	L1	CO1
12	How do you explain success?	1 Mark	L1	CO1
13	List any two basic parameters of 'Philosophy of life.'	1 Mark	L1	CO1
14	List the types of 'Self-awareness'.	1 Mark	L1	CO1
15	What is the need for improving 'Self-awareness'?	1 Mark	L1	CO2
16	How do you define 'Self-satisfaction'?	1 Mark	L1	CO1
17	How do you define 'Self-exploration'?	1 Mark	L1	CO1
18	Name any four barriers to success.	1 Mark	L1	CO1
19	List any two attributes of selflessness.	1 Mark	L1	CO1
20	How do you explain extrinsic motivation?	1 Mark	L1	CO2

PART - B

Answer any Ten Question

All Questions Carry Equal Marks

II

10 x 3 = 30 Marks

1	Explain the need for human values.	3 Marks	L2	CO1
2	Outline the basic human values.	3 Marks	L1	CO1
3	How do you differentiate between human values and ethics?	3 Marks	L1	CO2
4	How do you explain the importance of ethics?	3 Marks	L1	CO2
5	Explain the determinants of ethics.	3 Marks	L2	CO2
6	Discuss the characteristics of 'Goal'.	3 Marks	L1	CO2
7	How do you improve Self-awareness.	3 Marks	L2	CO1
8	Discuss the steps involved in decision making.	3 Marks	L2	CO1
9	Explain the barriers to success.	3 Marks	L2	CO1
10	Explain the principles for success according to Napoleon Hill.	3 Marks	L2	CO1
11	Discuss the ways to integrate body, mind and soul.	3 Marks	L2	CO1
12	Explain the benefits of having a Personal mission statement.	3 Marks	L2	CO1



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

RURAL SOCIOLOGY & EDUCATIONAL PSYCHOLOGY

[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 word Extension is derived from the Latin Word ‘_____’ meaning ‘out’ and ‘_____’ meaning ‘stretching’. | 1 Mark | L2 | CO1 |
| 2 | Extension education is a professional method of _____ education. | 1 Mark | L1 | CO1 |
| 3 | Extension education brings desirable changes in _____, _____, _____, and _____ of the rural people. | 1 Mark | L3 | CO2 |
| 4 | Extension education brings desirable changes in rural people to improve their _____, _____, and _____ status. | 1 Mark | L6 | CO2 |
| 5 | In India, _____ is a basic and important unit of the society | 1 Mark | | CO2 |
| 6 | The study of rural sociology helps the extension worker to _____ the _____. | 1 Mark | L6 | CO1 |
| 7 | The density of rural population is very _____ and the density of urban population is very _____. | 1 Mark | L2 | CO1 |
| 8 | _____ is the dominant institution of village. | 1 Mark | L1 | CO1 |
| 9 | _____ is a very important social institution of the village | 1 Mark | L1 | CO1 |
| 10 | The word Extension is derived from the Latin Word ‘_____’ meaning ‘out’ and ‘_____’ meaning ‘stretching’. | 1 Mark | L2 | CO2 |
| 11 | The caste system is determined slowly by birth and is _____ class system. | 1 Mark | L4 | CO1 |
| 12 | _____ is a way of life, mode of thinking, acting, and feeling. | 1 Mark | L1 | CO1 |
| 13 | _____, _____, _____ and _____ are the classes of customs. | 1 Mark | L2 | CO1 |
| 14 | _____ and _____ are mores. | 1 Mark | L2 | CO1 |
| 15 | IAAP is _____ | 1 Mark | L1 | CO2 |
| 16 | HYVP is _____ | 1 Mark | L1 | CO1 |
| 17 | IVLP is _____ | 1 Mark | L1 | CO1 |
| 18 | Father of Psychology is _____ | 1 Mark | L2 | CO1 |
| 19 | _____ Psychology explains the learning experiences. | 1 Mark | L2 | CO1 |
| 20 | _____ behavior that is visible and what occurs. | 1 Mark | L1 | CO2 |

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

II		10 x 3 = 30 Marks		
1	What is Extension Education?	3 Marks	L1	CO1
2	How would you compare Formal Education and Informal Education?	3 Marks	L3	CO1
3	How would you compare Urban Society and Rural Society?	3 Marks	L2	CO1
4	How would you classify Social Groups and Explain each with examples?	3 Marks	L4	CO2
5	How would you compare Social Change and Social Development?	3 Marks	L2	CO2
6	What is Social Ecology?	3 Marks	L1	CO2
7	What changes would you make to solve problems in Rural Development?	3 Marks	L6	CO1
8	What is Community Development? What are the principles & philosophy of CD?	3 Marks	L1	CO1
9	What examples can you find for various Extension programs of the Government of India?	3 Marks	L3	CO1
10	How would you compare Personality types?	3 Marks	L2	CO2
11	How would you compare Learning and Teaching?	3 Marks	L2	CO2
12	What are the steps in Extension Teaching?	3 Marks	L1	CO2



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

FUNDAMENTALS OF GENETICS

[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 cell organelle which contains green pigment is _____. 1 Marks L3 CO2
 - 2 The chromosome number of wheat is _____. 1 Marks L3 CO3
 - 3 The chromosome assumes J shape at Anaphase is _____. 1 Marks L3 CO2
 - 4 _____ enzyme synthesizes the complementary strand in DNA replication process. 1 Marks L3 CO3
 - 5 The cell division occurs in reproductive cells is _____. 1 Marks L1 CO5
 - 6 The crossing over of chromosomes occurs in _____ stage. 1 Marks L2 CO4
 - 7 _____ phenotypic ratio reveals the absence of linkage. 1 Marks L3 CO4
 - 8 The Father of Genetics is _____. 1 Marks L2 CO4
 - 9 The Supplementary gene action phenotypic ratio is _____. 1 Marks L3 CO4
 - 10 According to Chargoff, A+T = _____. 1 Marks L1 CO5
 - 11 If the Chinchilla fur coat rabbit is crossed with the Himalayan type what will be the F₁ (). 1 Marks L2 CO5
 - a) Chinchilla b) Agouti c) Himalayan d) none of the above
 - 12 Interpret the sex, 3(xy) 3(AA) according to the genic balance mechanism (). 1 Marks L3 CO5
 - a) Female b) Male c) Intersex d) None of the above
 - 13 Interpret the sex, if AAA+XXX in *Coccinia indica* and *Melandrium album*(). 1 Marks L2 CO5
 - a) Male b) Female c) Intersex d) None of the above
 - 14 The characters for which genes are located on autosomes called as (). 1 Marks L3 CO1
 - a) Sex linked characters b) Sex limited characters
 - c) Sex influenced characters d) None
 - 15 Changes occur in an organism due to (). 1 Marks L1 CO4
 - a) Genetics b) Guttation c) Mutation d) None
 - 16 Replacement of a purine by a pyrimidine or pyrimidine by purine is called (). 1 Marks L2 CO5
 - a) Translation b) Transversion c) Transformation d) All above
 - 17 When a segment of chromosome is oriented in reverse direction the phenomenon is called (). 1 Marks L3 CO5
 - a) Duplication b) Deletion c) Inversion d) Transition
 - 18 The symbol 2n+1 represents _____. 1 Marks L2 CO5
 - 19 Expand mRNA _____. 1 Marks L3 CO1
 - 20 Choose a crop with hexaploidy in condition (). 1 Marks L1 CO4
 - a) Rice b) Wheat c) Triticale d) All Above

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

		10 x 3 = 30 Marks			
II	1	Write the contributions of: a) Darwin b) Robert brown c)Hugo de Vries.	3 Marks	L2	CO1
	2	List out types of Special chromosomes and explain chromosome Structure with a neat sketch.	3 Marks	L3	CO1
	3	Justify the importance of Meiosis in Plants.	3 Marks	L5	CO1
	4	Interpret the Monohybrid phenotypic ratio of 3:1	3 Marks	L6	CO2
	5	Explain the concept of Multiple alleles in Blood Groups of Human Beings.	3 Marks	L2	CO2
	6	Differentiate between Prokaryotic Cell and Eukaryotic Cell.	3 Marks	L4	CO1
	7	Define crossing over and explain mechanism of crossing over.	3 Marks	L6	CO3
	8	Define linkage and explain types of linkage briefly.	3 Marks	L2	CO3
	9	a. What is sex linked inheritance? b. What happens when a colour-blind carrier woman marries a colour blind man? Conclude the results.	3 Marks	L6	CO4
	10	Explain Homogametic female chromosomal sex determination.	3 Marks	L2	CO4
	11	Define mutation and list out types of mutations.	3 Marks	L1	CO4
	12	Illustrate the origin of Brassica.	3 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

FUNDAMENTALS OF HORTICULTURE

[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 term Horticulture is derived from word _____. 1 Mark L2 CO1
 - 2 Thermodormancy induced due to _____. 1 Mark L3 CO2
 - 3 The development of fruit without fertilization is called _____. 1 Mark L1 CO3
 - 4 The plants which are potential source of drugs are called _____. 1 Mark L2 CO1
 - 5 _____ dormancy is induced due to immaturity of embryo. 1 Mark L1 CO2
 - 6 _____ system accommodates 15% more trees than the square system. 1 Mark L2 CO3
 - 7 An imaginary line in the garden is called as _____. 1 Mark L3 CO3
 - 8 Grafting method is used to repair damaged root system. 1 Mark L2 CO2
 - 9 _____ system of planting is followed in slopy land. 1 Mark L3 CO3
 - 10 _____ branch deals with the raising of perennial trees meant for avenue. 1 Mark L1 CO2
 - 11 Center of attraction in every garden is _____. 1 Mark L2 CO4
a) Axis b) focal point c) unity d) mass effect ()
 - 12 The study of cultivation of fruit crops is _____. 1 Mark L3 CO1
a) Pedology b) ornithology c) pomology d) olericulture ()
 - 13 _____ is an example for excellent temperate crop 1 Mark L2 CO1
a) Cashew b) custard apple c) date palm d) walnut ()
 - 14 Ideal soil preferred in cultivation of horticultural crops _____. 1 Mark L3 CO1
a) Sandy loam b) silt c) clay loam d) chalky soils ()
 - 15 Chemical used to break seed dormancy _____. 1 Mark L1 CO2
a) Ferulic acid b) Sulphuric acid
c) Abscisic acid d) Phenolic acid ()
 - 16 _____ technique used in converting inferior varieties in to superior. 1 Mark L2 CO2
a) top working b) training
c) multiplication d) grafting ()
 - 17 Father of modern Horticulture _____. 1 Mark L3 CO1
a) Dr. Kallo b) Dr.K.L. Chadha
c) B.D. Singh d) Peter Laurenberg ()
 - 18 _____ Grafting method is used to repair damaged root system. 1 Mark L2 CO2
a) Veneer b) epicotyl c) approach d) softwood grafting ()
 - 19 A system where a higher number of plants are accommodated in a unit area _____. 1 Mark L3 CO3
a) HDP b) square c) contour d) rectangular ()
 - 20 T- budding is also called as _____. 1 Mark L1 CO2
a) inarching b) shield budding
c) ring budding d) patch budding ()

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

II		10 x 3 = 30 Marks		
1	What is the importance of Horticulture in Indian economy?	3 Marks	L4	CO1
2	What is seed dormancy? How would you classify types of seed dormancy.	3 Marks	L2	CO2
3	Explain any two methods of planting systems along with diagram.	3 Marks	L3	CO3
4	What are the principles of the landscape garden?	3 Marks	L1	CO4
5	Define the term 'Horticulture' and explain the divisions of horticulture.	3 Marks	L1	CO1
6	How would you explain the importance of micropropagation?	3 Marks	L1	CO2
7	How would you describe special cultural operations in horticultural crops.	3 Marks	L2	CO3
8	How would you classify the types of landscape garden?	3 Marks	L4	CO4
9	Define asexual propagation. List out its advantages and disadvantages.	3 Marks	L2	CO2
10	Define hardening and write about media for micropropagation.	3 Marks	L2	CO2
11	What can you say about unfruitfulness and its causes.	3 Marks	L3	CO3
12	How would you describe about herbal garden?	3 Marks	L4	CO4



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

ELEMENTARY MATHEMATICS

[**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 | Find the distance between the two points (1, 4) and (2, 3). | 1 Mark | L1 | CO1 |
| 2 | Compute the slope of the line joining the points (2, 6) and (1, 4). | 1 Mark | L2 | CO1 |
| 3 | Find the equation of the line whose slope is 3 and y-intercept 6. | 1 Mark | L1 | CO1 |
| 4 | Find the equation of the line passing through (-1, 2) and (-2, -4). | 1 Mark | L1 | CO1 |
| 5 | Find the equation of the circle whose centre is (5, 2) and radius is 4. | 1 Mark | L1 | CO2 |
| 6 | Find the centre and radius of the circle $x^2 + y^2 + x + y + 2 = 0$. | 1 Mark | L1 | CO2 |
| 7 | Find the equation of a tangent to the circle $x^2 + y^2 = 16$ passing through (-2, 4). | 1 Mark | L1 | CO2 |
| 8 | Determine the value of 'c' if $y = x + c$ is a tangent to the circle $x^2 + y^2 = 16$. | 1 Mark | L3 | CO2 |
| 9 | Evaluate $\lim_{x \rightarrow 1} x^2 + 2x$. | 1 Mark | L3 | CO3 |
| 10 | Find $\frac{d}{dx}(2x^2 + 4x + 2)$ | 1 Mark | L1 | CO3 |
| 11 | Evaluate $\lim_{x \rightarrow 3} x^2 + 2$. | 1 Mark | L3 | CO3 |
| 12 | Find the stationary point of the function $y = x^2 + x$. | 1 Mark | L1 | CO3 |
| 13 | Evaluate $\int x^2 + 2x + 2 dx$ | 1 Mark | L3 | CO4 |
| 14 | Evaluate $\int_0^1 x^4 dx$ | 1 Mark | L3 | CO4 |
| 15 | Calculate the area under the curve $f(x) = 10 - x^3$, the limit is given as $x=1$ to 2. | 1 Mark | L2 | CO4 |
| 16 | Evaluate $\int_1^2 x^3 dx$ | 1 Mark | L3 | CO4 |
| 17 | Find the transpose of the matrix $\begin{bmatrix} 1 & 3 & 8 \\ 3 & 1 & 4 \\ 2 & 1 & 1 \end{bmatrix}$. | 1 Mark | L1 | CO4 |
| 18 | If $A = \begin{bmatrix} 1 & 2 & 6 \\ 2 & 3 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 5 & 2 \\ 1 & 6 & 8 \end{bmatrix}$ the compute $A-B$ | 1 Mark | L2 | CO4 |
| 19 | If $A = \begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$, then find A^2 . | 1 Mark | L1 | CO4 |

20 Find the determinant of $A = \begin{bmatrix} 1 & 4 \\ 2 & 8 \end{bmatrix}$.

1 Mark L1 CO4

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

II

10 x 3 = 30 Marks

- | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 1 | Find the equation of the line passing through the point (2, -5) and perpendicular to the straight line $7x+2y-1=0$. | 3 Marks | L1 | CO1 |
| 2 | Find the value of 'p' if the line joining the points (3, p) and (2, 7) is parallel to the line joining the points (-1, 4), (0, 6). | 3 Marks | L1 | CO1 |
| 3 | Find the equation of the normal to the circle $x^2 + y^2 - 10x + 4y - 140 = 0$ at (-7, -7). | 3 Marks | L1 | CO2 |
| 4 | Find the equation of the circle passing through the points (1, 1), (2, -1), (3, 2). | 3 Marks | L1 | CO2 |
| 5 | Compute $\frac{d}{dx} \left(\frac{2x(1-x^2)}{1+x^2} \right)$. | 3 Marks | L2 | CO3 |
| 6 | By using first principle of differentiation, find the derivative of e^x with respect to x . | 3 Marks | L3 | CO3 |
| 7 | If $y = x^x$, find $\frac{dy}{dx}$. | 3 Marks | L1 | CO3 |
| 8 | Evaluate $\int_0^2 \frac{x^2}{1+x^3} dx$. | 3 Marks | L3 | CO4 |
| 9 | Evaluate $\int_1^2 x \log x dx$ | 3 Marks | L3 | CO4 |
| 10 | Evaluate $\int (x^2 + 3x) \cos x$. | 3 Marks | L3 | CO4 |
| 11 | Evaluate $\begin{vmatrix} a & h & g \\ h & b & f \\ g & f & c \end{vmatrix}$. | 3 Marks | L3 | CO4 |
| 12 | If $A = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$, then show that $A.A^T = I$. | 3 Marks | L2 | CO4 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) I Semester (MBU-22) Regular Examinations, April – 2023

FUNDAMENTALS OF SOIL SCIENCE

[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 predominant metal element on earth crust is _____. 1 Mark L2 CO1
 - 2 The building block for silicate minerals is _____. 1 Mark L2 CO1
 - 3 Minerals are classified into light and heavy minerals based on their _____ 1 Mark L1 CO2
 - 4 The major mechanism of gaseous exchange through soil is _____. 1 Mark L2 CO2
 - 5 The fraction of incident radiation that is reflected by the land surface is _____. 1 Mark L2 CO2
 - 6 Conversion of an element from organic form to inorganic form by the action of microbes decomposition is called as _____. 1 Mark L2 CO1
 - 7 The organic matter fraction that is insoluble both in acid and alkali is _____. 1 Mark L2 CO4
 - 8 Peeling away of surface layer of rock due to differential expansion of mineral is called _____. 1 Mark L1 CO1
 - 9 The weight of organisms per unit weight of soil is known as _____. 1 Mark L2 CO4
 - 10 The lowest category in soil taxonomy is _____. 1 Mark L2 CO4
 - 11 The study of soil in relation to plant growth is _____ 1 Mark L1 CO1
 - a) Edaphology b) Pedology c) Petrology d) Mineralogy
 - 12 In the soil color notation 2.5 YR 3/6, the chroma is ... 1 Mark L2 CO2
 - a) 2.5 b) 2.5 YR c) 3 d) 6
 - 13 One of the following is a permanent soil property. 1 Mark L2 CO2
 - a) Structure b) Bulk density c) Texture d) Porosity
 - 14 The upper most layer of earth is ... 1 Mark L1 CO1
 - a) Crust b) Core c) Mantle d) Magma
 - 15 Compaction of soil results in increase of its ... 1 Mark L2 CO2
 - a) Bulk density b) Particle density c) Porosity d) Volume
 - 16 The constituent of organic matter most resistant to microbial degradation is. 1 Mark L2 CO4
 - a) Polysaccharides b) Proteins c) Cellulose d) Lignins
 - 17 Which one of the following ions has a tendency to disperse clay? 1 Mark L2 CO2
 - a) Ca b) Na c) Mg d) Al
 - 18 Electrical conductivity of saline soil is (dSm-1). 1 Mark L2 CO3
 - a) >4 b) <4 c) 1-2 d) 2-4
 - 19 1 bar is equal to ... 1 Mark L1 CO2
 - a) 100 M Pa b) 10 M Pa c) 1 M Pa d) 0.1 M Pa
 - 20 An example for 1:1 clay mineral is ... 1 Mark L2 CO3
 - a) Kaolinite b) Montmorillonite c) Chlorite d) Smectite

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

		10 x 3 = 30 Marks		
II	1	What is pedogenesis? Differentiate between Laterization and Podzolisation.	3 Marks	L2 CO1
	2	Define soil profile. Explain soil profile with a neat diagram.	3 Marks	L2 CO1
	3	What are different types of weathering? Explain briefly about biological weathering.	3 Marks	L3 CO1
	4	Write short notes on soil color.	3 Marks	L2 CO2
	5	Explain the term soil consistency. State and explain the limits of soil consistency.	3 Marks	L3 CO2
	6	What is soil crust? Write constraints due to soil crust and management practices for soil crusting.	3 Marks	L3 CO2
	7	Describe the soil colloidal properties.	3 Marks	L3 CO3
	8	What is the importance of CEC and the factors affecting it?	3 Marks	L2 CO3
	9	What is base saturation? Write brief note on base saturation.	3 Marks	L2 CO3
	10	Briefly explain the role of organic matter in improving soil physical, chemical and biological properties.	3 Marks	L3 CO4
	11	Give the classification of soil organisms.	3 Marks	L2 CO4
	12	Write briefly about black and red soils.	3 Marks	L2 CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, April – 2023

ENVIRONMENTAL SCIENCE

[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 do you mean by sustainable lifestyle? | 2 Marks | L2 | CO1 |
| | b) | Distinguish between renewable and non-renewable resources. | 2 Marks | L4 | CO1 |
| | c) | What is meant by ecosystem? | 2 Marks | L1 | CO2 |
| | d) | What is the concept and value of biodiversity? | 2 Marks | L2 | CO2 |
| | e) | List the types of pollution. | 2 Marks | L2 | CO3 |
| | f) | What are the various sources of water pollution? | 2 Marks | L1 | CO3 |
| | g) | What is meant by sustainable development? | 2 Marks | L1 | CO4 |
| | h) | List some environmental protection acts? | 2 Marks | L1 | CO4 |
| | i) | What do you mean by population explosion? | 2 Marks | L2 | CO5 |
| | j) | What is the role of technology in environmental 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) | Discuss the major causes for conflicts over water. | 8 Marks | L1 | CO1 |
| | b) | Discuss the merits and demerits of wind energy. | 8 Marks | L1 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 3. | a) | How does the overgrazing contribute to environmental degradation? | 8 Marks | L1 | CO1 |
| | b) | Discuss the major environmental impacts of mineral extraction. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------|---------|----|-----|
| 4. | a) | Write a detailed note on grassland ecosystem and its types. | 8 Marks | L1 | CO2 |
| | b) | Describe the types of ecological pyramids with neat sketches. | 8 Marks | L3 | CO2 |

(OR)

5. a) Write a detailed note on the types of biodiversity. 8 Marks L1 CO2
b) Explain briefly about values of biodiversity. 8 Marks L2 CO2

MODULE-III

6. a) Describe various methods of controlling of air pollution. 8 Marks L1 CO3
b) How can the solid waste be managed? 8 Marks L2 CO3

(OR)

7. a) How does soil pollution affect soil productivity? 8 Marks L2 CO3
b) Explain various measures for preventing soil pollution. 8 Marks L2 CO3

MODULE-IV

8. a) What are the major measures for sustainable development? 8 Marks L2 CO4
b) Why is urban requirement of energy more than rural requirement? 8 Marks L2 CO4

(OR)

9. a) Explain briefly the major impacts of acid rain. 8 Marks L2 CO4
b) Brief out the measures to be taken to control acid rain. 8 Marks L1 CO4

MODULE-V

10. a) Briefly discuss about HIV/AIDS, mode of its spread and its effects on environment. 8 Marks L2 CO5
b) Discuss various issues and measures for women and child welfare at international and national level. 8 Marks L2 CO5

(OR)

11. a) What are the objectives and elements of value education? How can the same be achieved? 8 Marks L1 CO5
b) Discuss the influence of environmental parameters and pollution on human health. 8 Marks L2 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations April – 2023

BASIC COMPUTERS AND INFORMATION SCIENCES

[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) | Define computers. | 2 Marks | L1 | CO1 |
| | b) | What are the characteristics of computers? | 2 Marks | L2 | CO1 |
| | c) | How many types of text alignments are there? | 2 Marks | L3 | CO2 |
| | d) | Define mail merging. | 2 Marks | L1 | CO2 |
| | e) | How many rows and columns are there in MS Excel? | 2 Marks | L3 | CO3 |
| | f) | What is mean by slide transition? | 2 Marks | L1 | CO3 |
| | g) | What do you understand by the term network? | 2 Marks | L2 | CO4 |
| | h) | What is internet? | 2 Marks | L2 | CO4 |
| | i) | What is real time operating system? | 2 Marks | L2 | CO5 |
| | j) | List some of the uses of real time 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 in detail the history of computer and also explain the evolution process of computer system. | 8 Marks | L2 | CO1 |
| | b) | Describe in detail about memory systems in computers. | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | Explain the fundamental units of a computer with a block diagram. | 8 Marks | L2 | CO1 |
| | b) | Elaborate the various input and output devices. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|------|----|-----------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain any four options of the formatting toolbar in detail. | 8 Marks | L2 | CO2 |
| | b) | Describe briefly about secondary storage devices. | 8 Marks | L2 | CO2 |
| (OR) | | | | | |
| 5. | a) | Explain in detail about word window and explain each component. | 8 Marks | L2 | CO2 |
| | b) | Discuss the different types of indentation. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What do you mean by conditional formatting? Explain in detail about conditional formatting. | 8 Marks | L2 | CO3 |
| | b) | With a suitable example, explain the uses of any two inbuilt mathematical functions in Excel. | 8 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain the components of power point window. | 8 Marks | L2 | CO3 |
| | b) | Describe the roll of transition and animation in electronic presentation. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Define the term topology. What are the popular network topologies? | 8 Marks | L2 | CO4 |
| | b) | Differentiate between LAN and WAN. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Who governs the Internet? Discuss in detail | 8 Marks | L1 | CO4 |
| | b) | Explain in detail about, how to create and access the Email Account. | 8 Marks | L3 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | What do you understand by real-time operating systems? Describe briefly. | 8 Marks | L3 | CO5 |
| | b) | Explain the various Functions of Operating Systems | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-----------------------------------------------------------------------|---------|----|-----|
| 11. | a) | With a neat block diagram, explain Components of an Operating System. | 8 Marks | L2 | CO5 |
| | b) | Explain about the various operations in operating system. | 8 Marks | L2 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations April – 2023

MEDICAL TERMINOLOGY AND RECORD-KEEPING

[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) | List out the planes and positions. | 2 Marks | L2 | CO1 |
| | b) | Name any four suffixes. | 2 Marks | L1 | CO1 |
| | c) | Discuss the four functions of Musculoskeletal systems. | 2 Marks | L3 | CO2 |
| | d) | Name any four abbreviations in Musculoskeletal systems. | 2 Marks | L1 | CO2 |
| | e) | Define the respiratory system. | 2 Marks | L3 | CO2 |
| | f) | Classify the three types of neurons. | 2 Marks | L1 | CO2 |
| | g) | What are the procedures in record keeping? | 2 Marks | L2 | CO1 |
| | h) | List the medical orders. | 2 Marks | L3 | CO1 |
| | i) | Discuss about the basic principles of ethics | 2 Marks | L2 | CO1 |
| | j) | Illustrate the confidentiality. | 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 the history of anatomy briefly. | 8 Marks | L2 | CO1 |
| | b) | Describe in detail about the introduction of human anatomy. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Determine the basic medical terms by utilizing roots and suffixes. | 8 Marks | L1 | CO1 |
| | b) | Discuss the medical terms used for muscles. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Write about surgical procedures of musculoskeletal system. | 8 Marks | L4 | CO2 |
| | b) | Brief about function and anatomy of the musculoskeletal systems. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Illustrate the test and procedures of musculoskeletal systems. | 8 Marks | L3 | CO2 |
| | b) | Estimate the conditions, disorders and care of patient in musculoskeletal system. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Brief about respiratory system. Analyze the diagnostic and surgical procedures of respiratory system. | 8 Marks | L4 | CO3 |
| | b) | Summarize the cardiovascular system. List the abbreviations and procedural terms. | 8 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Give the introduction of the nervous system. Expand the abbreviations and symbols. | 8 Marks | L3 | CO3 |
| | b) | Detail about the endocrine system. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-----------------------------------------|---------|----|-----|
| 8. | a) | Write the procedures in record keeping. | 8 Marks | L4 | CO4 |
| | b) | Discuss about the medical orders. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | List the data entry and management on electronic health record system. | 8 Marks | L3 | CO4 |
| | b) | What are the advanced tools to maintain records in health care? | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Define the medical ethics and give out the principals of medical ethics. | 8 Marks | L4 | CO5 |
| | b) | Justify the confidentiality and malpractice. | 8 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------|---------|----|-----|
| 11. | a) | Detail about negligence and rational irrational drug therapy. | 8 Marks | L3 | CO5 |
| | b) | Describe the autonomy ethics of principle. | 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 April – 2023

INTRODUCTION TO QUALITY AND PATIENT SAFETY

[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) | Write a short note on patient safety. | 2 Marks | L2 | CO1 |
| | b) | State the benefits of providing quality services in patient safety. | 2 Marks | L1 | CO1 |
| | c) | Briefly discuss about sterilization. | 2 Marks | L3 | CO2 |
| | d) | Write about the importance of antiseptics. | 2 Marks | L1 | CO2 |
| | e) | Write about benefits of hand sanitization. | 2 Marks | L3 | CO2 |
| | f) | Name methods of sterilization. | 2 Marks | L1 | CO2 |
| | g) | Write a short note on Hippocratic patient safety concept. | 2 Marks | L2 | CO1 |
| | h) | Define medication error. | 2 Marks | L3 | CO1 |
| | i) | What is principle of accreditation? | 2 Marks | L2 | CO1 |
| | j) | List out the principles of patient's safety. | 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) | Explain patient safety in detailed. | 8 Marks | L2 | CO1 |
| | b) | Write about the NABH guidelines and its applications in patient safety and quality of treatment. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Discuss about the importance in quality of treatment in healthcare system. | 8 Marks | L1 | CO1 |
| | b) | How patient safety overlaps with risk management? | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | List out and explain physical sterilization methods. | 8 Marks | L4 | CO2 |
| | b) | What are the general factors that influence the enhancement of symptoms of a disease? | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Define hot air oven principle and explain its components, holding period, precautions and uses. | 8 Marks | L3 | CO2 |
| | b) | How did you perform hand sanitization (hand rub) techniques? | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Illustrate the antibiotic sensitivity test and explain its necessity. 8 Marks L4 CO3
b) Enumerate antimicrobial resistance, why we must consider it as a global concern. 8 Marks L3 CO3

(OR)

7. a) Discuss in detail about the spread of microbial agents and resistance mechanism. 8 Marks L3 CO3
b) Write a short note on any two scientists who developed antibiotics. 8 Marks L1 CO3

MODULE-IV

8. a) List out and explain steps of emergency management. 8 Marks L4 CO4
b) What are emergency services and write about fire protection system. 8 Marks L3 CO4

(OR)

9. a) Explain about the communication system during disaster management. 8 Marks L3 CO4
b) What is disaster management? Explain types of disaster management. 8 Marks L1 CO4

MODULE-V

10. a) List of Principles of patient safety in healthcare system. List the principles of patient safety. Explain each type. 8 Marks L4 CO1
b) Define Sterilization, and discuss the concepts of disinfection, antiseptic and asepsis. 8 Marks L3 CO2

(OR)

11. a) Discuss why antimicrobial resistance is a global concern. 8 Marks L3 CO3
b) Write about the contingencies involved in infrastructure and operational systems of patient safety. 8 Marks L1 CO4



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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 April – 2023

PROFESSIONAL ENGLISH

[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) | Write the meanings of the following words: | 2 Marks | L1 | CO2 |
| | i) Impalpable | | | |
| | ii) Neutrals | | | |
| b) | Fill in the blanks with suitable verbs: | 2 Marks | L1 | CO3 |
| | i) Everyone _____ (call) him intelligent. | | | |
| | ii) We _____ (play) volley ball with our friends. | | | |
| c) | Write the past and past participle of the following base verbs: | 2 Marks | L1 | CO3 |
| | i) Cut | | | |
| | ii) Go | | | |
| d) | Write the comparative and superlative forms of the following words: | 2 Marks | L1 | CO3 |
| | i) Good | | | |
| | ii) Awful | | | |
| e) | Fill in the blanks with appropriate articles: | 2 Marks | L1 | CO3 |
| | i) Rajan is _____ cleverest boy. | | | |
| | ii) I want to join _____ university for higher studies. | | | |
| f) | Divide the words into syllables: | 2 Marks | L1 | CO2 |
| | i) Indian | | | |
| | ii) Attract | | | |
| g) | Change the voice of the given sentences: | 2 Marks | L1 | CO3 |
| | i) I study English every day. | | | |
| | ii) Gulab Jamun was brought by my father. | | | |
| h) | Rearrange the jumbled words: | 2 Marks | L1 | CO2 |
| | i) R-L-U-I-V-T-A | | | |
| | ii) I-E-A-M-D | | | |
| i) | Underline the content and structure words in these sentences: | 2 Marks | L1 | CO3 |
| | i) I am going to Delhi tomorrow. | | | |
| | ii) They are swimming now. | | | |
| j) | Find out the error in the sentence: | 2 Marks | L1 | CO3 |
| | i) Let the door opened. | | | |
| | ii) These nuts are said be good for health. | | | |

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2. a) Analyze these lines from the poem 'Be the Best of Whatever You Are'.
And some highway happier make;
If you can't be a muskier then just be a bass-
b) What are idioms and phrases? List out ten idioms and phrases with meanings.
- (OR)**
3. a) What is intonation? Explain the falling and rising tone with examples.
b) Write a letter to XYZ company asking for clothes sample before placing final order.

MODULE-II

4. a) Analyze the behavior of the bus conductor with the passengers from the short essay 'On Saying Please'.
b) Discuss different types of sentences with examples
- (OR)**
5. a) Discuss the different parts of speech with examples.
b) Write an email to your coordinator informing that you are not able to purchase college uniform, and ask for permission to allow you to attend the regular classes without college uniform for a week.

MODULE-III

6. a) Analyze these lines from the poem 'If You Forget Me'.
Well, now,
if little by little you stop loving me
I shall stop loving you little by little.
b) Differentiate between finite and infinite verbs with suitable examples.
- (OR)**
7. a) What are tone groups? Give examples.
b) Write an essay on 'Importance of hygiene and sanitization'.

MODULE-IV

8. a) Explain self-respect is the asset of the poor from the short story 'After the Sunset'.
b) What is active and passive voice? Give examples.
- (OR)**
9. a) Discuss the different degrees of comparison with examples.
b) Write a case study on 'How do cartoon channels affect kids' behavior.

MODULE-V

10. a) Summarize the essay 'Man's Peril' by Bertrand Russell.
b) What are Articles? Mention the uses of definite article.
- (OR)**
11. a) Write about syllable and word stress? Give examples.
b) Write a report on World Mental Health Day celebrated in your college.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations April – 2023

PRINCIPLES OF MANAGEMENT

[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 Management? | 2 Marks | L1 | CO1 |
| | b) | List out the functions of management. | 2 Marks | L1 | CO1 |
| | c) | State any two types of planning. | 2 Marks | L1 | CO2 |
| | d) | What do you mean by programmed decisions? | 2 Marks | L1 | CO2 |
| | e) | Compare Centralization and Decentralization. | 2 Marks | L4 | CO3 |
| | f) | Write a short note on Delegation of Authority. | 2 Marks | L1 | CO3 |
| | g) | State any two points about coordination. | 2 Marks | L2 | CO4 |
| | h) | What is Total Quality Management? | 2 Marks | L1 | CO5 |
| | i) | What do you mean by Technology Management? | 2 Marks | L1 | CO5 |
| | j) | What is organizational change? | 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 principles of management. | 8 Marks | L2 | CO1 |
| | b) | Describe the scope of management. | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | Explain the F. W. Taylor's scientific management. | 8 Marks | L1 | CO1 |
| | b) | Discuss briefly about the functions of management. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|------|----|---------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the types of Decision Making. | 8 Marks | L2 | CO2 |
| | b) | Define planning and Discuss the Importance of Planning. | 8 Marks | L2 | CO2 |
| (OR) | | | | | |
| 5. | a) | Describe the steps in the process of Decision Making. | 8 Marks | L2 | CO2 |
| | b) | List out the advantages of Decision Making. | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Define Organizing. Explain the Principles of Organizing. 8 Marks L2 CO3
b) Distinguish between Formal and Informal Organizations. 8 Marks L4 CO3

(OR)

7. a) Explain the departmentalisation. 8 Marks L2 CO3
b) Describe the Line And Staff Organization structure. 8 Marks L1 CO3

MODULE-IV

8. a) Describe the sources of recruitment. 8 Marks L2 CO4
b) Define selection explain the process of selection. 8 Marks L2 CO4

(OR)

9. a) Explain the importance of controlling. 8 Marks L2 CO4
b) Differentiate between coordination and cooperation organizations. 8 Marks L4 CO4

MODULE-V

10. a) Describe the advantages of Total Quality Management. 8 Marks L2 CO5
b) Explain the Organizational Change and Development. 8 Marks L2 CO5

(OR)

11. a) Discuss different Leadership styles. 8 Marks L2 CO5
b) Explain the Corporate Social Responsibility. 8 Marks L2 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 April – 2023

GENERAL AND CLINICAL PSYCHOLOGY

[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 span of attention? | 2 Marks | L2 | CO1 |
| | b) | What are cognitive processes? | 2 Marks | L1 | CO1 |
| | c) | State the formula for IQ. | 2 Marks | L3 | CO2 |
| | d) | What is repression? | 2 Marks | L1 | CO2 |
| | e) | What is massed/spaced learning? | 2 Marks | L3 | CO2 |
| | f) | What are hallucinations. | 2 Marks | L1 | CO2 |
| | g) | What are the various types of intelligence. | 2 Marks | L2 | CO1 |
| | h) | What is developmental psychology? | 2 Marks | L3 | CO1 |
| | i) | What are illusions? | 2 Marks | L2 | CO1 |
| | j) | Who explained classical conditioning. | 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 learning and laws of learning. | 8 Marks | L2 | CO1 |
| | b) | Explain different theories of learning. | 8 Marks | L3 | CO1 |
| (OR) | | | | | |
| 3. | a) | Define personality and explain theories of personality. | 8 Marks | L1 | CO1 |
| | b) | Explain different techniques of personality assessment. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|------|----|------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain different defense mechanisms. | 8 Marks | L4 | CO2 |
| | b) | Explain management of stress. | 8 Marks | L3 | CO2 |
| (OR) | | | | | |
| 5. | a) | Define attention and explain the types of attention. | 8 Marks | L3 | CO2 |
| | b) | What are the determinants of attention? | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|------|----|---------------------------------------------------------------|---------|----|-----|
| 6. | a) | Define psychology and branches of psychology. | 8 Marks | L4 | CO3 |
| | b) | Explain psychology importance in physiotherapy. | 8 Marks | L3 | CO3 |
| (OR) | | | | | |
| 7. | a) | Define psychology and explain applied branches of psychology. | 8 Marks | L3 | CO3 |
| | b) | Explain different schools of psychology. | 8 Marks | L1 | CO3 |

MODULE-IV

8. a) Define motivation and explain motivation cycle. 8 Marks L4 CO4
b) Describe Abraham Maslow's theory. 8 Marks L3 CO4

(OR)

9. a) Describe psychology of sensation. 8 Marks L3 CO4
b) Describe errors of perception. 8 Marks L1 CO4

MODULE-V

10. a) Explain three levels of analysis of emotions. 8 Marks L4 CO5
b) Write about theories of emotions. 8 Marks L3 CO5

(OR)

11. a) Explain different methods of psychology. 8 Marks L3 CO5
b) Explain rules in problem solving. 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 April – 2023

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 Ayurveda? | 2 Marks | L3 | CO2 |
| | d) | What is homeopathy? | 2 Marks | L1 | CO2 |
| | e) | Define demography. | 2 Marks | L3 | CO2 |
| | f) | What are vital events? | 2 Marks | L1 | CO2 |
| | g) | List the principles of epidemiology. | 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) | Role of physiotherapy in health care system. | 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) | What is primary, secondary and tertiary health care system? | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 3. | a) | Describe the central council of health and family welfare. | 8 Marks | L1 | CO1 |
| | b) | Define NHM, action plan, targets, operations and achievements. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------|---------|----|-----|
| 4. | a) | Explain in detail about the Ayurveda. | 8 Marks | L4 | CO2 |
| | b) | Discuss about Naturopathy medicine. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------|---------|----|-----|
| 5. | a) | Describe the Unani and Siddha medicine. | 8 Marks | L3 | CO2 |
| | b) | Explain in detail about the homeopathy medicine. | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Define demography and its concepts. 8 Marks L4 CO3
b) Illustrate the vital events of life and its impact on demography. 8 Marks L3 CO3

(OR)

7. a) Describe the Significance and recording of 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) What is epidemiology? Describe the principles of epidemiology 8 Marks L4 CO4
b) Explain the methods of epidemiological studies. 8 Marks L3 CO4

(OR)

9. a) Discuss the communicable and 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) Explain the role of physiotherapy in health care professionals. 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) Define rehabilitation, and Principles of rehabilitation 8 Marks L3 CO5
b) What is disability and Evaluation of disability? 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 April – 2023

BASIC ETHICS AND REGULATION OF PHYSIOTHERAPY

[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 any two ethical principles. | 2 Marks | L2 | CO1 |
| | b) | Classify the physio ethics. | 2 Marks | L1 | CO1 |
| | c) | List the principles of public life. | 2 Marks | L3 | CO2 |
| | d) | What is WCPT? | 2 Marks | L1 | CO2 |
| | e) | What is IAP? | 2 Marks | L3 | CO2 |
| | f) | List the medical legal aspects. | 2 Marks | L1 | CO2 |
| | g) | What is patient confidentiality? | 2 Marks | L2 | CO1 |
| | h) | Mention the leadership qualities in physiotherapy. | 2 Marks | L3 | CO1 |
| | i) | Definition of intelligence. | 2 Marks | L2 | CO1 |
| | j) | Role of emotion in physiotherapy practice. | 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 ethics? Explain the historical background of ethics in health profession. | 8 Marks | L2 | CO1 |
| | b) | What is IAP? Discuss the role of IAP on physiotherapy practice. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Describe the ethics and principles of physiotherapy. | 8 Marks | L1 | CO1 |
| | b) | What is physiotherapy? Explain the scope of physiotherapy under the health care professionals. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Give the ethical aspects in private practice and legal private practice. | 8 Marks | L4 | CO2 |
| | b) | Explain in detail about the consequences faced by the physiotherapist due to violation of professional ethics. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Describe the details about safe guards in physiotherapy practice. | 8 Marks | L3 | CO2 |
| | b) | Explain in detail about medical legal cases. | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Discuss about ethical dilemmas arising out of patient evaluation and management. 8 Marks L4 CO3
b) Explain the good leader and relate in context of physiotherapy. 8 Marks L3 CO3

(OR)

7. a) What is importance of leadership in health care profession? 8 Marks L3 CO3
b) What is emotional intelligence? Describe in detail emotional intelligence in physiotherapy practice. 8 Marks L1 CO3

MODULE-IV

8. a) Write about the mentorship program, and ethical issues in treating vulnerable population. 8 Marks L4 CO4
b) Explain the role of professional bodies in developing leadership. 8 Marks L3 CO4

(OR)

9. a) What are the characteristics of leadership? Characteristics of leadership in treating vulnerable population. 8 Marks L3 CO4
b) What is MLC? How a health care professional has to handle MLC cases? 8 Marks L1 CO4

MODULE-V

10. a) Describe the ethical principles for governing practices in physiotherapy. 8 Marks L4 CO5
b) What is negligence? Explain in detail about the medical negligence? 8 Marks L3 CO5

(OR)

11. a) What is liability? Discuss how a health care professional is liable for his acts with proper examples. 8 Marks L3 CO5
b) Write in detail about the medical legal reporting. 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 April – 2023

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 Femoral sheath? | 2 Marks | L3 | CO2 |
| | d) | Write about Nutrient artery. | 2 Marks | L1 | CO2 |
| | e) | Define Hybrid muscle. | 2 Marks | L3 | CO2 |
| | f) | List the names of tarsal bones. | 2 Marks | L1 | CO2 |
| | g) | What is Tarsal tunnel? | 2 Marks | L2 | CO1 |
| | h) | Write about the formation of Dorsal venous arch of foot. | 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) | Explain Ulnar nerve under the following headings. | 8 Marks | L2 | CO1 |
| | | i) Origin ii) Course and Relations | | | |
| | | iii) Branches iv) Applied anatomy | | | |
| | b) | Describe Knee joint under the following headings. | 8 Marks | L3 | CO1 |
| | | i) Type and Variety | | | |
| | | ii) Articular surfaces, ligaments and Relations | | | |
| | | iii) Muscles and Movements | | | |
| | | iv) Blood supply, Nerve supply and Applied anatomy. | | | |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | What is a synovial joint? Explain the features of a synovial joint with examples. | 8 Marks | L1 | CO1 |
| | b) | Describe conducting system of heart and it's clinical importance. | 8 Marks | L4 | 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. | 8 Marks | L3 | CO2 |
| | | i) Origin ii) Course and Relations | | | |
| | | iii) Branches iv) Applied anatomy | | | |
| | 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) What are hamstring muscles? Describe origin, insertion, nerve supply, action and applied aspects of hamstring muscles. 8 Marks L3 CO3
b) Define ossification. Write about laws of ossification. 8 Marks L1 CO3

MODULE-IV

8. a) Explain heart under the following headings 8 Marks L4 CO4
i) External features
ii) Chambers and Internal features
iii) Blood supply and Nerve supply
iv) Applied anatomy
b) Define anastomosis. Write about anastomosis around knee joint. 8 Marks L3 CO4

(OR)

9. a) Explain sciatic nerve under the following headings. 8 Marks L3 CO4
i) Origin ii) Course and Relations
iii) Branches iv) Applied anatomy
b) What are parts of a young long bone? Explain types of epiphysis with examples. 8 Marks L1 CO4

MODULE-V

10. a) Explain stages of spermatogenesis and oogenesis. 8 Marks L4 CO5
b) Write in detail about adductor canal and its contents. 8 Marks L3 CO5

(OR)

11. a) Describe upper end and lower end of femur with its muscle attachments. 8 Marks L3 CO5
b) Explain foetal circulation 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.P.T. I Semester (MBU-22) Regular Examinations, April – 2023

PHYSIOLOGY - 1
[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 composition of blood | 2 Marks | L2 | CO1 |
| | b) | What are Lysosomes? | 2 Marks | L1 | CO1 |
| | c) | What is Synaptic cleft? | 2 Marks | L3 | CO2 |
| | d) | Write about Gap junction . | 2 Marks | L1 | CO2 |
| | e) | Name any two Neurotransmitters . | 2 Marks | L3 | CO2 |
| | f) | Define Symport. | 2 Marks | L1 | CO2 |
| | g) | What is Landsteiner's law? | 2 Marks | L2 | CO1 |
| | h) | Define Motor point. | 2 Marks | L3 | CO1 |
| | i) | What are the types of WBC cells ? | 2 Marks | L2 | CO1 |
| | j) | Write about latent period. | 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 erythropoiesis. Explain stages of erythropoiesis. | 8 Marks | L2 | CO1 |
| | b) | Define neuromuscular junction. Explain the structure of neuromuscular junction. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------|---------|----|-----|
| 3. | a) | What is active transport? Describe types of active transport. | 8 Marks | L1 | CO1 |
| | b) | Define cardiac cycle. Explain stages of cardiac cycle. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Write in detail about mechanism of transport of Oxygen. | 8 Marks | L4 | CO2 |
| | b) | Define action potential. Enumerate the mechanism of transmission of action potential. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Define muscle. Describe types of muscle with examples. | 8 Marks | L3 | CO2 |
| | b) | Illustrate the structure of mitochondria and functions of it with a neat labeled diagram. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Define heart rate. Explain the physiological and pathological variations of heart rate. | 8 Marks | L4 | CO3 |
| | b) | Explain the properties of skeletal muscle. | 8 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | What are the types of muscle contraction? Explain factors affecting muscle contraction. | 8 Marks | L3 | CO3 |
| | b) | Define cell. Describe the structure and functions of cell. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Define vital capacity. Explain physiological and pathological variations of vital capacity. | 8 Marks | L4 | CO4 |
| | b) | What is muscle tone? Describe maintenance of muscle tone and its applied physiology. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------|---------|----|-----|
| 9. | a) | Define excitability. Describe the excitability curve. | 8 Marks | L3 | CO4 |
| | b) | Illustrate the special types of active transport. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-------------------------------------------------|---------|----|-----|
| 10. | a) | Explain the properties of cardiac muscle. | 8 Marks | L4 | CO5 |
| | b) | Write differences between red and pale muscles. | 8 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|----------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain simple muscle curve. | 8 Marks | L3 | CO5 |
| | b) | What is cell junction? Explain types of cell junction with 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 April – 2023

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

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|----|----|-------------------------------------------------------------|---------|----|-----|
| 1. | a) | List the social factors in relation to health. | 2 Marks | L1 | CO1 |
| | b) | Define case study. | 2 Marks | L1 | CO1 |
| | c) | List the types of socializations with examples. | 2 Marks | L1 | CO2 |
| | d) | Outline the characteristics of primary groups. | 2 Marks | L1 | CO2 |
| | e) | List the types of families based on residence and descent. | 2 Marks | L1 | CO2 |
| | f) | Define culture. Outline the characteristics. | 2 Marks | L1 | CO3 |
| | g) | List the characteristics of rural communities. | 2 Marks | L1 | CO3 |
| | h) | How do you explain the relation between culture and health? | 2 Marks | L1 | CO3 |
| | i) | Outline the problems related to underprivileged. | 2 Marks | L1 | CO4 |
| | j) | List the social security measures to the disabled. | 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 need of sociology for health care professionals. | 8 Marks | L2 | CO1 |
| | b) | Discuss the role of social factors in health and illness. | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | Discuss the characteristics, principles and advantages of case study. | 8 Marks | L2 | CO1 |
| | b) | Describe the characteristics and merits of an interview method. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|------|----|------------------------------------------------------------|---------|----|-----|
| 4. | a) | Discuss the characteristics of secondary groups. | 8 Marks | L2 | CO2 |
| | b) | Discuss the functions of family. | 8 Marks | L2 | CO2 |
| (OR) | | | | | |
| 5. | a) | Discuss the characteristics of a family. | 8 Marks | L2 | CO2 |
| | b) | Describe the influence of family on health of its members. | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Discuss the characteristics of tribal community. 8 Marks L2 CO3
b) Discuss the health hazards among urban communities 8 Marks L2 CO3
(OR)
7. a) Define culture. Discuss the characteristics of culture. 8 Marks L2 CO3
b) Discuss the role of culture on health practices. 8 Marks L2 CO3

MODULE-IV

8. a) Discuss the problems of population explosion. 8 Marks L2 CO4
b) Discuss various rural poverty eradication programmes. 8 Marks L2 CO4
(OR)
9. a) Describe issues faced by women at work places. 8 Marks L2 CO4
b) Discuss the role of a medical social worker. 8 Marks L2 CO4

MODULE-V

10. a) Identify various factors behind population explosion. 8 Marks L2 CO5
b) Discuss problems of underprivileged sections in India. 8 Marks L2 CO5
(OR)
11. a) Discuss the need for women employment. 8 Marks L2 CO5
b) Outline various social security measures taken for the disabled. 8 Marks L2 CO5



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC10) Supplementary Examinations, April - 2023

ENGINEERING MATHEMATICS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering,
 Electronics and Communication Engineering, Computer Science and Engineering,
 Electronics and Instrumentation Engineering, Information Technology, Electronics and Control Engineering,
 Computer Science and Systems Engineering]

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
 All questions carry equal marks

1. Solve the differential equation $(e^y + 1)\cos x dx + e^y \sin x dy = 0$.
2. Solve : $d^2y/dx^2 - 6 dy/dx + 13 y = 8 e^{3x} \sin 2x$.
3.
 - a) Find the error in calculating the volume of a cone, when there is an error of 0.06 cm each in the measuring the radius of 6 cm and height 12 cm.
 - b) Find the minimum value of $x^2 + y^2 + z^2$, given that $xyz = a^3$.
4. Find the centre of curvature at the point $\left(\frac{a}{4}, \frac{a}{4}\right)$ of the curve $\sqrt{x} + \sqrt{y} = \sqrt{a}$. Find also the equation of circle of curvature at that point.
5. Find the Laplace Transform of $f(t) = |t - 1| + |t + 1|$, $t \geq 0$.
6. Solve by using Laplace Transforms: $\frac{d^2x}{dt^2} + 9x = \cos 2t$, if $x(0) = 1, x\left(\frac{\pi}{2}\right) = -1$
 when $y(0) = 1, y^1(0) = -1$.
7. Evaluate $\int_0^3 \int_1^{\sqrt{4-y}} (x + y) dx dy$ by changing the order of integration.
8. Apply Stokes theorem to evaluate $\oint_C y dx + z dy + x dz$ where C is the curve of the intersection of the sphere $x^2 + y^2 + z^2 = a^2$ and $x + z = a$.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations, April – 2023.

MATRICES AND NUMERICAL METHODS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- 1 a) Reduce the matrix $A = \begin{bmatrix} 1 & 2 & 1 & 0 \\ -2 & 4 & 3 & 0 \\ 1 & 0 & 2 & -8 \end{bmatrix}$ to canonical form (normal) and find its rank. 7 Marks

- b) Two eigen values of the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ are equal to 1 each. Find the eigen values and eigen vectors of the matrix A^{-1} . 7 Marks

(OR)

- 2 Find the eigen values and the corresponding eigen vectors of the matrix $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$. 14 Marks

UNIT-II

- 3 Using Lagrange’s interpolation formula find the value of ‘y’ when $x = 10$ if the following values of x and y are given. 14 Marks

x :	5	6	9	11
y :	12	13	14	16

(OR)

- 4 a) Using Newton’s forward interpolation formula and the given table of values, obtain the value of $f(x)$ when $x = 1.4$. 7 Marks

x	1.1	1.3	1.5	1.7	1.9
f(x)	0.21	0.69	1.25	1.89	2.61

- b) Find the curve of best fit of the type $y = a e^{bx}$ to the following data by the method of least squares. 7 Marks

x:	1	5	7	9	12
y:	10	15	12	15	21

UNIT-III

- 5 Given that $\frac{dy}{dx} = y - x$, $y(0) = 2$. 14 Marks

Find $y(0.2)$ using Runge-Kutta method of order 4 taking $h = 0.1$

(OR)

- 6 a) The population of a certain town is shown in the following table. Estimate the rate of growth of the population in the year 1981. 7 Marks

Year x :	1951	1961	1971	1981	1991
population y : (in thousands)	19.96	39.65	58.81	77.21	94.61

- b) Find the solution of $\frac{dy}{dx} = y + x$, $y(0) = 1$, at $x = 0.2$ in steps of 0.1 using modified Euler's method. 7 Marks

UNIT-IV

- 7 Find the Fourier cosine transform of $f(x) = \frac{1}{x^2 + 1}$ 14 Marks

(OR)

- 8 Find the Fourier series of the function $f(x) = -1 + x$ for $-\pi < x < 0$
 $= 1 + x$ for $0 < x < \pi$ 14 Marks

Hence prove that $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots = \frac{\pi}{4}$.

UNIT-V

- 9 a) Form the partial differential equation by eliminating the arbitrary function ϕ from $\phi(y/x, x + y + z) = 0$. 4 Marks
 b) A tightly stretched flexible string has its ends fixed at $x = 0$ and $x = L$. At time $t = 0$, the string is given a shape defined by $f(x) = \lambda x(L-x)$, where λ is a constant and then released. Find the displacement at any point x of the string at any time $t > 0$. 10 Marks

(OR)

- 10 Solve one dimensional heat equation by the method of separation of variables $\frac{\partial u}{\partial t} = c^2 \frac{\partial^2 u}{\partial x^2}$. 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC14) Supplementary Examinations, April - 2023**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 $\frac{d}{dx} [x^n J_n(x)] = x^n J_{n-1}(x)$. 14 Marks
- (OR)**
- 2 a) Derive orthogonality relation of Bessel functions. 7 Marks
- b) Show that $\left[J_{\frac{1}{2}}(x) \right]^2 + \left[J_{-\frac{1}{2}}(x) \right]^2 = \frac{2}{\pi x}$. 7 Marks

UNIT-II

- 3 Find the analytic function whose real part is $\frac{y}{x^2 + y^2}$. 14 Marks
- (OR)**
- 4 a) If $f(z) = u+iv$ is an analytic function, find $f(z)$ if $u-v = e^x(\cos y - \sin y)$. 7 Marks
- b) Determine the analytic function $w = u + iv$ if $v = \log(x^2+y^2) + x-2y$. 7 Marks

UNIT-III

- 5 Evaluate $\int_C (y^2 + 2xy)dx + (x^2 - 2xy)dy$ where C is the boundary of the region 14 Marks
given by $y = x^2$ and $x = y^2$.
- (OR)**
- 6 a) Evaluate $\oint_c \frac{3z^2 + 7z + 1}{(z+1)} dz$ where c is the circle $|z+i|=1$. 7 Marks
- b) Expand $f(z) = \frac{(z-2)(z+2)}{(z+1)(z+4)}$ in the region (i) $|z| < 1$ (ii) $|z| > 4$ (iii) $1 < |z| < 4$. 7 Marks

UNIT-IV

- 7 a) Determine the poles of the function and the corresponding residues $\frac{z+1}{z^2(z-2)}$. 7 Marks
- b) Evaluate $\int_0^{2\pi} \frac{\sin 3\theta}{5-3\cos\theta} d\theta$ using Residue theorem. 7 Marks

(OR)

8

Evaluate $\int_0^{\infty} \frac{dx}{(x^2 + 1)^2}$.

14 Marks

UNIT-V

9

a) Under the transformation $w = \frac{z - i}{1 - iz}$, find the image of the circle $|z| = 1$.

7 Marks

b) Find the bilinear transformation which transforms the points $\infty, i, 0$ in the z -plane into $0, i, \infty$ in the w -plane.

7 Marks

(OR)

10

Find the bilinear transformation which maps the points $(1, i, -1)$ in the z -plane in to the points $(1, 0, -i)$ in the w -plane. Hence find the invariant points of this transformation.

14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC14) Supplementary Examinations, April – 2023**HEAT TRANSFER****[Mechanical Engineering]**

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

- 1 Derive the general two-dimensional unsteady state heat conduction equation for an isotropic solid cylindrical rod with internal heat generation. Simplify the obtained equation to Poisson's equation, Fourier's equation and Laplace equation. 14 Marks

(OR)

- 2 Derive the expression for the general 3D heat conduction equation in Cartesian coordinate system with neat sketch. 14 Marks

UNIT-II

- 3 Derive expression for the "temperature distribution" and the "rate of heat flow" for the case of short fin end insulated. 14 Marks

(OR)

- 4 a) What is meant by a semi-infinite solid? Write temperature distribution equation for it. 6 Marks
b) What are Heisler charts? Explain their significance in solving transient conduction problem. 8 Marks

UNIT-III

- 5 a) Define Reynolds, Nusselt and Prandtl numbers. Explain their importance in convective heat transfer. 6 Marks
b) Using dimensional analysis, obtain an expression for Nusselt number in terms of Reynolds and Prandtl numbers. 8 Marks

(OR)

- 6 a) Explain the concept of velocity and thermal boundary layers. 8 Marks
b) Explain with neat sketch, the hydrodynamic and thermal entrance region for flow over a flat plate. 6 Marks

UNIT-IV

- 7 a) State the different types of boiling and explain with neat sketch the different stages in pool boiling heat transfer. 7 Marks
b) Define condensation and differentiate filmwise and dropwise condensation. 7 Marks

(OR)

- 8 a) Write a short note on compact heat exchangers. 5 Marks
b) Define emissivity, absorptivity and reflectivity. 9 Marks

UNIT-V

- 9 Assuming the sun to be a black body, emitting radiation with maximum intensity at $\lambda = 0.49 \text{ m}$, calculate the following: (i) Surface temperature of the sun and (ii) heat flux at surface of the sun. 14 Marks

(OR)

- 10 a) Define irradiation and radiosity. 4 Marks
b) What does radiation shape factor mean? 5 Marks
c) What is the shape factor with respect to itself if the surface is concave, convex or flat? 5 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, April – 2023

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. Find the response of a system described by the difference equation $y(n) + 2y(n-1) + y(n-2) = x(n) + x(n-1)$ for input $x(n) = (0.5)^n u(n)$ with initial conditions $y(-1) = y(-2) = 1$. CO2 14 Marks

(OR)

2. a) Given the sequence $x(n) = (6-n)[u(n) - u(n-6)]$ make a sketch of CO4 7 Marks
 i) $Y(n) = x(4-n)$.
 ii) $Y(n) = x(n^2 - 2n + 1)$.
- b) Find the DTFT of the sequence $x(n) = \cos(n\pi/3)u(n)$. CO2 7 Marks

UNIT-II

3. Using FFT algorithm compute the output of a linear filter described by $h(n) = \{1, 2, 3, 2, 1\}$ and $x(n) = \{1, 1, 1, 1\}$. CO2 14 Marks

(OR)

4. Compute the N-point DFT of the length N-sequence CO2 14 Marks
 $x(n) = \cos\left(\frac{2\pi rn}{N}\right); 0 \leq n \leq N-1; 0 \leq r \leq N-1$.

UNIT-III

5. Derive the relation between analog and digital frequency in bilinear transformation. CO2 14 Marks

(OR)

6. a) Design an analog Butterworth filter that has a -2db pass band attenuation at a frequency of 20 rad/sec and at least -10dB stop band attenuation at 30 rad/sec (assume $\Omega_c = 21.3868$ rad/sec). CO3 8 Marks
 b) Derive an expression for order of the Chebyshev analog prototype filter. CO2 6 Marks

UNIT-IV

7. Derive the frequency response of linear phase FIR filters when impulse response is symmetric with centre of symmetry at $(N-1)/2$ and N is odd. CO2 14 Marks

(OR)

8. Using a rectangular window, design LPF with a pass-band gain of unity, cut-off frequency of 1000Hz and working at a sampling frequency of 5KHz. Take the length of the impulse response as 7. CO3 14 Marks

UNIT-V

9. a) Write a short note on Memory Access schemes. CO1 7 Marks
 b) Explain about special addressing modes in detail. CO1 7 Marks

(OR)

10. a) List the relative merits and demerits of RISC and CISC processors. CO1 7 Marks
 b) Write salient features of TMS320C6X family of digital signal processor. CO1 7 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC10) Supplementary Examinations, April - 2023**POWER ELECTRONICS****[Electrical and Electronics Engineering]**

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. a) Explain the switching characteristics of power MOSFETs.
b) Compare the features of power MOSFETs with BJTs.
2. Explain the operation of UJT firing circuit.
3. a) Give the design details of Snubber network for **dc** circuit.
b) Write short notes on protections schemes against **dv/dt** and over voltages.
4. Explain the operation of a single-phase fully-controlled converter with RLE load and derive the expression for average output voltage and current.
5. a) Explain the operation of three-phase ,half-wave controlled with resistive load and inductive load. Sketch the relevant waveforms.
b) Derive the expression for average load voltage.
6. Describe the basic principle of working of single phase step down cycloconverter with the help of bridge type configuration.
7. a) With the help of circuit diagram, explain the working of step-up chopper.
b) Draw the schematics of step-down and step-up choppers. Explain in detail
8. Explain the operation of a parallel inverter and mention its merits.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC10) Supplementary Examinations, April – 2023**LINEAR AND DIGITAL IC APPLICATIONS****[Electrical and Electronics Engineering]****Time: 3 hours****Max. Marks: 70**

Answer any FIVE questions
All questions carry equal marks

1. Draw the basic block diagram of a general op-amp and explain the operation of each block.
2. a) Draw the circuit and discuss the working of an instrumentation amplifier.
What are its important features? Derive an expression for its output.
b) Explain with a neat circuit diagram the working of voltage to current converter with floating load.
3. a) What is Phase Locked Loop? List the basic building blocks of the discrete PLL.
What is the major difference between digital and analog PLLs?
b) List the applications of PLL? Explain each.
4. Explain the concept of CMOS steady state electrical behavior.
5. Write short notes on TTL, ECL and CMOS digital logic families.
6. Explain the following:
 - i) Libraries and packages.
 - ii) Structural design elements.
 - iii) Data flow design elements.
7. Design a full adder using two half adders.
8. a) Distinguish the operations of a latch and a flip-flop.
b) Explain briefly about the synchronous design methodology.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations, April – 2023

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) Define the following terms: 6 Marks
Void ratio, Porosity, Degree of Saturation, Percentage air voids, Air content and Water content.
- b) Describe the classification of Fine Grained Soils. 8 Marks
- (OR)**
- 2 a) Describe the Classification of Coarse grained Soils. 6 Marks
- b) Obtain the relationship between for the water content, void ratio, specific gravity and degree of saturation. 8 Marks

UNIT-II

- 3 a) Explain the construction of phreatic line in an earth dam with horizontal filter. 7 Marks
- b) Explain the determination of coefficient of permeability of layered soil. 7 Marks
- (OR)**
- 4 a) What is flow net? Explain the properties and uses of flow net. 6 Marks
- b) Discuss the capillary phenomenon and quick sand condition. 8 Marks

UNIT-III

- 5 a) What is compaction curve and describe zero-air void curve with a sketch. 6 Marks
- b) Explain how field control of compaction soil is achieved. Describe at least one example in each case. 8 Marks
- (OR)**
- 6 The following results were obtained in a compaction test: 14 Marks
- | | | | | | | |
|---------------------------------------|------|------|------|------|------|------|
| Bulk unit weight (kN/m ³) | 18.8 | 20.0 | 20.5 | 21.0 | 21.0 | 20.0 |
| Water content (%) | 17.5 | 19.0 | 20.0 | 20.8 | 21.8 | 22.4 |
- Determine the optimum moisture content and maximum dry density. Also draw 5% air voids line and 90% saturation line if $G = 2.67$.

UNIT-IV

- 7 Explain square root time fitting method to determine coefficient of consolidation. 14 Marks
- (OR)**
- 8 a) Explain the consolidation test conducted to plot void ratio-pressure curve. 9 Marks
- b) State the assumption made in Terzaghi's one dimensional consolidation theory. 5 Marks
What do you understand by normally consolidated and over consolidated soil?

UNIT-V

- 9 a) Explain the critical void ratio and pore pressure coefficients, in detail. 6 Marks
- b) State the advantages and limitations of direct shear test. 8 Marks
- (OR)**
- 10 What are the advantages of triaxial shear test over direct shear test? 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech I Semester (SVEC14) Supplementary Examinations, April – 2023**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) Illustrate Protocol Hierarchies and Design issues of the Layers. 9 Marks
b) Describe 3G Mobile phone networks. 5 Marks
- (OR)**
- 2 a) Explain OSI Reference Model in detail. 9 Marks
b) Write short notes on Twisted Pair. 5 Marks

UNIT-II

- 3 a) Explain Elementary Data link Protocols. 9 Marks
b) Write short notes on Ethernet. 5 Marks
- (OR)**
- 4 a) Explain Selective Repeat Sliding window Protocol. 9 Marks
b) Describe channel allocation Problem. 5 Marks

UNIT-III

- 5 a) List and describe Transport service primitives. 5 Marks
b) Write short notes on IPv6. 9 Marks
- (OR)**
- 6 a) Write short notes on Quality of Service. 5 Marks
b) Illustrate Distance Vector Routing algorithm with relevant figures. 9 Marks

UNIT-IV

- 7 a) Describe about the services provided by the transport layer to the network layer. 6 Marks
b) Define RPC. Explain the mechanism of RPC and RTCP in detail. 8 Marks
- (OR)**
- 8 a) Explain the purpose of TCP and UDP in detail. 6 Marks
b) List out the methods used to avoid congestion in transport layer. 8 Marks

UNIT-V

- 9 Write a short notes on following. 14 Marks
i) HTTP. ii) Web documents.
- (OR)**
- 10 a) Define Message Digest. Describe about digital signature with an example. 8 Marks
b) Briefly explain about IP security and email security. 6 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech II Semester (SVEC-14) Supplementary Examinations, April – 2023**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 the performance criteria of a cellular system. CO1 7 Marks
b) List the Analog and Digital cellular systems. CO1 7 Marks
(OR)
- 2 a) Explain a basic cellular system with a neat diagram. CO1 7 Marks
b) Explain the consideration of components of cellular systems. CO3 7 Marks

UNIT-II

- 3 a) Mention the steps required for obtaining a point to point model. CO1 7 Marks
b) What are the effects of cell site antennas? CO1 7 Marks
(OR)
- 4 a) Explain the propagation mechanism over water. CO1 7 Marks
b) What are the characteristics of antenna structures? CO1 7 Marks

UNIT-III

- 5 a) How are channels assigned to a travelling mobile user? CO2 7 Marks
b) What is a dropped call and how are these evaluated? CO2 7 Marks
(OR)
- 6 a) Determine the probability of requirement of a Handoff. CO1 7 Marks
b) Explain the process of assigning a channel to a user and traffic in a cell. CO1 7 Marks

UNIT-IV

- 7 a) Explain the operation of OFDM Transmitter. CO1 7 Marks
b) Explain two coding techniques used in cellular systems. CO4 7 Marks
(OR)
- 8 a) Compare QPSK and MSK modulation techniques. CO2 7 Marks
b) Differentiate between conventional FDM and OFDM systems. CO1 7 Marks

UNIT-V

- 9 a) Derive the probability for bit error cases. CO3 7 Marks
b) How is voice signal processed and coded in cellular systems? CO1 7 Marks
(OR)
- 10 Elaborate handoff, location and paging procedures in mobile communications. CO1 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

IV B.Tech II Semester (SVEC14) Supplementary Examinations, April - 2023**DATABASE MANAGEMENT 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 Discuss the main characteristics of the database approach. How does it differ from traditional file systems? CO1 14 Marks

(OR)

2 Explain about two-tier and three-tier architectures of database systems with neat diagrams. CO1 14 Marks

UNIT-II

3 a) What is a relational model? Explain its concept. CO2 6 Marks

b) Define a View. Discuss about operations that are performed on view. CO2 8 Marks

(OR)

4 Explain the following with examples. CO3 14 Marks

i) SELECTION

ii) JOIN

iii) CARTESIAN PRODUCT

iv) OUTER-JOIN

UNIT-III

5 a) Write the basic structure of SQL. Explain about Group functions used in it with examples. CO3 8 Marks

b) Differentiate Nested and Correlated queries. CO3 6 Marks

(OR)

6 Why the normalization is needed? Explain in detail about 4NF and 5NF. CO3 14 Marks

UNIT-IV

7 Describe the properties of a transaction. Discuss about transaction operations. CO1 14 Marks

(OR)

8 Write and explain deadlock handling algorithm. CO3 14 Marks

UNIT-V

9 a) What is the difference between conflict serializability and view serializability? Explain in detail with an example. CO4 7 Marks

b) Briefly discuss ACID property with an example. CO4 7 Marks

(OR)

10 a) Define B+ Tree file organization in detail. CO5 7 Marks

b) Identify a B+ tree to insert the key elements 5, 3, 4, 9, 7, 15, 14, 21, 22, 23 (consider order of the tree is 3). CO5 7 Marks

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

INTRODUCTION TO BIOLOGY

[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 the term Metabolism. | 2 Marks | L1 | CO1 |
| | b) | What are Semi-autonomous organelles? | 2 Marks | L2 | CO1 |
| | c) | Explain the term Species. | 2 Marks | L1 | CO2 |
| | d) | What are tetranucleate cysts? | 2 Marks | L1 | CO2 |
| | e) | Describe purines and pyrimidines. | 2 Marks | L1 | CO3 |
| | f) | Explain the function of RNA Polymerase. | 2 Marks | L1 | CO3 |
| | g) | Composition of Blood. | 2 Marks | L2 | CO4 |
| | h) | Role of amylases in the digestion. | 2 Marks | L1 | CO4 |
| | i) | Function of PS I. | 2 Marks | L1 | CO5 |
| | j) | Photosynthesis 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) | Compare and contrast the living and non-living systems. | 8 Marks | L1 | CO1 |
| | b) | Describe in detail fluid mosaic model of plasma membrane with labeled diagram. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Distinguish cellular and nuclear components of Prokaryotes and Eukaryotes. | 8 Marks | L2 | CO1 |
| | b) | Explain in detail the structure and function of Endoplasmic reticulum with labeled diagram. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Describe in detail Bentham and Hooker system of Plant classification. | 8 Marks | L1 | CO2 |
| | b) | Elaborate the Economic importance of Plants. | 8 Marks | L1 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Discuss in detail the life cycle of <i>Plasmodium vivax</i> in man. | 8 Marks | L1 | CO2 |
| | b) | Explain with suitable diagram the life cycle of <i>Ascaris</i> in man. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Describe in detail the experimental evidences supporting DNA as genetic material. | 8 Marks | L1 | CO3 |
| | b) | Evaluate the Semi Conservative model of DNA Replication. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Elaborate the process of Transcription with a neat labeled diagram. | 8 Marks | L1 | CO3 |
| | b) | Discuss the Lac operon model of Gene Regulation. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-----------------------------------------------------------|---------|----|-----|
| 8. | a) | Draw a neat labeled diagram of Human Digestive system. | 8 Marks | L2 | CO4 |
| | b) | Explain the structure of Lungs with neat labeled diagram. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Discuss in detail the structure of Neuron with a neat labeled diagram. | 8 Marks | L1 | CO4 |
| | b) | Explain the process of Synaptic transmission. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------------|---------|----|-----|
| 10. | a) | Write an Essay on the C3 Cycle. | 8 Marks | L2 | CO5 |
| | b) | Explain the process of Bacterial Photosynthesis. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|--------------------------------------------------------|---------|----|-----|
| 11. | a) | Describe the process of Hill Reaction. | 8 Marks | L2 | CO5 |
| | b) | Explain the mechanism of cyclic photo phosphorylation. | 8 Marks | L2 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

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) | Explain about Wind Energy. | 2 Marks | L1 | CO1 |
| | b) | Define Solar Energy. | 2 Marks | L1 | CO1 |
| | c) | Write about wastewater management. | 2 Marks | L1 | CO2 |
| | d) | Mention various sources of water. | 2 Marks | L1 | CO2 |
| | e) | What are effects of pesticides? | 2 Marks | L1 | CO3 |
| | f) | Write any four major impacts of nuclear hazards. | 2 Marks | L1 | CO3 |
| | g) | Write about acid rains. | 2 Marks | L1 | CO4 |
| | h) | What is meant by rain water harvesting? | 2 Marks | L1 | CO4 |
| | i) | Define green technology. | 2 Marks | L1 | CO5 |
| | j) | Explain the term Green 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) | Explain at least five renewable resources along with their advantages and disadvantages. | 8 Marks | L2 | CO1 |
| | b) | Explain in detail about non-renewable energy resources. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Define energy resource. Explain about different types of energy resources. | 8 Marks | L2 | CO1 |
| | b) | Explain in detail about renewable energy resources. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------|---------|----|-----|
| 4. | a) | Summarize in detail about effect of water pollution. | 8 Marks | L2 | CO2 |
| | b) | Describe the process of waste water management. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain about impurities in water and their consequences. | 8 Marks | L2 | CO2 |
| | b) | What is meant by Eutrophication? Explain in detail. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-----------------------------------------------------------|---------|----|-----|
| 6. | a) | Write about hazardous waste management. | 8 Marks | L2 | CO3 |
| | b) | Explain in detail about industrial wastewater management. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Identify the causes and effects of air pollution. | 8 Marks | L2 | CO3 |
| | b) | Summarize about the effects of uses of fertilizers and pesticides. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-----------------------------------------------------------------|---------|----|-----|
| 8. | a) | Discuss about the reasons of causing the ozone layer depletion. | 8 Marks | L6 | CO4 |
| | b) | Explain in detail about global warming. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain about various climate changes. | 8 Marks | L2 | CO4 |
| | b) | Explain about various urban problems related to water conservation. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|------------------------------------------------|---------|----|-----|
| 10. | a) | Explain various principles of green chemistry. | 8 Marks | L2 | CO5 |
| | b) | Explain various green manufacturing systems. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain the difference between green chemistry and environmental cleanup. | 8 Marks | L2 | CO5 |
| | b) | Discuss about the impact of green chemistry. | 8 Marks | L6 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

BIOMOLECULES

[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 in brief about blood group substance. | 2 Marks | L1 | CO1 |
| | b) Compare epimers and anomers taking the example of Glucose. | 2 Marks | L1 | CO1 |
| | c) Define Imino Acid with a suitable example and its structural representation. | 2 Marks | L1 | CO2 |
| | d) Define Zwitterion with a suitable example. | 2 Marks | L1 | CO2 |
| | e) Write the significance of the use of the Iodine number. | 2 Marks | L1 | CO3 |
| | f) Define Rancidity with a suitable example. | 2 Marks | L1 | CO3 |
| | g) List out the groups involved in phosphodiester linkage. | 2 Marks | L1 | CO4 |
| | h) List out various Functions of polyamines. | 2 Marks | L1 | CO4 |
| | i) Describe briefly the role of xanthophyll. | 2 Marks | L1 | CO4 |
| | j) Write various benefits of cyanocobalamin. | 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 the Difference Between Homopolysaccharides and Heteropolysaccharides with suitable examples. | 8 Marks | L2 | CO1 |
| | b) Summarize various functions of Glycosaminoglycans and draw a pictograph of any sulfated glycosaminoglycans. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) Explain in detail about structure and function of Starch with detailed schematics. | 8 Marks | L2 | CO1 |
| | b) Classify the difference between Hydrophilic and Hydrophobic Natural Polymer Materials with any two suitable examples of hydrophilic polymers. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Read the one-letter amino acid sequences and write the Complete amino acid name R-I-G-H-T, P-A-I-N, D-E-A-L, L-A-K-E. | 8 Marks | L2 | CO2 |
| | b) Analyze the Formation of peptide bonds with schematic representation and write various properties of amino acids. | 8 Marks | L4 | CO2 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Interpret the bond(s) that build is responsible for cross-linking within a protein structure. | 8 Marks | L2 | CO2 |
| | b) | Classify the difference between the tertiary and Quaternary structure of a protein with the suitable schematic representation of protein structure. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain the clinical importance of HDL, LDL, and VLDL with their range of concentration in blood. | 8 Marks | L2 | CO3 |
| | b) | Define Sphingolipid and discuss various types of Sphingolipid with structural representation. | 8 Marks | L6 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | List out the various types of prostaglandins and explain in detail their various functions of it. | 8 Marks | L2 | CO3 |
| | b) | Classify the Lipids and give examples for different classes. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|--------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Illustrate Watson and Crick model of DNA and discuss its biological functions. | 8 Marks | L2 | CO4 |
| | b) | Discuss the Chemical and Physical Properties of Nucleic Acids. | 8 Marks | L6 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain in brief about DNA hyperchromic and hypochromic effects. | 8 Marks | L2 | CO4 |
| | b) | Sketch the Organization of DNA inside the cell and write a brief note about DNA. | 8 Marks | L3 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|---------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Classify the methods for the detection of Chlorophyll and other pigments. | 8 Marks | L2 | CO4 |
| | b) | Outline the structure and function of "Heme". | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|-----|----|------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Identify the Uses, Interactions, and Mechanism of Action of Porphobilinogen. | 8 Marks | L3 | CO4 |
| | b) | Define Porphyrin and discuss in brief about various types of Porphyrin. | 8 Marks | L6 | CO4 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023**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) | Define Lewis acid with an example. | 2 Marks | L1 | CO1 |
| | b) | Discuss the Structure of Diborane. | 2 Marks | L1 | CO1 |
| | c) | Transition metals show zero oxidation state with ligands like CO. Explain. | 2 Marks | L1 | CO1 |
| | d) | Give reason “transition metals and their many compounds acts as good catalysts. | 2 Marks | L1 | CO1 |
| | e) | Actinide contraction is greater from element to elements than lanthanide contraction. Justify? | 2 Marks | L1 | CO1 |
| | f) | Define Semi conductors based on band theory of solids and give one example to each category. | 2 Marks | L1 | CO2 |
| | g) | Define Smectic Liquid Crystal with an example. | 2 Marks | L1 | CO3 |
| | h) | Define Partially miscible liquid with an example. | 2 Marks | L1 | CO4 |
| | i) | Explain the effect of impurity on Consolute temperature. | 2 Marks | L2 | CO4 |
| | j) | Define Unit Cell & Lattice. | 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 classification, preparations and uses of Silicones. | 8 Marks | L2 | CO1 |
| | b) | Discuss the Synthesis and structure of Boron Nitrogen compounds (Borazole-B ₃ N ₃ H ₆). | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------|----------|----|-----|
| 3. | a) | Explain the Structures of any one AX ₃ and AX ₅ inter-halogen compounds. | 12 Marks | L2 | CO1 |
| | b) | Give a brief note on Pseudo halogens. | 4 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|----------|----|-----|
| 4. | a) | What is Lanthanide Contraction? Explain the Consequences of Lanthanide Contraction. | 10 Marks | L2 | CO1 |
| | b) | Explain the magnetic properties of d- block elements. | 6 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain the variability in oxidation states of transition metals different from that of the p-block elements? | 8 Marks | L2 | CO1 |
| | b) | Assign reasons for the following: | 8 Marks | L3 | CO1 |
| | | i) Copper (I) ion is not known in aqueous solution. | | | |
| | | ii) Actinoids exhibit greater range of oxidation states than Lanthanides. | | | |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Classify the Conductors, Semi-Conductors and Insulators using Band theory of solids. | 8 Marks | L2 | CO2 |
| | b) | Explain thermal and electrical properties metals. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain Valence bond theory. | 8 Marks | L2 | CO2 |
| | b) | Explain the metallic properties and its limitations. | 8 Marks | L2 | CO2 |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | List out any five differences between liquid crystals and liquids, solids. | 8 Marks | L2 | CO3 |
| | b) | Discuss the applications of Liquid crystals. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain Nernst distribution Law. Explain its applications. | 8 Marks | L2 | CO4 |
| | b) | Explain the difference between Henry's law and Raoult's law. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|------------------------------------------------|---------|----|-----|
| 10. | a) | Discuss various types of symmetry in crystals. | 8 Marks | L2 | CO5 |
| | b) | Explain the laws of symmetry. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-----------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Define the Bragg's Law. Explain the determination of structure of a crystal by powder method. | 8 Marks | L2 | CO5 |
| | b) | Illustrate the X-ray diffraction and crystal structures. | 8 Marks | L2 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

PERSONALITY DEVELOPMENT

[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 the leadership qualities. | 2 Marks | L1 | CO1 |
| | b) | Explain about Freudian personality. | 2 Marks | L1 | CO3 |
| | c) | Explain about positive self esteem. | 2 Marks | L1 | CO1 |
| | d) | Explain about self-actualization. | 2 Marks | L1 | CO2 |
| | e) | Explain about attitude. | 2 Marks | L1 | CO3 |
| | f) | What you mean by Behavior? | 2 Marks | L1 | CO3 |
| | g) | What is meant by grapevine communication? | 2 Marks | L1 | CO4 |
| | h) | Explain about leadership styles. | 2 Marks | L1 | CO4 |
| | i) | Explain about Time management. | 2 Marks | L1 | CO5 |
| | j) | Briefly explain about negative stress. | 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 self-esteem and self-image. | 8 Marks | L2 | CO2 |
| | b) | Write a difference between behavior and attitude. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------|----------|----|-----|
| 3. | a) | Explain about the Freud's psycho analytic theory. | 10 Marks | L4 | CO3 |
| | b) | Define behavior modification. | 6 Marks | L2 | CO2 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------|---------|----|-----|
| 4. | a) | Explain about Swami Vivekananda personality begets. | 8 Marks | L2 | CO1 |
| | b) | Identify the reasons for success in our lives. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------|---------|----|-----|
| 5. | a) | Explain about self actualization with examples. | 9 Marks | L2 | CO2 |
| | b) | Explain about changing negative attitude. | 7 Marks | L1 | CO3 |

MODULE-III

6. a) Identify and illustrate the essential skills to build strong interpersonal relationships. Discuss its importance. 8 Marks L2 CO3
b) Discuss the ways of increasing our self-image with suitable examples. 8 Marks L2 CO2

(OR)

7. a) Explain about leadership qualities and decision-making skills. 7 Marks L2 CO1
b) How do you assess your behavior? Explain. 9 Marks L3 CO3

MODULE-IV

8. a) Discuss leadership styles and identify the qualities of a successful leader with appropriate examples. 8 Marks L2 CO4
b) Explain the concept of grapevine communication and its importance in our lives. 8 Marks L2 CO3

(OR)

9. a) Explain about aptitude tests and how it useful in our life. 8 Marks L2 CO3
b) Describe about positive self esteem. 8 Marks L2 CO2

MODULE-V

10. a) Explain the about the action plan of goal setting and the steps to build it. 8 Marks L2 CO2
b) Identify the benefits of learning counselling in our life. 8 Marks L2 CO2

(OR)

11. a) Time management is important in our lives. Explain its advantages as well as disadvantages. 8 Marks L2 CO3
b) Interpret the importance of stress management in context of today's world? 8 Marks L2 CO3



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

TELUGU

[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) | మీపాఠ్యభాగం ఎక్కట్లలో "ఎక్కటి" అంటే ఏమిటి? | 2 Marks | L1 | CO1 |
| | b) | "తెనుగులొంక" అని బిరుదు వహించిన కవి ఎవరు? | 2 Marks | L1 | CO1 |
| | c) | "మనిషి పేదరికం పోవటానికి బృహస్పతి చెప్పిన నాలుగు కారణాలు ఏవి? | 2 Marks | L2 | CO2 |
| | d) | మీపాఠ్యభాగంలోని బకముపేర్లేమిటి? | 2 Marks | L1 | CO2 |
| | e) | భాగవతంలోని విభాగాలను ఏమని పిలుస్తారు? | 2 Marks | L1 | CO3 |
| | f) | మీపాఠ్యప్రణాళికలో భక్త కవి బిరుదు కలిగిన కవి వ్రాసిన "పాఠం" పేరేమిటి? | 2 Marks | L2 | CO3 |
| | g) | కవి కోకిల వ్రాసిన మీపాఠం పేరు | 2 Marks | L1 | CO4 |
| | h) | కవి కోకిల బిరుదాంకితుడైనకర్తక కవి ఎవరు? | 2 Marks | L1 | CO4 |
| | i) | "రవీంద్రుడు"- ఏసంధి? | 2 Marks | L2 | CO5 |
| | j) | కమలలోచనుడు"- ఇది ఏసమాసము? | 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) | మానవాళి నడతను గురించి శ్రీతుమ్మలవారు చెప్పిన అంశాలు. | 8 Marks | L3 | CO1 |
| | b) | జీవితంలో ఎవరు గెలుపును సాధిస్తారు? | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 3. | a) | లోకంలో మూర్ఖులైన మనుషులు దేనిని ఒర్చుకోలేరు? | 8 Marks | L3 | CO1 |
| | b) | ఎక్కట్లు పాఠ్యభాగంలో సీతారామమూర్తిచౌదరిగారు చెప్పిన వివిధ అంశాలు. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | ఈక్రింది పద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి:
"నిచ్చలువచ్చు-----నొక్కొదైవమా!" | 8 Marks | L2 | CO2 |
| | b) | భీష్ముడుధర్మరాజుకు చెప్పిన నాడిజంఘుని వృత్తాంతాన్ని తెలుపండి. | 8 Marks | L3 | CO2 |

(OR)

5. a) ఈక్రింది పద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి: 8 Marks L2 CO2
"కుడిచినపళ్ళెరంబును----మట్టికిన్"--
b) మీపాఠ్యభాగమాధారముగా గౌతముడి వృత్తాంతాన్ని వివరించండి. 8 Marks L3 CO2

MODULE-III

6. a) ఈక్రింది పద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి: 8 Marks L3 CO3
"కావుననమ్మహాత్ముడు---నీవుభూవరా!"
b) నారదుడు ధృవుడికి చెప్పిన యోగమార్గ విశేషాలు చెప్పండి. 8 Marks L2 CO3

(OR)

7. a) ఈక్రింది పద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి: 8 Marks L3 CO3
"నావినినారదుండు---- దుఃఖమేటికిన్"--
b) పోతరాజువర్ణించిన ధృవోపాఖ్యానం 8 Marks L2 CO3

MODULE-IV

8. a) కృషీవలుడు ఆధారముగా దువ్వారి "కర్ణకపక్షపాతి" 8 Marks L2 CO4
అన్న అంశాన్ని నిరూపించండి.
b) ఈక్రింది వాక్యాన్ని సందర్భసహితంగా వ్యాఖ్యానించండి: 8 Marks L2 CO4
"నిందావాక్యముల్పల్కరే"-

(OR)

9. a) కృషీవలుడు ఆధారంగా రైతు లక్షణాలు 8 Marks L2 CO4
b) రైతుకష్టాలను తనకవిత్వంలో వర్ణించిన కవివరేణ్యుడి గురించి వ్రాయండి 8 Marks L2 CO4

MODULE-V

10. a) ఏవైనా నాలుగు కర్మధారయ సమాసములను లక్ష్య, లక్షణ సమన్వయంగా 8 Marks L3 CO5
వివరించండి.
b) శబ్దాలంకారములను సోదాహరణంగా పేర్కొనండి 8 Marks L3 CO5

(OR)

11. a) వృత్తచందస్సులలో చంపకమాల మరియు మత్తేభపద్య లక్షణాలను వ్రాసి, 8 Marks L3 Co5
ఉదాహరణ వ్రాయండి.
b) ఏవైనా నాలుగు సంస్కృత సంధులను-సూత్రాలు వ్రాసి ఉదాహరణలు 8 Marks L3 Co5
వ్రాయండి.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

SANSKRIT

[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) | श्रीरामः कीदृशं भरतं ददर्श? | 2 Marks | L1 | CO1 |
| b) | श्रीरामः भरतं वीक्ष्य किमकरोत्? | 2 Marks | L1 | CO1 |
| c) | श्रीरामः भरतं किं पपृच्छ? | 2 Marks | L1 | CO1 |
| d) | किं रिक्त गुरुतरंभूमेः ? किं रिक्तदुच्छतरम खात ? | 2 Marks | L1 | CO1 |
| e) | किंस्वित् प्रवसतो मित्रम्? किंस्वित् मित्रं गृहे सतः? | 2 Marks | L1 | CO1 |
| f) | चम्पूरामायणस्य कर्ता कः? | 2 Marks | L1 | CO2 |
| g) | यो मोहपनोदहपाठस्य रचयिता | 2 Marks | L1 | CO2 |
| h) | मृगः केन वञ्चितः? | 2 Marks | L1 | CO3 |
| i) | वीरवरस्य पुत्रः कः? | 2 Marks | L1 | CO3 |
| j) | दुर्जनस्य हृदि किं अस्ति? | 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) | आर्यपादुकाभिषेकः पाठ्यभागस्य सारांशं लिखत? | 8 Marks | L3 | CO1 |
| b) | आर्यपादुकाभिषेकः इति सिर्शिकायाः औचित्यम प्रतिपादयत | 8 Marks | L3 | CO1 |
| (OR) | | | | |
| 3. a) | यक्षप्रश्नाः पाठ्यभागसारं वर्णयत? | 8 Marks | L3 | CO1 |
| b) | यक्ष परस्नेषु विवृतान संग्रहेण लिखत | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|-------|------------------------------------------|---------|----|-----|
| 4. a) | भागीरथस्य घोरं तपस्यं वर्णयतु | 8 Marks | L3 | CO2 |
| b) | अमर्त्यतरङ्गिणी कथं मर्त्यतरङ्गिणी बभूव? | 8 Marks | L3 | CO2 |
| (OR) | | | | |
| 5. a) | मोहापनोदः कथां लिखत? | 8 Marks | L3 | CO2 |
| b) | सुनन्दायाः विषये लिखत? | 8 Marks | L3 | CO2 |

MODULE-III

6. a) शृगालः कथं लगुडेन मारितः विवृणत। 8 Marks L3 CO3
b) अत्युत्कटैः पापपुण्यैः इहैव फलमश्नुते "-इति पाठ्यांसस्य सारम विसदायत 8 Marks L3 CO3

(OR)

7. a) वीरवर त्यागबुद्धिं वर्णयत। 8 Marks L3 CO3
b) वीरवार कथां विसादयता 8 Marks L3 CO3

MODULE-IV

8. a) भारविमुनिः कवेः वर्णयत। 8 Marks L3 CO4
b) भारति कविरुद्दिश्य लिखत। 8 Marks L3 CO4

(OR)

9. a) मघ महाकवि विषये लिखत 8 Marks L3 CO4
b) दण्डी विषये कथयतु 8 Marks L3 CO4

MODULE-V

10. a) रामा शब्दः सम्पूर्णतया लिखत। 8 Marks L3 CO5
b) मति शब्दः सम्पूर्णतया लिखत। 8 Marks L3 CO5

(OR)

11. a) ऋकारान्तः पुंलिङ्ग पितृ शब्दः 8 Marks L3 CO5
b) ओकारान्तः पुंलिङ्गः "गो" शब्दः 8 Marks L3 CO5



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

GENERAL ENGLISH

[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) List the plural forms to the following:
a) equipment b) data c) virus d) hero | 2 Marks | L1 | CO3 |
| | b) Find the vowel sound in the given words.
a) fit b) tent c) walk d) group | 2 Marks | L1 | CO3 |
| | c) State the meanings to the following words.
a) Compulsion b) Rectify | 2 Marks | L1 | CO3 |
| | d) List any two examples for assertive sentences. | 2 Marks | L1 | CO3 |
| | e) List any two examples for present continuous tense. | 2 Marks | | CO3 |
| | f) Fill the blanks with suitable preposition.
a) The ball passed _____ his legs. (between/among)
b) I meet her _____ the evening. (in/at) | 2 Marks | L1 | CO3 |
| | g) State the passive voice for the give sentences.
a) John is repairing radios. b) She doesn't like insects. | 2 Marks | L1 | CO3 |
| | h) Use the following conjunctions in a sentence.
a) Because b) Not only/but also | 2 Marks | L3 | CO3 |
| | i) Find the suitable article to fill the blank.
a) They visited grandmother in _____ hospital.
b) The car sped past at 100 miles _____ hour. | 2 Marks | L1 | CO3 |
| | j) Find the number of syllables in the given words.
a) Jump b) Contradiction | 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) In the story "A Snake in the Grass" by R. K. Narayan, what superstitions or rituals are indicated regarding the cobra? Discuss. | 8 Marks | L2 | CO1 |
| | b) Write an essay on how superstitions influence our lives. | 8 Marks | L2 | CO1 |
| | (OR) | | | |
| 3. | a) Does the story 'A Snake in the Grass' throw any light on how people faced with sudden danger believe? Explain. | 8 Marks | L1 | CO1 |
| | b) Give some instances from the story 'A Snake in the Grass' which show the old mother's superstitious nature. | 8 Marks | L1 | CO1 |

MODULE-II

4. a) 'Please' and 'Thank you' are the small changes with which we bring positiveness in social life. Explain. 8 Marks L2 CO2
b) Discuss the impact of good temper and kindness on the society in the light of a good-mannered conductor. 8 Marks L2 CO2
- (OR)**
5. a) Is the bus conductor's behavior appropriate with the passengers? Discuss. 8 Marks L2 CO2
b) Change the following sentences into interrogative. 8 Marks L1 CO3
i) Raju can fly kites.
ii) She lives in Chennai.
iii) He is not a good person.
iv) They play football.

MODULE-III

6. a) Summarize the poem "If You Forget Me" in your own words. 8 Marks L2 CO4
b) "Do not look for me, for I shall have already forgotten you." What was that the poet trying to convey through these lines? Elucidate. 8 Marks L2 CO4
- (OR)**
7. a) What is the central idea of the poem "If You Forget Me"? Explain. 8 Marks L2 CO1
b) Use appropriate tense form to fill the blanks given. 8 Marks L2 CO3
a) I usually ___ so quickly that he ___ me. (speak, not understand)
b) The phone _____ for half a minute. Why doesn't someone answer it. (ring)
c) Look over there! He _____ in a non-smoking area! (smoke)
d) I have called him at least four times but he hasn't answered the phone. (call, not answer)

MODULE-IV

8. a) Why do the rich and powerful people treat the poor differently according to the author in the story "After the Sunset"? 8 Marks L2 CO1
b) How are inequality and terrorism affecting the society according to the author? 8 Marks L2 CO1
- (OR)**
9. a) The activities of terrorists disrupt the lives of common people in many ways. Explain in the context of 'After the Sunset'. 8 Marks L1 CO1
b) Write a dialogue between friends on 'the impact of social media'. 8 Marks L1 CO3

MODULE-V

10. a) What are the repercussions of atomic warfare as described by Bertrand Russell? 8 Marks L1 CO2
b) Explain Russell's views on various conflicts in 'Man's Peril'. 8 Marks L1 CO2
- (OR)**
11. a) "As a human being to human beings: remember your humanity, and forget the rest." What was Russel's message through these lines? 8 Marks L1 CO5
b) Rewrite the sentences with necessary corrections. 8 Marks L2 CO4
i) What time does the wedding start?
ii) Neither Rakesh nor his friends has not attended the party.
iii) The boy as well as his parents are coming today.
iv) Yesterday, after the party, we went home.



MOHAN BABU UNIVERSITY
 SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH
B.Sc. I Semester (MBU-22) Regular Examinations February – 2023
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) Write the truth table for the formula $(p \wedge q) \vee (\neg p \wedge \neg q)$. | 2 Marks | L1 | CO1 |
| | b) Write the negation of the statement “If there is a will, then there is a way”. | 2 Marks | L1 | CO1 |
| | c) Draw Venn diagram for the symmetrical difference of sets A and B. | 2 Marks | L1 | CO2 |
| | d) Prove $A \cup B = B \cup A$. | 2 Marks | L1 | CO2 |
| | e) Define into and onto functions. | 2 Marks | L1 | CO3 |
| | f) List out the types functions. | 2 Marks | L1 | CO3 |
| | g) State pigeon hole principle. | 2 Marks | L1 | CO4 |
| | h) In how many ways can letters of the word “INDIA” be arranged? | 2 Marks | L1 | CO4 |
| | i) Define spanning subgraph. | 2 Marks | L1 | CO5 |
| | j) State the condition for Eulerian cycle. | 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 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 math or computer science. | 8 Marks | L1 | CO1 |
| | b) Obtain PDNF of $P \rightarrow (P \wedge (Q \rightarrow P))$. | 8 Marks | L1 | CO1 |
| (OR) | | | | |
| 3. | a) Show that $((P \rightarrow Q) \rightarrow Q) \Rightarrow P \vee Q$. | 8 Marks | L3 | CO1 |
| | b) Using indirect method of proof, derive $P \rightarrow \sim S$ from the premises $P \rightarrow (q \vee r)$, $q \rightarrow \sim p$, $s \rightarrow \sim r$ and p . | 8 Marks | L1 | CO1 |

MODULE-II

- | | | | | |
|----|---------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) By using mathematical induction, Prove that $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$ | 8 Marks | L2 | CO2 |
| | b) List the all the partitions of the set $\{1, 2, 3, 4\}$. | 8 Marks | L3 | CO2 |

(OR)

5. a) Use mathematical Induction to prove that $(3^n + 7^n - 2)$ is divisible by 8, for $n \geq 1$. 8 Marks L3 CO2
- b) In A survey of 100 students, it was found that 30 studied Mathematics, 54 studied Statistics, 25 studied Operations Research, 1 studied all the three subjects, 20 studied Mathematics and Statistics, 3 studied Mathematics and Operation Research and 15 studied Statistics and Operation Research. Find how many students studied none of these subjects and how many students studied only Mathematics? 8 Marks L1 CO2

MODULE-III

6. a) Find all the solution of the recurrence relation $a_n = 5a_{n-1} - 6a_{n-2} + 7^n$. 8 Marks L3 CO3
- b) Discuss in detail about the properties of relations 8 Marks L2 CO3
- (OR)**
7. a) Solve the recurrence relation of the Fibonacci sequence of numbers $f_n = f_{n-1} + f_{n-2}$, $n > 2$. with initial conditions $f_1 = 1$, + $f_2 = 1$. 8 Marks L3 CO3
- b) Solve the recurrence relation $a_n = 2(a_{n-1} - a_{n-2})$ where $n \geq 2$ and $a_0 = 1, a_1 = 2$. 8 Marks L3 CO3

MODULE-IV

8. 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 L5 CO4
- (OR)**
9. a) Suppose there are six boys and five girls,
 a) In how many ways can they sit in a row?
 b) In how many ways can they sit in a row, if the boys and girls each sit together?
 c) In how many ways can they sit in a row, if the girls are to sit together and the boy don't sit together?
 d) How many seating arrangements are there with no two girls sitting together? 8 Marks L2 CO4
- b) Explain how the generalized pigeonhole principle can be used to show that among any 91 integers, there are at least ten that end with the same digit. 8 Marks L2 CO4

MODULE-V

10. a) Discuss in detail about hand shaking theorem. 8 Marks L2 CO5
- b) Define the following with examples: 8 Marks L1 CO5
- i) Degree of a vertex
 ii) Complete Graph
 iii) Regular Graph.
- (OR)**
11. Illustrate the differences between paths and circuits, and regular and connected graphs. 16 Marks L2 CO5



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

DESCRIPTIVE STATISTICS AND PROBABILITY

[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 any two key points for construction questionnaire. 2 Marks L1 CO1
- b) Where is a line graph used for? 2 Marks L1 CO1
- c) The mean of $x, x+3, x+5, x+7$ and $x+10$ is 11, then find the value of x ? 2 Marks L1 CO2
- d) The geometric mean of two numbers is 6 and arithmetic mean is 6.5 then finds the numbers? 2 Marks L1 CO2
- e) In Statistics which measures helps to interpret the variability of data? 2 Marks L1 CO3
- f) For a distribution Karl Pearson’s coefficient of skewness is 0.64, standard deviation is 13 and mean is 59.2 Find mode and median. 2 Marks L1 CO3
- g) A bag contains 5 green and 3 blue balls. Two balls are picked at random. What is the probability that both are of the same color? 2 Marks L1 CO4
- h) Write the difference between sample space and exhaustive events. 2 Marks L1 CO4
- i) Define discrete random variable and given an example. 2 Marks L1 CO5
- j) Let x be the number of times a certain numerical control machine will malfunction on a given day. Let y be the number of times a technician is called on an emergency call. Their joint probability mass function is given by

		x		
		1	2	3
y	1	0.00	0.20	0.10
	2	0.05	0.10	0.35
	3	0.05	0.05	0.10

Calculate the marginal probability value of x ?

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 primary and secondary data. 8 Marks L2 CO1
- b) Define pie chart and draw a pie chart from the following data. 8 Marks L2 CO1

Activity	School	Sleep	Playing	Study	T.V	Others
Number of Hours	6	8	2	4	1	3

(OR)

3. a) How do you create questionnaire for primary data? 8 Marks L2 CO1
b) Construct the cumulative frequency table and draw the Ogive curve for the below given data. 8 Marks L2 CO1

Marks	0-10	11-20	20-30	30-40	40-50	50-60	60-0
Frequency	3	4	6	3	2	2	

MODULE-II

4. a) Discuss various measures of Central tendency measures with an example? 8 Marks L2 CO2
b) The following data attained from a garden records of certain period. Calculate the mean weight of the apple. 8 Marks L2 CO2

Weight in grams ('10's)	21-22	22-23	23-24	24-25	25-26	26-27
Number of apples	14	20	42	54	45	18

(OR)

5. a) The mean of 10 items was 70. Later on it was found out that one item 92 was misread as 29. What was the correct mean? 8 Marks L2 CO2
b) The following is the distribution of marks obtained by 165 students in a subject in an institution. Find the Geometric mean. 8 Marks L2 CO2

Marks	4-8	8-12	12-16	16-20	20-24	24-28
Frequency	10	14	26	32	40	43

MODULE-III

6. a) Explain any two dispersion measures and write its pro and cons. 8 Marks L2 CO3
b) The following table gives the age distribution for the number of deaths in metro city due to accidents for residents age 25 years and older in 2022, India. Calculate quartile deviation. 8 Marks L3 CO3

Age (years)	18-25	25-32	32-39	39-46	46-53	53-60	60-67
Number of deaths	16	32	54	63	28	20	13

(OR)

7. a) Define the raw and central moments of a frequency distribution. Obtain the relation between the central moments of r^{th} order in terms of the raw moments. 8 Marks CO3
b) In certain distribution, the first four moments about the point 4 are -1.5 , 17 , -13 and 108 . Calculate β_1 and β_2 . 8 Marks L3 CO3

MODULE-IV

8. a) Define: i) random experiment, ii) sample space, iii) mutually exclusive events and iv) conditional event. 8 Marks L2 CO4
b) A middle school principal has 80 keys on her key chain to distribute to staff on the first day of school. Of these 80 keys, 50 open classroom doors, 20 open the door to the teachers' lounge, and 10 open classroom doors and the teachers' lounge. Using this information, the probability that a key opens a classroom or the teachers' lounge? 8 Marks L3 CO4

(OR)

9. a) State and prove Boole's inequality? 8 Marks L2 CO4
b) Police plan to enforce speed limits by using radar traps at four different locations within the city limits. The radar traps at each of the locations $L_1, L_2, L_3,$ and L_4 will be operated 40%, 30%, 20%, and 10% of the time. If a person who is speeding on her way to work has probabilities of 0.2, 0.1, 0.5, and 0.2, respectively, of passing through these locations, what is the probability that she will receive a i) speeding ticket?, ii) Location L_1 , iii) Location L_4 .

MODULE-V

10. a) Define random variable and write its properties. 8 Marks L2 CO5
b) A random variable x has the following probability function:
Compute:
i) i) Find k
ii) ii) Evaluate $p(x < 6), p(0 < x < 5),$
iii) iii) Determine the distribution function

x	0	1	2	3	4	5	6	7
$P(x)$	0	k	$2k$	$2k$	$3k$	K^2	$2 K^2$	$7 K^2+k$

(OR)

11. a) i) $E(x) (0.5) - 1M$ and $V(x) (0.05) - 3M,$ 8 Marks L3 CO5
ii) $E(x+2) (2.5(-2M))$ and $V(2x) (0.20) - 2M$
b) The joint density function of the random variables X and Y is, 8 Marks L3 CO5
Find the i) marginal density function of x and $y,$ ii) conditional distribution function.

$$f(x, y) = \begin{cases} 4xy, & 0 < x < 1; 0 < y < 1 \\ 0, & elsewhere \end{cases}$$



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations February – 2023

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

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|----|----|-------------------------------------------------------------------|---------|----|-----|
| 1. | a) | Differentiate between algorithm and flow chart. | 2 Marks | L1 | CO1 |
| | b) | What is a datatype? List out different primitive data types in C. | 2 Marks | L1 | CO1 |
| | c) | Mention the role of escape Sequences / back 0s lash constants. | 2 Marks | L1 | CO2 |
| | d) | What is meant by call by value in functions? | 2 Marks | L1 | CO2 |
| | e) | Define the array with syntax. | 2 Marks | L1 | CO3 |
| | f) | List out jumping statements in C. | 2 Marks | L1 | CO3 |
| | g) | What is Dynamic Memory Allocation? | 2 Marks | L1 | CO4 |
| | h) | How structure is different from union? | 2 Marks | L1 | CO4 |
| | i) | Define void pointer. | 2 Marks | L1 | CO5 |
| | j) | List the types of File organization in C. | 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 to find sum of n natural numbers. | 8 Marks | L3 | CO1 |
| | b) | Classify various generations of programming languages, and what are its advantages and disadvantages? | 8 Marks | L2 | CO1 |

(OR)

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|----|----|-----------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain about else if ladder. Write a C Program to find largest of three numbers. | 8 Marks | L3 | CO1 |
| | b) | Define an operator. Discuss about various types of operators used in C. | 8 Marks | L1 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Write a c program to find the sum of digits of a given number. | 8 Marks | L3 | CO2 |
| | b) | Compare the difference between while and do while loops with syntax. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain about break & continue with examples. | 8 Marks | L1 | CO2 |
| | b) | Write a c program to print multiplication table for given number. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Write a C program to search an element using linear search. | 8 Marks | L3 | CO3 |
| | b) | What is sorting? Write a program to sort the elements of an array. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Define a string. Explain any 4 string library functions with syntax and example. | 8 Marks | L1 | CO3 |
| | b) | Write a program to find largest & smallest element in an integer array. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain array of structure and structure within a structure with an example. | 8 Marks | L2 | CO4 |
| | b) | Write a C program that defines a structure employee containing the details such as empno, empname, department name and salary. The structure must store 20 employees in an organization. Use the appropriate method to define the above details and define a function that will display the contents. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain about enumeration data types in C with an example. | 8 Marks | L1 | CO4 |
| | b) | Write a C program to find the factorial of a number using functions. | 8 Marks | L3 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-----------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Write a short note on error handling while performing file operations in C. | 8 Marks | L1 | CO5 |
| | b) | Explain about command line arguments with suitable example. | 8 Marks | L1 | CO5 |

(OR)

- | | | | | | |
|-----|----|----------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain the following file handling functions:
i) fseek ()
ii) ftell ()
iii) rewind ()
iv) feof () | 8 Marks | L1 | CO5 |
| | b) | Briefly discuss about dynamic memory allocation functions with examples. | 8 Marks | L2 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

IC FABRICATION

[VLSI and Embedded Systems]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|---------------------------------------------------------------------|---------|----|-----|
| 1. | a) | List clean room safety precaution rules | 2 Marks | L1 | CO1 |
| | b) | Define silicon shaping | 2 Marks | L1 | CO1 |
| | c) | List Crystal defects in wafer preparation | 2 Marks | L1 | CO1 |
| | d) | What is a Photoresist? | 2 Marks | L1 | CO2 |
| | e) | Define oxidation. | 2 Marks | L1 | CO2 |
| | f) | Define Epitaxy. | 2 Marks | L1 | CO2 |
| | g) | Explain the application of SiO ₂ layer in IC fabrication | 2 Marks | L2 | CO1 |
| | h) | Explain diffusion | 2 Marks | L1 | CO3 |
| | i) | Explain the need of Metallization | 2 Marks | L2 | CO3 |
| | j) | Why packaging is required? | 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) | Describe in detail the Czochralski crystal growing technique. | 8 Marks | L2 | CO1 |
| | b) | Remember the rules to maintain clean room and its safety. | 8 Marks | L1 | CO1 |

(OR)

- | | | | | | |
|----|--|---------------------------------------------------------------------------------------------|----------|----|-----|
| 3. | | What are the processing considerations for IC processing of silicon wafers? How it is done? | 16 Marks | L1 | CO1 |
|----|--|---------------------------------------------------------------------------------------------|----------|----|-----|

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------------|---------|----|-----|
| 4. | a) | Compare the merits and demerits of Molecular Beam Epitaxy. | 8 Marks | L2 | CO1 |
| | b) | Explain the evaluation of epitaxial thickness and doping. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|--|-------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 5. | | What are the possible ways of growing oxide on substrate without Forming oxidation induced stacking faults? | 16 Marks | L1 | CO1 |
|----|--|-------------------------------------------------------------------------------------------------------------|----------|----|-----|

MODULE-III

- | | | | | |
|----|------------------------------------------------------------------------|---------|----|-----|
| 6. | a) Explain how optical lithography technique is used in IC fabrication | 8 Marks | L2 | CO1 |
| | b) Identify the techniques for reactive plasma etching. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 7. | Examine the development in optical lithography and the new trends in the design. List the corresponding merits and demerits. | 16 Marks | L4 | CO2 |
|----|------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|

MODULE-IV

- | | | | | |
|----|------------------------------------------------------------|---------|----|-----|
| 8. | a) Briefly discuss the equipment used in Ion implantation. | 8 Marks | L2 | CO1 |
| | b) Give a brief account on plasma assisted deposition. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | |
|----|----------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) Analyze the Low Pressure CVD and explain how uniform deposition can be achieved in LPCVD. | 8 Marks | L4 | CO2 |
| | b) Analyze the VLSI shallow junctions using Ion implantation. | 8 Marks | L4 | CO2 |

MODULE-V

- | | | | | |
|-----|---------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) Discuss the problems associated with Al-Cu interconnect. | 8 Marks | L2 | CO3 |
| | b) Identify the different metallization problems in processing and predict methods to eradicate or minimize the related issues. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | |
|-----|--------------------------------------------------------------------------------------|----------|----|-----|
| 11. | Explain the different packaging design considerations in detail for VLSI technology. | 16 Marks | L2 | CO3 |
|-----|--------------------------------------------------------------------------------------|----------|----|-----|



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

ANALOG CMOS VLSI DESIGN

[VLSI and Embedded Systems]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|-------------------------------------------------------------------------------|---------|----|-----|
| 1. | a) | Differentiate Passive and Active Current Mirrors. | 2 Marks | L2 | CO1 |
| | b) | Derive the expression for MOS Transconductance. | 2 Marks | L3 | CO1 |
| | c) | Justify how Superposition Concept is applicable to Differential Amplifiers. | 2 Marks | L3 | CO1 |
| | d) | Analyze the effect of Thermal Noise for Common Gate Topology. | 2 Marks | L2 | CO2 |
| | e) | Define slew rate and explain how it is a nonlinear phenomenon. | 2 Marks | L2 | CO2 |
| | f) | Justify why the Folded Cascode Op-Amps are more popular than other Op-Amps. | 2 Marks | L3 | CO2 |
| | g) | Define pole splitting using Miller Compensation. | 2 Marks | L1 | CO3 |
| | h) | Identify the effect of adding a right-half-plane zero. | 2 Marks | L3 | CO3 |
| | i) | Identify the two interesting properties of PLLs. | 2 Marks | L3 | CO4 |
| | j) | Sketch the block diagram of Simple PLL and its waveforms in Locked Condition. | 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) | Derive an Expression for I_{DS} - V_{DS} Relation of MOSFET. | 8 Marks | L3 | CO1 |
| | b) | Analyze the common source stage with Miller's Approximation. | 8 Marks | L4 | CO1 |
| (OR) | | | | | |
| 3. | a) | Recall the frequency response of Differential amplifier. | 8 Marks | L2 | CO1 |
| | b) | Identify the second order effects in MOSFETs. Also Suggest solutions to overcome them. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 4. | a) | Model the Noise for Common Gate Stage. | 8 Marks | L3 | CO2 |
| | b) | Recall the frequency response of Differential amplifier. | 8 Marks | L1 | CO1 |
| (OR) | | | | | |
| 5. | | Evaluate the frequency response of a common gate stage with necessary equivalent circuits and hence calculate the input impedance of the amplifier. | 16 Marks | L3 | CO1 |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain how to improve the output impedance by feedback. | 8 Marks | L2 | CO2 |
| | b) | Develop the expression of loop gain and output resistance of current-voltage feedback amplifier. | 8 Marks | L3 | CO2 |

(OR)

7. a) Define and explain op-amp gain. Sketch and assess the frequency response of CMOS Two stage Amplifier with diagram. 8 Marks L2 CO2
b) Identify the necessary technique that ensures zero input-offset voltage for a 2 stage OP-AMP. 8 Marks L4 CO2

MODULE-IV

8. a) Apply the tradeoff involved in selecting the input stage as p-channel or n-channel With respect to a 2 stage op amp. 8 Marks L3 CO3
b) Explain in detail about Multi-pole Systems. 8 Marks L2 CO3

(OR)

9. Justify the role of current mirrors in achieving supply independent biasing. 16 Marks L3 CO3

MODULE-V

10. a) Classify Switched-Capacitor Amplifiers. 8 Marks L4 CO4
b) Summarize the Non-inverting Amplifier and Unity-Gain Sampler/Buffer in Switched Capacitor amplifiers. 8 Marks L1 CO4

(OR)

11. a) Analyze the small transients in Locked Condition. 8 Marks L4 CO4
b) Explain the basic PLL Technology. 8 Marks L2 CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

DIGITAL CMOS VLSI DESIGN

[VLSI and Embedded Systems]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.

All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|---------------------------------------------------------------------------|---------|----|-----|
| 1. | a) | Define Domino Logic. | 2 Marks | L2 | CO1 |
| | b) | Construct CMOS inverter with parasitic capacitance level | 2 Marks | L1 | CO1 |
| | c) | Mention the drawbacks of Clock feedthrough | 2 Marks | L1 | CO2 |
| | d) | Differentiate Edge and Level Triggering Latches and Registers | 2 Marks | L1 | CO2 |
| | e) | Define Dynamic glitch transition | 2 Marks | L1 | CO3 |
| | f) | What is mean by Dynamic glitch transition? | 2 Marks | L1 | CO3 |
| | g) | Distinguish SRAM & DRAM? | 2 Marks | L1 | CO3 |
| | h) | Draw the Schematic of 1T DRAM Cell. | 2 Marks | L1 | CO3 |
| | i) | List the steps for migration falls in design reuse of IC design | 2 Marks | L1 | CO4 |
| | j) | Recall generalized design flow for chip Implementation in error-free way. | 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) | Interpret the dynamic behavior of CMOS inverter by computing the capacitances and propagation delay. | 8 Marks | L2 | CO1 |
| | b) | Survey the leakage issues in dynamic CMOS circuits. | 8 Marks | L4 | CO1 |
| | | (OR) | | | |
| 3. | a) | Let $Z = (ABCDE+FGH)'$. Develop a BiCMOS and Domino CMOS implementation of the Boolean function Z. | 8 Marks | L4 | CO1 |
| | b) | Conclude the various dynamic CMOS designs. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Identify and summarize logic styles for pipelined structures. | 8 Marks | L3 | CO2 |
| | b) | Recall the design and functionality of Bistable and Non Bistable elements. | 8 Marks | L1 | CO2 |
| | | (OR) | | | |
| 5. | a) | Illustrate the functionality of dynamic sequential circuits. | 8 Marks | L2 | CO2 |
| | b) | Develop and explain a circuit to overcome threshold voltage drops in dynamic circuits. | 8 Marks | L3 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Apply the design considerations of a 4-bit SRAM and develop its CMOS logic diagram. | 8 Marks | L3 | CO3 |
| | b) | List various types of memory classifications and explain them in brief. | 8 Marks | L1 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 7. | a) | Illustrate the method of logical effort for transistor sizing. | 8 Marks | L2 | CO3 |
| | b) | Model a 3T DRAM cell and explain its operation in detail. | 8 Marks | L3 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain the importance of multiplier with pipelined algorithm for future implementations. | 8 Marks | L2 | CO3 |
| | b) | Show the general arrangement of 4 bit arithmetic processor. | 8 Marks | L1 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Illustrate the various considerations to implement ALU functions with an adder. | 8 Marks | L2 | CO3 |
| | b) | Develop a 4x4 Barrel shifter and list some of its applications. | 8 Marks | L3 | CO3 |

MODULE-V

- | | | | | | |
|-----|----|---------------------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Recall the Behavioral Synthesis Design Flow for a CMOS System. | 8 Marks | L1 | CO4 |
| | b) | Identify the significance of Design Economics for future implementations in digital design. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|-----|----|----------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | What are the elements for cost to produce an integrated circuit? | 8 Marks | L1 | CO4 |
| | b) | Outline the details present in Data Sheets that contribute future enhancement of digital circuits. | 8 Marks | L2 | CO4 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

EMBEDDED SYSTEMS DESIGN

[VLSI and Embedded Systems]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 1. | a) | Define interrupt. | 2 Marks | L1 | CO2 |
| | b) | Contrast RISC to CISC architectural features. | 2 Marks | L2 | CO1 |
| | c) | Write a code to stop the watchdog timer in Embedded C. | 2 Marks | L1 | CO2 |
| | d) | List various sources available for the clock in MSP430 variants. | 2 Marks | L1 | CO2 |
| | e) | List out the applications of RTC. | 2 Marks | L1 | CO2 |
| | f) | Write any four features of comparator in MSP430 | 2 Marks | L1 | CO3 |
| | g) | Write about I2C data lines. | 2 Marks | L1 | CO3 |
| | h) | Write about the USI in MSP430. | 2 Marks | L1 | CO3 |
| | i) | What is FSM | 2 Marks | L1 | CO4 |
| | j) | Write short notes on Model Vs Language. | 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) | Sketch the Anatomy of a typical microcontroller. | 8 Marks | L2 | CO1 |
| | b) | Sketch the memory map of MSP430G2553 with description of each region. | 8 Marks | L1 | CO1 |

(OR)

- | | | | | | |
|----|--|----------------------------------------------------|----------|----|-----|
| 3. | | Illustrate the functional block diagram of MSP430. | 16 Marks | L1 | CO1 |
|----|--|----------------------------------------------------|----------|----|-----|

MODULE-II

- | | | | | | |
|----|--|------------------------------------------------------------------------|----------|----|-----|
| 4. | | Discuss MSP430 instructions which can be used to control program flow. | 16 Marks | L2 | CO1 |
|----|--|------------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------|---------|----|-----|
| 5. | a) | Summarize MSP430 Low power modes. | 8 Marks | L2 | CO2 |
| | b) | Demonstrate usage of software delays using suitable example. | 8 Marks | L4 | CO2 |

MODULE-III

6. Outline the block diagram of comparator A and list the bits that control its operation. 16 Marks L2 CO3

(OR)

7. Model the block diagram of basic Timer-1 and discuss about associated counters and their configuration using BTCTL register. 16 Marks L3 CO2

MODULE-IV

8. Write short notes on the following: 16 Marks L1 CO3
i) SPI ii) Inter-integrated Circuit Bus

(OR)

9. a) Discuss in detail about communication protocol CAN. 8 Marks L2 CO3
b) Sequence the steps necessary for baud rate setting with USCI_A. 8 Marks L3 CO3

MODULE-V

10. a) Write short notes on Processor Technology. 8 Marks L2 CO4
b) Discuss in detail about Concurrent Process Model. 8 Marks L2 CO4

(OR)

11. Illustrate Embedded system modeling using 16 Marks L2 CO4
i) Data Flow Model ii) HCFSM



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

TECHNICAL REPORT WRITING

[Machine Design, VLSI and Embedded Systems]

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 a report? | 2 Marks | L1 | CO1 |
| | b) | Mention any two reports. | 2 Marks | L1 | CO1 |
| | c) | What is a final draft? | 2 Marks | L1 | CO2 |
| | d) | What is the use of writing a conclusion to a report? | 2 Marks | L1 | CO2 |
| | e) | Give two examples of types of graphs for presenting data. | 2 Marks | L1 | CO2 |
| | f) | What is the use of citing and arranging references? | 2 Marks | L1 | CO2 |
| | g) | What is a citation? | 2 Marks | L1 | CO1 |
| | h) | What is a cross-reference? | 2 Marks | L1 | CO1 |
| | i) | Give an example for an intermediate question. | 2 Marks | L1 | CO1 |
| | j) | Give an example of rhetoric. | 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) | “A report is a formal communication.” Discuss | 8 Marks | L2 | CO1 |
| | b) | Illustrate the need and value of a report. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------|---------|----|-----|
| 3. | a) | Discuss broad categories of formal reports | 8 Marks | L1 | CO1 |
| | b) | Differentiate oral reports and written reports. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------|---------|----|-----|
| 4. | a) | Discuss the importance of a rough draft. | 8 Marks | L2 | CO2 |
| | b) | How will you prepare a final draft? | 8 Marks | L1 | CO2 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------|---------|----|-----|
| 5. | a) | List out the suggestions to make your task of writing a report. | 8 Marks | L1 | CO2 |
| | b) | Discuss the need to prepare the final draft. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-----------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What are the points that should be borne in mind while using illustrations? | 7 Marks | L1 | CO3 |
| | b) | Discuss different types of graphs for illustrations. | 9 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | List out examples for citing and arranging references. | 7 Marks | L1 | CO3 |
| | b) | Explain the procedure of writing for publication in a scientific journal. | 9 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain bibliographical data according to ISO standards. | 9 Marks | L2 | CO4 |
| | b) | What is the need for copyright laws? | 7 Marks | L1 | CO4 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------|---------|----|-----|
| 9. | a) | List out examples of editing typographic details. | 8 Marks | L1 | CO4 |
| | b) | List out examples of cross references. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|----------------------------------------------------------------|---------|----|-----|
| 10. | a) | What is the need for a presentation with appropriate pointing? | 9 Marks | L1 | CO5 |
| | b) | What are intermediate questions? Give examples. | 7 Marks | L1 | CO5 |

(OR)

- | | | | | | |
|-----|----|----------------------------------------------------|---------|----|-----|
| 11. | a) | Explain the need for analysis of the presentation. | 9 Marks | L2 | CO5 |
| | b) | Mention a few rhetoric tips. | 7 Marks | L1 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

ADVANCED SOLID MECHANICS

[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 are complementary stress in a state of stress? | 2 Marks | L2 | CO1 |
| | b) | What is the reason for use of extra wheel at rear in case of heavy vehicles? Which force is dominant here? | 2 Marks | L2 | CO1 |
| | c) | Express the equation of cubical dilatation. | 2 Marks | L2 | CO2 |
| | d) | Define shear strain. Express its equation. | 2 Marks | L2 | CO2 |
| | e) | State the conditions of the distortion energy theory that failure occurs. | 2 Marks | L2 | CO3 |
| | f) | “The cylinder of von Misses circum scribes Tresca’s hexagonal cylinder” State True or false? If so express its relationship equation. | 2 Marks | L1 | CO3 |
| | g) | How to calculate the negative allowance for a two-layer barrel of inner diameter? | 2 Marks | L1 | CO4 |
| | h) | “The circumferential stress is greatest at the inner surface of the cylinder” is it true or false? What is the maximum stress equation? | 2 Marks | L1 | CO4 |
| | i) | What are the fundamental composition in a composite materials? Give two-three examples? | 2 Marks | L2 | CO5 |
| | j) | What are the possible arrangement of laminates in composites? | 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) | At a point P in a body, $S_x = 10,000 \text{ N/cm}^2$ (1020 kgf/cm ²), $S_y = -5,000 \text{ N/cm}^2$ (-510 kgf/cm ²), $S_z = -5,000 \text{ N/cm}^2$, $t_{xy} = t_{yz} = t_{zx} = 10,000 \text{ N/cm}^2$. Determine the normal and shearing stresses on a plane that is equally inclined to all the three axes. | 8 Marks | L2 | CO1 |
| | b) | Derive an equation for maximum shear stress in the plane state of stress. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | The state of stress at a point is characterized by the components | 8 Marks | L1 | CO1 |
| | | $[\sigma_{ij}] = \begin{bmatrix} 12 & 3 & 0 \\ 3 & 4 & 0 \\ 0 & 0 & 10 \end{bmatrix}$ Find the values of the principal stresses and their directions. | | | |

- b) At a point P, the rectangular stress components are $\sigma_x = 1$, $\sigma_y = -2$, $\sigma_z = 4$, $\tau_{xy} = 2$, $\tau_{yz} = -3$, and $\tau_{xz} = 1$ all in units of kPa. Find the principal stresses and check for invariance. 8 Marks L4 CO1

MODULE-II

4. a) Derive an expression for change in length of a linear Element—linear Components. 6 Marks L4 CO2
- b) The following displacement field is imposed on a body $u = (xyi + 3x^2z j + 4k)10^{-2}$ Consider a point P and a neighboring point Q where PQ has the following direction cosines $n_x = 0.200$, $n_y = 0.800$, $n_z = 0.555$ Point P has coordinates (2, 1, 3). If $PQ = \Delta s$, find the components of P' and Q' after deformation. 10 Marks L3 CO2

(OR)

5. a) Consider the displacement field $u = [y2i + 3yz j + (4 + 6x2)k]10^{-2}$ What are the rectangular strain components at the point P(1, 0, 2)? Use only linear terms. 8 Marks L3 CO2
- b) The following state of strain exists at a point P In the direction PQ having direction cosines $n_x = 0.6$, $n_y = 0$ and $n_z = 0.8$, determine: 8 Marks L1 CO2

$$\text{Strain at PQ. } [\varepsilon_{ij}] = \begin{bmatrix} 0.02 & -0.04 & 0 \\ -0.04 & 0.06 & 0.02 \\ 0 & -0.02 & 0 \end{bmatrix}.$$

MODULE-III

6. a) List all the Failures of theories. Explain Maximum Principal Stress Theory with suitable diagrams. 8 Marks L4 CO3
- b) Determine the diameter d of a circular shaft subjected to a bending Moment M and a torque T, according to i) Maximum Normal Stress Theory and ii) Maximum Shear Stress theories of failure. Use a factor of safety N. 8 Marks L3 CO3

(OR)

7. a) Draw and discuss the salient features of Stress-Strain graph of i) Linearly elastic ii) Rigid perfectly plastic iii) Rigid-linear work hardening iv) Linearly elastic-perfectly plastic and v) Linearly elastic-linear work hardening 8 Marks L3 CO3
- b) Derive the equation and explain the yield surfaces of Tresca and von Mises. 8 Marks L1 CO3

MODULE-IV

8. a) A compound cylinder made of copper inner tube of radii $a = 10$ cm and $c = 20$ cm is snug fitted ($D = 0$) inside a steel jacket of external radius $b = 40$ cm. If the compound cylinder is subjected to an internal pressure $p = 1500$ kgf/cm² (147009 kPa), determine the contact pressure p_c and the values of s_r and s_q at the inner and external points of the inner cylinder and of the jacket. Use the following data. 12 Marks L4 CO4

$$E_{st} = 2 \times 10^6 \frac{\text{kgf}}{\text{cm}^2}, E_{cu} = 1 \times 10^6 \frac{\text{kgf}}{\text{cm}^2}, \nu_{st} = 0.3, \nu_{cu} = 0.34.$$

- b) Draw the stress components in case of Sphere with purely radial displacement. 4 Marks L3 CO4

(OR)

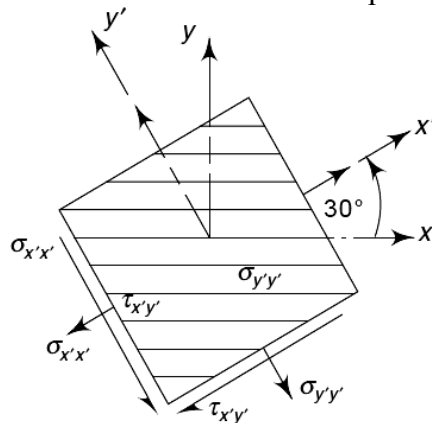
9. a) A flat steel disk of 75 cm outside diameter with a 15 cm diameter hole is shrunk around a solid steel shaft. The shrink-fit allowance is 1 part in 1000 (i.e. an allowance of 0.0075 cm in radius). 10 Marks L3 CO4

$$E = 2.8 \times 10^6 \frac{\text{kgf}}{\text{cm}^2} (214 \times 10^6 \text{ kPa}).$$

- i) What are the stresses due to shrink-fit?
ii) At what rpm will the shrink-fit loosen up as a result of rotation?
iii) What is the circumferential stress in the disk when spinning at the above speed? Assume that the same equations as for the disk are applicable to the solid rotating shaft also.
- b) Determine the shape for a disk with uniform stress, i.e. $\sigma_r = \sigma_\theta$. 6 Marks L1 CO4

MODULE-V

10. a) At a point in a laminate the following stress state exists: $\sigma_{x'x'} = 100 \text{ MPa}$, $\sigma_{y'y'} = 30 \text{ MPa}$, $\tau_{x'y'} = 30 \text{ MPa}$. The laminate is unidirectionally reinforced and the fibre orientation is 30° to x' -axis, as shown in the figure. The elastic constants along the principal directions of the laminate are $E_{xx} = 100 \text{ GPa}$, $E_{yy} = 10 \text{ GPa}$, $G_{xy} = 5 \text{ GPa}$, $\nu_{yx} = 0.25$. Determine the principal stresses, principal strains and their orientations in the plane of the laminate. 8 Marks L4 CO5



- b) Explain the failure criteria's of composites materials. Elaborate any two important criteria. 8 Marks L3 CO5

(OR)

11. a) How multi-directional composites are defined? Briefly explain the method of stacking. 6 Marks L3 CO5
b) Derive the matrix equations of Transverse Stress in a Cylinder with a single fiber. 10 Marks L1 CO5



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

ADVANCED MECHANICAL VIBRATIONS AND DIAGNOSTICS

[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) Degree of freedom ii) Simple Harmonic Motion | 2 Marks | L1 | CO1 |
| | b) | Define logarithmic decrement and Transmissibility | 2 Marks | L1 | CO1 |
| | c) | Draw 3dof for transverse vibration system. | 2 Marks | L1 | CO2 |
| | d) | What is Orthogonality Principle? | 2 Marks | L1 | CO2 |
| | e) | What do you mean by torsion ally equivalent shaft? | 2 Marks | L1 | CO3 |
| | f) | With a neat sketch, define torsional free vibration. | 2 Marks | L1 | CO3 |
| | g) | What are the applications of Holzer’s method? | 2 Marks | L1 | CO4 |
| | h) | What is the basic principle of Rayleigh-Ritz method? | 2 Marks | L1 | CO4 |
| | i) | Write types of sound insulation used. | 2 Marks | L1 | CO5 |
| | j) | What are the types of sound measurement used with application? | 2 Marks | L1 | CO5 |

PART - B

Answer One Question from each Module.

All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

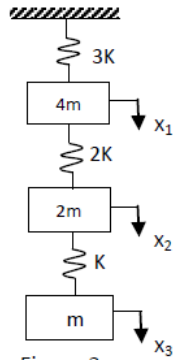
- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 2. | a) | Derive Natural frequency for free transverse vibrations due to a point load acting over a simply supported shaft. | 8 Marks | L2 | CO1 |
| | b) | The measurement on a mechanical vibrating system has a mass of 8 kg and that the springs can be combined to give an equivalent spring of stiffness 5.4 N/mm. If the vibrating system have a dashpot attached which exerts a force of 40 N when the mass has a velocity of 1 m/s, find: i) critical damping coefficient, ii) damping factor, iii) Logarithmic decrement, and iv) ratio of two consecutive amplitudes. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 3. | Derive an expression to identify Natural Frequency of Free Longitudinal Vibrations using Equilibrium and Energy method. | 16 Marks | L2 | CO1 |
|----|-------------------------------------------------------------------------------------------------------------------------|----------|----|-----|

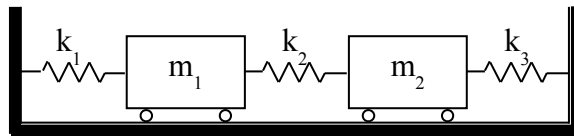
MODULE-II

- | | | | | |
|----|----------------------------------------------------------------------------------------|----------|----|-----|
| 4. | Find the natural frequency of the 3-dof system shown in figure. Use the matrix method. | 16 Marks | L3 | CO2 |
|----|----------------------------------------------------------------------------------------|----------|----|-----|



(OR)

5. Determine the natural frequencies and mode shapes for the system shown in figure. For $K_1 = 300 \text{ N/m}$, $K_2 = 500 \text{ N/m}$, $K_3 = 200 \text{ N/m}$, $m_1 = 2 \text{ kg}$ and $m_2 = 1 \text{ kg}$. 16 Marks L3 CO2

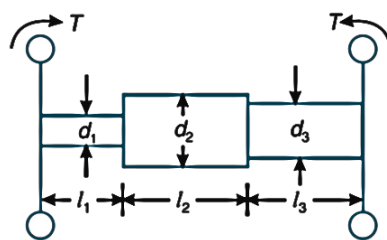


MODULE-III

6. a) Derive an expression for the frequency of the free torsional vibrations for a shaft fixed at one end and carrying a load on the free end. 8 Marks L4 CO3
 b) A shaft of 100 mm diameter and 1 m long has one of its end fixed and the other end carries a disc of mass 500kg at a radius of gyration of 450mm. The modulus of rigidity for the shaft material is 80 GN/m^2 . Determine the frequency of torsional vibrations. 8 Marks L3 CO3

(OR)

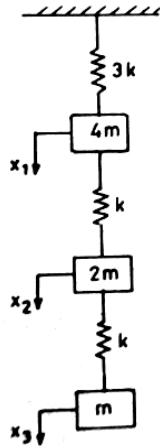
7. a) Find natural frequency for the torsionally equivalent shaft shown in below figure. 8 Marks L3 CO3



- b) A steel shaft 1.5m long is 95mm in diameter for the first 0.6m of its length, 60mm in diameter for the next 0.5m of the length and 50mm in diameter for the remaining 0.4m of its length. The shaft carries two flywheels at two ends, the first having a mass of 900kg and 0.85m radius of gyration located at the 95mm diameter end and the second having a mass of 700kg and 0.55m radius of gyration located at the other end. Determine the location of the node and the natural frequency of free torsional vibration of the system. The modulus of rigidity of shaft material may be taken as 80 GN/m^2 8 Marks L3 CO3

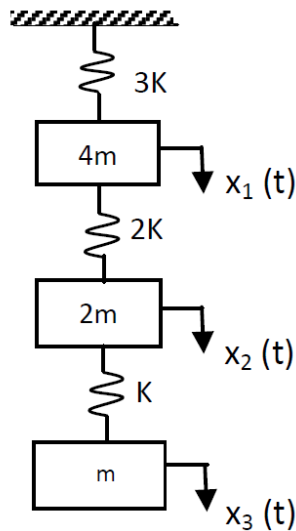
MODULE-IV

8. Find the natural frequency of shown figure by using Matrix Iteration method 16 Marks L4 CO4



(OR)

9. Determine the fundamental natural frequency of the system shown in figure by Stodola method. 16Marks L3 CO4



MODULE-V

10. a) Explain in detail Sound, Intensity Level Meters. 8 Marks L2 CO5
 b) What is mean by Dosimeter? Explain with applications? 8 Marks L2 CO5

(OR)

11. a) Explain the needs of Octave Band analysis in noise control. 8 Marks L2 CO5
 b) Explain different types of noise control strategies. 8 Marks L2 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

ADVANCED COMPOSITE TECHNOLOGIES

[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 Rule of Mixtures in the determination of elasticity modulus. | 2 Marks | L1 | CO1 |
| | b) | What is the role reinforcement in composite materials? | 2 Marks | L1 | CO1 |
| | c) | Write the general characteristics of composite materials. | 2 Marks | L1 | CO2 |
| | d) | Write short notes on Resilience. | 2 Marks | L1 | CO2 |
| | e) | Describe the application of Hooke's law for various materials. | 2 Marks | L2 | CO3 |
| | f) | Define compliance and stiffness matrix of a composite. | 2 Marks | L1 | CO3 |
| | g) | Write the relations for mass and density fractions of composite mixtures. | 2 Marks | L1 | CO4 |
| | h) | Define coefficients of thermal expansion and coefficients of moisture expansion | 2 Marks | L1 | CO4 |
| | i) | What factors do you think will be important in the environmental effects on the fatigue behavior of fiber reinforced composites? | 2 Marks | L1 | CO5 |
| | j) | Write short notes on Failure envelop. | 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 functions of continuous and discontinuous phases of a composite? | 8 Marks | L1 | CO1 |
| | b) | Briefly describe laminar composites. What is the prime reason for fabricating these materials? | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | List four reasons why glass fibers are most used for reinforcement. What measures are taken to protect the surface of glass fibers? | 8 Marks | L4 | CO1 |
| | b) | What is the effect on viscosity of adding ceramic particles to a molten metal such as aluminum or magnesium? Discuss its implications in the processing of MMCs with respect to features such as particle size, volume fraction, etc. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Obtain the relation for strain at a point in the laminate to the reference plane strains and the laminate curvatures using classical lamination theory. | 8 Marks | L4 | CO2 |
| | b) | Derive the strain-stress relations for an orthotropic lamina in three-dimensional domain in terms of engineering constants. | 8 Marks | L3 | CO2 |

(OR)

5. a) Derive Tsai-Hill and Tsai-Wu strength criteria for a composite lamina. 10 Marks L4 CO2
b) Derive the constitutive relations for a multidirectional composite in a hygrothermal environment. 6 Marks L4 CO2

MODULE-III

6. a) Enumerate the various phenomena which can cause macro-cracking in a fiber composite. 8 Marks L3 CO3
b) A two-ply laminate composite has the top and bottom ply orientations of 45 and 0° and thicknesses of 2 and 4 mm, respectively. The stiffness matrix for the 0° ply is:

$$[Q_{ij}] = \begin{bmatrix} 20 & 1 & 0 \\ 1 & 3 & 0 \\ 0 & 0 & 1 \end{bmatrix} \text{ GPa.}$$

(OR)

7. a) A thin lamina of a composite with fibers aligned at 45° to the lamina major axis is subjected to the following stress system along its geometric axes:
Compute the stress components along the material axes (i.e., σ_1 , σ_2 , and σ_6). 8 Marks L3 CO3
b) Reduce the monoclinic stress-strain relationships to those of an orthotropic material. 8 Marks L2 CO3

MODULE-IV

8. a) Describe some experimental methods of measuring void content in composites. Give the limitations of each method. 6 Marks L2 CO4
b) Find the coefficients of thermal expansion for a 60° angle lamina of glass/epoxy whose longitudinal and transverse coefficients of thermal expansion are $8.6 \times 10^{-6} \text{ m/m}^\circ\text{C}$ and $22.1 \times 10^{-6} \text{ m / m}^\circ\text{C}$ respectively. 10 Marks L4 CO4

(OR)

9. a) A composite is made of unidirectionally aligned carbon fibers in a glass-ceramic matrix. The following data are available:
 $E_{f1} = 280 \text{ GPa}$, $E_{f2} = 40 \text{ GPa}$, $E_m = 70 \text{ GPa}$
 $n_{f1} = 0.2$, $n_m = 0.3$, $G_{f12} = 18 \text{ GPa}$
i) Compute the elastic modulus in the longitudinal and transverse directions.
ii) Compute the two Poisson's ratios.
iii) Compute the principal shear modulus, G_{12} .
b) Explain the two principal effects of changes in hygrothermal environment on the mechanical behavior of polymer composites. 8 Marks L1 CO4

MODULE-V

10. a) Discuss the effects of frequency of cycling in regard to hysteretic heating in PMCs and CMCs. 8 Marks L2 CO5
b) "Diffusional creep involving mass transport becomes important at low stresses and high temperatures". Discuss the importance of reinforcement/matrix interface in creep of a composite under these conditions. 8 Marks L2 CO5

(OR)

11. a) Discuss the fatigue behavior an aramid fiber reinforced PMC is subjected to fatigue at negative and positive stress ratio (R). 8 Marks L3 CO5
b) Describe various failure criterion for a laminated composite. 8 Marks L2 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech I Semester (MBU-22) Regular Examinations February – 2023

TRIBOLOGY IN 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 Newtonian fluid. | 2 Marks | L1 | CO1 |
| | b) | What are the characteristics of good lubricant? | 2 Marks | L1 | CO1 |
| | c) | What are the classifications of friction? | 2 Marks | L3 | CO2 |
| | d) | Write any two situations where wear is desirable. | 2 Marks | L1 | CO2 |
| | e) | Explain any two factors affecting boundary lubrication. | 2 Marks | L3 | CO3 |
| | f) | Write down any six desirable properties of lubricant. Explain with examples. | 2 Marks | L1 | CO3 |
| | g) | Write any two Geometric Characteristics of Surfaces. | 2 Marks | L2 | CO4 |
| | h) | Write short notes on Ten point average method. | 2 Marks | L3 | CO4 |
| | i) | What is meant by electro plating? | 2 Marks | L2 | CO5 |
| | j) | Write any four bearing materials used in industry. | 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) | Briefly explain the history of tribology. | 8 Marks | L2 | CO1 |
| | b) | Write short notes on properties and importance of lubricants. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain with neat sketches the regimes of lubrication. | 8 Marks | L1 | CO1 |
| | b) | Define viscosity and its effect on temperature and pressure in Detail. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Define the term friction. Explain the various measurement of Friction. | 8 Marks | L4 | CO2 |
| | b) | Explain in detail about adhesion theory of friction. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------|---------|----|-----|
| 5. | a) | Define wear. Classify the wear with neat sketches. | 8 Marks | L3 | CO2 |
| | b) | Explain the delamination theory of wear. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-----------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain the different properties of lubricants. | 8 Marks | L4 | CO3 |
| | b) | Explain in detail about the various factors affecting boundary lubrication. | 8 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain in detail about solid and semi-solid lubricants. | 8 Marks | L3 | CO3 |
| | b) | Explain any four additives for developing a lubricant. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|----------|----|-----|
| 8. | a) | Explain in detail about
i) Optical interferometer
ii) Atomic force microscope | 10 Marks | L4 | CO4 |
| | b) | Describe in detail about the Computation of Surface Parameters. | 6 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------|----------|----|-----|
| 9. | a) | Explain the importance of surface topography. | 6 Marks | L3 | CO4 |
| | b) | Explain in detail about surface roughness measurement and methods. | 10 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|------------------------------------------------------------------------------|----------|----|-----|
| 10. | a) | Explain the scope of surface engineering. | 6 Marks | L4 | CO5 |
| | b) | Describe the Physical vapour deposition technique with the help of a sketch. | 10 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|-----------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 11. | a) | Give examples of operating conditions under which the application of hydrostatic bearings would be necessary or highly desirable. | 10 Marks | L3 | CO5 |
| | b) | Explain the mechanism of hydrodynamic journal bearing. | 6 Marks | L1 | CO5 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE
(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, February – 2023

ENGINEERING MECHANICS
[Civil Engineering]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----------------------------------------|
| 1. | a) Define the following with neat sketch:
i) Coplanar and Non-coplanar forces.
ii) Collinear and Non-collinear forces. | 4 Marks | L1 | CO1 | PO1
PO10 |
| | b) Two cylindrical identical rollers <i>A</i> and <i>B</i> , each of weight $W = 500\text{ N}$ are supported by an inclined plane and vertical wall and makes an angle of 30° with the horizontal as shown in Fig.1. Assuming all surfaces to be smooth, determine the safe reactions at <i>A</i> , <i>B</i> and <i>C</i> . | 10 Marks | L4 | CO1 | PO1
PO2
PO4
PO5
PO6
PO10 |

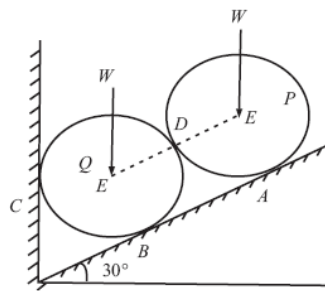


Fig.1

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------|---------|----|-----|----------------------------------|
| 2. | a) Determine the reactions at the supports of the given loaded beam shown in the Fig.2. | 4 Marks | L4 | CO1 | PO1
PO2
PO4
PO6
PO10 |
|----|-----------------------------------------------------------------------------------------|---------|----|-----|----------------------------------|

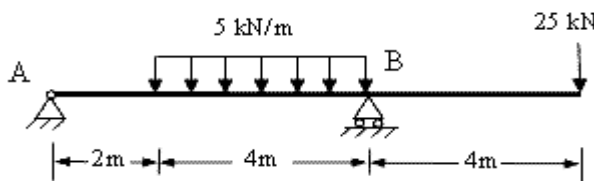


Fig.2

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----------------------------------------|
| b) | What kind of frame is the given truss? Find the forces in the members AC, BC and BD of the truss shown in the Fig.3. using method of sections. | 10 Marks | L4 | CO1 | PO1
PO2
PO4
PO5
PO6
PO10 |
|----|------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----------------------------------------|

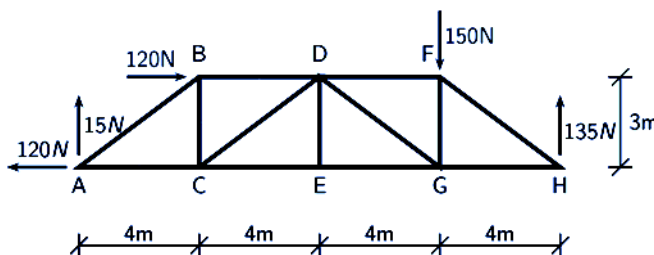


Fig.3

UNIT-II

3. a) Define cone of friction, angle of repose and angle of friction. 6 Marks L1 CO1 PO1
 b) A block weighing 100 N is resting on a rough plane inclined 20° to the horizontal. It is acted upon by a force of 50 N directed upward at angle of 14° above the plane. Determine the friction. If the block is about to move up the plane, determine the co-efficient of friction. 8 Marks L4 CO2 PO1 PO2 PO4 PO6 PO10

(OR)

4. A person of mass 90 kg is standing on a ladder at point C, shown in Fig.4. The ladder rests on a rough horizontal floor at A and against a smooth vertical wall at B. If the ladder is just on the point of slipping find the coefficient of friction between the ladder and the floor. Neglect the weight of the ladder. Also find the reactions at A and B. 14 Marks L4 CO2 PO1 PO2 PO4 PO6 PO10

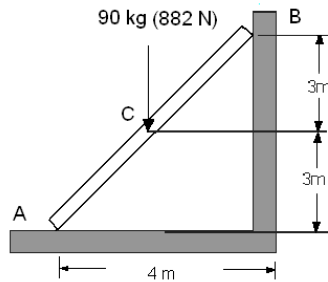


Fig.4

UNIT-III

5. a) State and prove the theorem of perpendicular axis. 4 Marks L4 CO3 PO1 PO2 PO10
 b) Find the centroid of the inverted T section shown in below Fig.5. 10 Marks L4 CO3 PO1 PO2 PO4 PO5 PO10

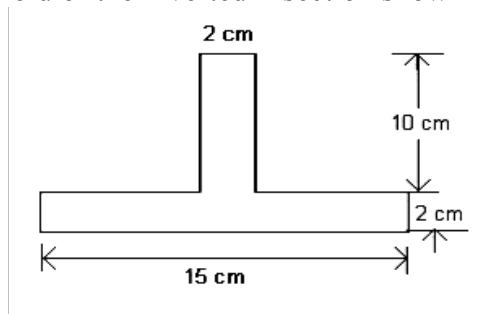


Fig.5

(OR)

6. Determine the moment of inertia and the radius of gyration of the I - section shown in the Fig.6. 14 Marks L4 CO3 PO1 PO2 PO4 PO5 PO10

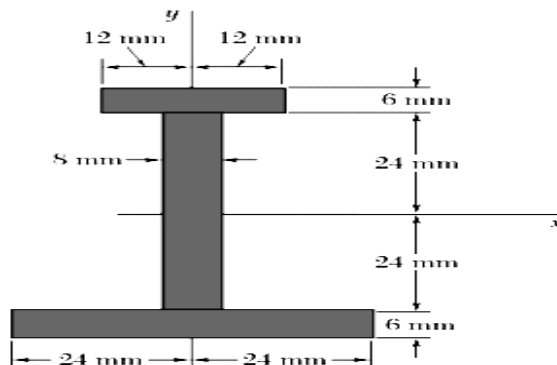


Fig.6

UNIT-IV

7. a) Derive the expression for the extension of the tapering rod with circular cross section. 7 Marks L4 CO4 PO1
PO2
PO10
- 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 7 Marks L4 CO4 PO1
PO2
PO4
PO5
PO6
PO10
- 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/mm².

(OR)

8. a) Derive the relationship between Modulus of Elasticity and Modulus of rigidity. 7 Marks L4 CO4 PO1
PO2
PO10
- 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. 7 Marks L4 CO4 PO1
PO2
PO4
PO5
PO6
PO10

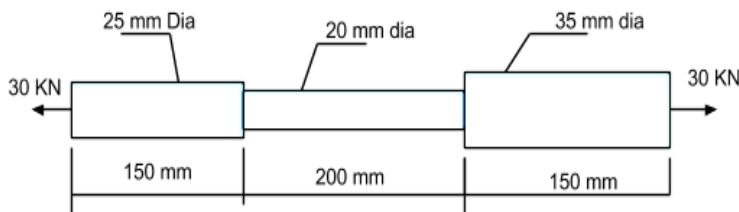


Fig.7

UNIT-V

9. a) Derive the change in dimension of thin cylindrical shell due to an internal pressure. 7 Marks L4 CO5 PO1
PO2
PO10
- 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/mm², determine the increase in volume of the drum. Take $E = 2 \times 10^5$ N/mm². Poisson's ratio 0.3. 7 Marks L4 CO5 PO1
PO2
PO4
PO6
PO10

(OR)

- 10 a) A pipe of 200 mm internal diameter and 50 mm thickness carries a fluid at a pressure of 10 MN/m². Calculate the maximum and minimum intensities of circumferential stress across the section. 7 Marks L4 CO5 PO1
PO2
PO4
PO5
PO6
PO10
- b) Calculate the thickness of metal necessary for a cylindrical shell of internal diameter 160 mm to withstand an internal pressure of 25 MN/m² if maximum permissible tensile stress is 125 MN/m². 7 Marks L6 CO5 PO1
PO2
PO3
PO4
PO5
PO6
PO10



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, February – 2023**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. Draw Iron, Iron carbide diagram neatly and explain cooling of steel from liquid phase to room temperature for 0.4% and 0.8% carbon. 14 Marks L3 CO1 PO1
PO2
PO3

(OR)

2. Explain the expression for the Gibb's Phase rule and recall the Hume Rothery rule. 14 Marks L2 CO1 PO1
PO2
PO3
PO4

UNIT-II

3. a) Write short notes on vacuum and plasma hardening. 7 Marks L2 CO2 PO1
PO2
b) Explain the concept of time temperature transformation with a neat sketch. 7 Marks L2 CO2 PO1
PO2
PO7

(OR)

4. Define carburizing and describe the types of carburizing in detail. 14 Marks L2 CO2 PO1

UNIT-III

5. a) Classify the types of carbon steels with their specific features and applications. 7 Marks L2 CO3 PO1
b) Write a short note on Malleable and Nodular cast iron. 7 Marks L2 CO3 PO1
PO2

(OR)

6. Recall the designations of steels and mention the types, composition, properties and applications of tool steels. 14 Marks L2 CO3 PO1
PO2
PO3
PO4

UNIT-IV

7. a) Interpret the composition, features and applications of Titanium and copper materials. 7 Marks L2 CO4 PO1
PO2
PO3
b) List the properties and applications of Nickel. 7 Marks L2 CO4 PO1

(OR)

8. Explain the types, properties and uses of Magnesium alloys in detail. 14 Marks L2 CO4 PO1 PO2

UNIT-V

9. a) Write a brief note on properties and applications of ceramics. 7 Marks L2 CO5 PO1
b) Discuss on the polymer matrix composites and nano composites. 7 Marks L2 CO5 PO1 PO2 PO7

(OR)

10. Give the classification of ceramics. Explain metal matrix composites with their properties and applications. 14 Marks L2 CO5 PO1 PO2 PO7



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, February – 2023**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) A railway embankment of formation width 12 m is to be built with side slopes of 1 vertical to 1.5 horizontal. The ground is horizontal in the direction transverse to the centre line. Length of embankment is 200 m. The centre height of embankment at 25 m interval are as given below:
1.6, 2.4, 3.4, 3.8, 4.2, 3.6, 2.8, 2.2, 1.2 m
Calculate the volume of earth filling using
Trapezoidal formula
Prismoidal formula
- 8 Marks L4 CO1 PO1
PO2
PO4
PO5
Po10
- b) List the characteristics of contours. Also write the uses of contour maps.
- 6 Marks L2 CO1 PO1
PO10
- (OR)**
2. a) Discuss the physical and chemical classification of rocks.
- 6 Marks L4 CO1 PO1
PO2
- b) What is meant by curing of concrete? Briefly explain different methods of curing of concrete.
- 8 Marks L4 CO1 PO1
PO2
PO5

UNIT-II

3. a) Explain different types of stone masonry with sketches.
- 8 Marks L2 CO1 PO1
PO10
- b) Distinguish between port and harbour.
- 6 Marks L4 CO1 PO1
PO2
- (OR)**
4. a) Classify roofs and explain them briefly.
- 7 Marks L4 CO1 PO1
PO2
- b) Explain the components of permanent way with a neat sketch.
- 7 Marks L3 CO1 PO1
PO10

UNIT-III

5. a) Explain the importance of mechanical engineering with a suitable example.
- 4 Marks L2 CO2 PO1
- b) Explain the working principle of 2 stroke Diesel engine with neat sketch.
- 10 Marks L2 CO2 PO1

(OR)

6. Define pump. Describe the working principle of centrifugal pump with neat sketch. 14 Marks L2 CO2 PO1

UNIT-IV

7. a) Explain the following: 7 Marks L2 CO2 PO1
i) Power transmission by belts. PO2
ii) Power transmission by gear train. PO3

b) The central distance two shaft is 4m having two pulleys with diameter having 500mm and 700mm respectively find the length of belt required - 7 Marks L1 CO2 PO1
i) for open belt drive ii) for cross belt drive. PO2
PO3

(OR)

8. Define power transmission system. Derive an expression for length of belt for open belt drive. 14 Marks L2 CO2 PO1
PO2
PO3

UNIT-V

9. Compare and contrast between soldering and Brazing operations. 14 Marks L2 CO2 PO1

(OR)

10. Draw a neat diagram of grinding process, and explain its working principle. 14 Marks L2 CO2 PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, February – 2023**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) List the Tokens of C Language. Explain briefly. | 7 Marks | L2 | CO1 | PO1 |
| | b) Write a C program to swap two numbers. | 7 Marks | L2 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|----------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Explain the Relational and Logical operators of C Language. | 7 Marks | L2 | CO1 | PO1 |
| | b) Write a C program to Perform all arithmetic operations. | 7 Marks | L3 | CO1 | PO3 |

UNIT-II

- | | | | | | |
|----|-----------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Demonstrate the branching statements with a suitable flow graph notation. | 7 Marks | L2 | CO1 | PO1 |
| | b) Write a C program to find the reverse of a given three digit positive integer. | 7 Marks | L3 | CO1 | PO3 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Define Flowchart. Design a flowchart to check whether a number given by the user is odd or even. | 7 Marks | L2 | CO2 | PO3 |
| | b) Explain the steps involved in solving the given problem. | 7 Marks | L2 | CO2 | PO5 |

UNIT-III

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Write a C program to search the number in a list of integers. | 7 Marks | L2 | CO3 | PO3 |
| | b) Write a C program to generate the Fibonacci series between 1 and N. Define a separate function to generate Fibonacci series. | 7 Marks | L3 | CO3 | PO3 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Compare and contrast automatic, external and static variables. | 7 Marks | L2 | CO3 | PO2 |
| | b) Write a C program to find the length of a string without using the string functions. | 7 Marks | L3 | CO3 | PO3 |

UNIT-IV

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Write a C program using pointers to read an array of integers and search an element in an array. | 7 Marks | L2 | CO3 | PO1 |
| | b) | Compare <i>malloc()</i> , <i>calloc()</i> , <i>realloc()</i> and give suitable examples. | 7 Marks | L3 | CO3 | PO2 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | Write a C program to implement <i>call by address</i> . | 7 Marks | L2 | CO4 | PO2 |
| | b) | Write a C program to find the sub string of a main string using pointers. | 7 Marks | L3 | CO4 | PO3 |

UNIT-V

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | Define structure. Write a C Program to print employee details using structure. | 7 Marks | L2 | CO5 | PO3 |
| | b) | Write a C program that implements Structures using pointers. | 7 Marks | L3 | CO5 | PO3 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------------------|---------|----|-----|-----|
| 10 | a) | Write a C program that demonstrates reading a file and printing the file. | 7 Marks | L2 | CO5 | PO3 |
| | b) | Explain the Union with an example. | 7 Marks | L2 | CO5 | PO1 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations, March – 2023

ENVIRONMENT AND THE SOCIETY

[Biotechnology, Organic Chemistry]

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 measures for controlling Acid rains. | 2 Marks | L1 | CO1 |
| | b) | Recognize measures to control greenhouse gases. | 2 Marks | L1 | CO1 |
| | c) | List the key aerosols groups. | 2 Marks | L1 | CO1 |
| | d) | Name primary air pollutants in the environment. | 2 Marks | L1 | CO2 |
| | e) | Identify impacts of nuclear radiation and mutations. | 2 Marks | L1 | CO1 |
| | f) | What is biodiesel? | 2 Marks | L1 | CO5 |
| | g) | Difference between ignitable and corrosive wastes | 2 Marks | L1 | CO2 |
| | h) | Recollect any one nuclear accident. | 2 Marks | L1 | CO1 |
| | i) | List the case study on pesticide pollution | 2 Marks | L1 | CO5 |
| | j) | What is green computing? | 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. | Explain how various factors causing ‘Ozone layer depletion’ and its effects on environment. | 16 Marks | L1 | CO1 |
|----|---------------------------------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | |
|----|----------------------------------------------------------------------------|----------|----|-----|
| 3. | Explain various measures to be taken for preventing Global Climate Change. | 16 Marks | L1 | CO1 |
|----|----------------------------------------------------------------------------|----------|----|-----|

MODULE-II

- | | | | | |
|----|-------------------------------------------------------|----------|----|-----|
| 4. | Outline Dose-Response Relationships with one example. | 16 Marks | L2 | CO2 |
|----|-------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | |
|----|--------------------------------------------------------------------------------------|----------|----|-----|
| 5. | Outline effects of pesticides, MIC and Carcinogens (toxic chemicals) on environment. | 16 Marks | L2 | CO2 |
|----|--------------------------------------------------------------------------------------|----------|----|-----|

MODULE-III

- | | | | | |
|----|---------------------------------------------------------------------|----------|----|-----|
| 6. | Define ‘Water Pollution’? What are major types of water pollutants? | 16 Marks | L2 | CO3 |
|----|---------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | |
|----|---------------------------------------------------------------------------------------------|----------|----|-----|
| 7. | List the effects of ‘Soil Pollution’ on physio-chemical and biological. Properties of Soil. | 16 Marks | L2 | CO3 |
|----|---------------------------------------------------------------------------------------------|----------|----|-----|

MODULE-IV

8. Describe the roles and functions of 'Wildlife Protection Act -1972'. 16 Marks L2 CO4

(OR)

9. Outline the structure, composition and functions of 'National Green Tribunal'. 16Marks L2 CO4

MODULE-V

10. Explain synthesis of biodiesel. 16 Marks L2 CO5

(OR)

11. List out advantages and disadvantages of 'Biodiesel'. 16 Marks L2 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

BIOSAFETY, IPR AND BIOETHICS

[Biotechnology]

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 concept of Biosafety in India. | 2 Marks | L1 | CO1 |
| | b) | List out the guidelines of Biosafety with respect to GMO. | 2 Marks | L1 | CO1 |
| | c) | Brief the concept of international treaties. | 2 Marks | L1 | CO2 |
| | d) | Discuss the important features of WIPO. | 2 Marks | L1 | CO2 |
| | e) | Enlist the patenting agencies in India. | 2 Marks | L1 | CO3 |
| | f) | Recall the differences between process and utility patent. | 2 Marks | L1 | CO3 |
| | g) | Brief the policies of copyright in India. | 2 Marks | L1 | CO4 |
| | h) | State the necessity of trademarks. | 2 Marks | L1 | CO4 |
| | i) | Brief the need of Bioethics. | 2 Marks | L1 | CO5 |
| | j) | Recall the role of Bioethics in Human Genome Project. | 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 out various BSL and their role in establishing a new lab | 7 Marks | L1 | CO1 |
| | b) | Mention the names of competent authorities for implementing biosafety and their functions | 9 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Discuss Cartagena Protocol in Biosafety | 7 Marks | L2 | CO1 |
| | b) | Elaborate the structure and functions of Institutional Ethical committee | 9 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|--------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Enumerate the structure and functions of WIPO and TRIPS | 8 Marks | L2 | CO2 |
| | b) | List out the conventions on Intellectual property and explain any 3 in detail. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Describe the implications of GATT in Pharmaceutical industry | 8 Marks | L2 | CO2 |
| | b) | Summarize the pros and cons of establishing international treaties | 8 Marks | L2 | CO2 |

MODULE-III

6. a) Describe the key points need to be considered while filing a patent 9 Marks L3 CO3
b) Substantiate the role of various patenting agencies in India 7 Marks L2 CO3

(OR)

7. a) Explain the procedure in filing a patent in India 9 Marks L2 CO3
b) Mr. Akbar has identified a novel Covid strain. Suggest him the procedure for patenting DNA sequence isolated from virus. 7 Marks L3 CO3

MODULE-IV

8. a) Outline copyright registration in India and discuss the advantages 7 Marks L2 CO4
b) Discuss the protection given to Geographical indication with suitable examples 9 Marks L3 CO4

(OR)

9. a) Extend the significance of Trademark with a relevant example 10 Marks L2 CO4
b) Elucidate the policies of copyright in India 6 Marks L3 CO4

MODULE-V

10. a) Justify the statement “Bioethics play a major role in managing Biodiversity” 8 Marks L3 CO5
b) Extend the significance of Bioethics in stem cell research 8 Marks L2 CO5

(OR)

11. a) Enumerate the ethical issues in GMO 7 Marks L3 CO5
b) Elaborate the role of bioethics with other branches of sciences 9 Marks L2 CO5



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

GREEN CHEMISTRY

[Organic Chemistry]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.

All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | |
|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|
| 1. | a) Define green chemistry and its concepts. | 2 Marks | L1 | CO1 |
| | b) Among quaternary phosphonium salts and quaternary ammonium salt which one is more thermally stable? | 2 Marks | L2 | CO1 |
| | c) Write a note on atom economy. | 2 Marks | L1 | CO1 |
| | d) Give a brief account on green solvent. | 2 Marks | L2 | CO1 |
| | e) Give two examples of crown ether catalyst. | 2 Marks | L1 | CO2 |
| | f) List out the uses of biocatalysts. | 2 Marks | L2 | CO2 |
| | g) How microwaves are useful as source of green energy? | 2 Marks | L1 | CO3 |
| | h) Discuss the sonication reaction with proper example. | 2 Marks | L2 | CO3 |
| | i) Explain sonophotocatalytic oxidation. | 2 Marks | L1 | CO4 |
| | j) Describe biodegradable polymers and their uses. | 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. | Explain in detail the twelve principles of green chemistry by giving suitable examples. | 16 Marks | L2 | CO1 |
|----|-----------------------------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | |
|----|-------------------------------------------|----------|----|-----|
| 3. | Discuss briefly about the following: | 16 Marks | L2 | CO1 |
| | i) Risk hazards | | | |
| | ii) Assessment of the impact of chemistry | | | |

MODULE-II

- | | | | | |
|----|-------------------------------------------------------------------------------------|----------|----|-----|
| 4. | Describe the characteristics and advantages of super critical fluids with examples. | 16 Marks | L2 | CO1 |
|----|-------------------------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | |
|----|------------------------------------------------------------------------------------------------|----------|----|-----|
| 5. | “Green chemistry is important in alternate reaction pathways” explain with suitable reactions. | 16 Marks | L3 | CO1 |
|----|------------------------------------------------------------------------------------------------|----------|----|-----|

MODULE-III

6. Give a brief account of biochemical oxidations and biochemical reductions with suitable examples. 16 Marks L2 CO2
(OR)
7. Interpret the significance of a photochemical reaction? Present an explanatory note on some important photochemical reactions. 16 Marks L3 CO2

MODULE-IV

8. a) Illustrate in detail the mechanism involved in phase transfer catalysis with examples. 8 Marks L3 CO3
b) Discuss the advantages of bio catalysis 8 Marks L2 CO3
(OR)
9. Ultrasound assisted reaction is a step towards a greener environment. Justify giving the suitable examples. 16 Marks L3 CO3

MODULE-V

10. a) Interpret the following on green chemistry perspective: 10 Marks L3 CO4
i) Sustainable chemistry and future prospective.
ii) Sustainable development.
b) Give a brief account on Bio-based renewable. 6 Marks L2 CO4
(OR)
11. Justify the following statements: 16 Marks L3 CO4
i) Economic sustainability through green chemistry.
ii) Environmental sustainability through green chemistry.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

GENERAL 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) | State the theory of spontaneous generation. | 2 Marks | L1 | CO1 |
| | b) | Write a shot notes on refractive index and microscopic resolution. | 2 Marks | L1 | CO1 |
| | c) | Highlight two important functions of bacterial capsule. | 2 Marks | L1 | CO1 |
| | d) | Define a virus particle or virion, and how is it different from living organisms? | 2 Marks | L1 | CO1 |
| | e) | Differentiate between chemoautotroph and photoautotroph. | 2 Marks | L1 | CO2 |
| | f) | State the role of following micro and macronutrients: Ca ²⁺ , Mg ²⁺ , Zn ²⁺ , Co ²⁺ . | 2 Marks | L1 | CO2 |
| | g) | Interpret the effect of increasing limiting nutrient concentration on microbial biomass yield and its growth rate. | 2 Marks | L1 | CO3 |
| | h) | Describe mean generation time with suitable example. | 2 Marks | L1 | CO3 |
| | i) | Outline the difference between ectosymbiont and endosymbiont. | 2 Marks | L1 | CO4 |
| | j) | Interpret biological control of microorganism. | 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 scope and relevance of microbiology in various areas. | 8 Marks | L2 | CO1 |
| | b) | Note future of microbiology and its major challenges. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------|----------|----|-----|
| 3. | a) | Interpret the working principle of scanning electron microscopy with neat schematic diagram. | 10 Marks | L3 | CO1 |
| | b) | Highlights various advantages and limitations of scanning electron microscopy. | 6 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain structure and composition of peptidoglycan with labeled diagrams. | 9 Marks | L4 | CO1 |
| | b) | Discuss the difference in cell wall structure of gram-positive and gram-negative bacteria with appropriate schematic diagram. | 7 Marks | L5 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------|----------|----|-----|
| 5. | a) | Outline the morphology and structure of bacteriophage with neat schematic diagram and labelling. | 6 Marks | L2 | CO1 |
| | b) | Discuss the life cycle of bacteriophage in a host system with suitable illustrations. | 10 Marks | L5 | CO1 |

MODULE-III

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 6. | a) | Give a detailed account on the classification of microorganisms based on their nutritional requirement in terms of their source of energy, carbon, and electron sources. List representative microorganisms in each categories. | 10 Marks | L2 | CO2 |
| | b) | Discuss about pure culture and importance in industrial application. | 6 Marks | L5 | CO2 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 7. | a) | Outline the decomposition of carbon source by microorganisms in aerobic and anaerobic route. Summarize the involvement of microorganisms in various stages of these processes. | 12 Marks | L2 | CO2 |
| | b) | Interpret the application of microorganisms in environmental remediation with suitable example. | 4 Marks | L3 | CO2 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 8. | a) | Assess various stages of microbial growth curve with in a closed system with suitable graph and elaborate the causes of each stage. | 12 Marks | L5 | CO3 |
| | b) | Interpret the changes of specific growth rate in each stages of growth phase. | 4 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------|----------|----|-----|
| 9. | a) | Elaborate on the continuous culture system while highlighting on chemostat and turbidostat. | 10 Marks | L3 | CO3 |
| | b) | Discuss the effect of UV radition on microbial growth and the mechanisms involved in it. | 6 Marks | L5 | CO3 |

MODULE-V

- | | | | | | |
|-----|----|---------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 10. | a) | Highlight on various steps involved in establishing the Rhizobium-legume root symbiosis with a detailed discussion. | 12 Marks | L3 | CO4 |
| | b) | Interpret the role of plant-microbes interaction in development of modem agriculture. | 4 Marks | L6 | CO4 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Discuss the involvement of various plant secondary metabolites in its deference mechanism with example. | 8 Marks | L5 | CO4 |
| | b) | Explain the steps involved in plant-pathogen interaction while highlighting any one suitable defence pathway. | 8 Marks | L4 | CO4 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

BIOMOLECULES AND CELLS

[Biotechnology]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.

All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|-----------------------------------------------------------------------------|---------|----|-----|
| 1. | a) | Differentiate monosaccharides from oligosaccharides with examples. | 2 Marks | L3 | CO1 |
| | b) | What are phospholipids? | 2 Marks | L1 | CO1 |
| | c) | Analyze the formation of Peptide bond. | 2 Marks | L3 | CO2 |
| | d) | Evaluate the structure of any two positive amino acids. | 2 Marks | L2 | CO2 |
| | e) | Recall the secondary structure formation in RNA. | 2 Marks | L1 | CO3 |
| | f) | How can you justify that genomics help in disease prediction and diagnosis. | 2 Marks | L1 | CO3 |
| | g) | What are porphyrins. | 2 Marks | L1 | CO4 |
| | h) | List water soluble vitamins. | 2 Marks | L1 | CO4 |
| | i) | Identify the functions of lysosomes and ribosomes. | 2 Marks | L1 | CO5 |
| | j) | List the Mitochondria and its importance cell metabolism. | 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) | Classification of carbohydrates. | 8 Marks | L2 | CO1 |
| | b) | Illustrate the Structure of lactose, sucrose, and trehalose. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------|---------|----|-----|
| 3. | a) | Compare the structure and function of chitin and cellulose. | 8 Marks | L4 | CO1 |
| | b) | Identify the role of proteoglycans. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Write the importance of positive and negative amino acids with structures. | 8 Marks | L1 | CO2 |
| | b) | Predict the functions of methionine and proline in protein structure. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------|---------|----|-----|
| 5. | a) | Discuss the Sanger method of nucleic acid sequencing. | 8 Marks | L2 | CO2 |
| | b) | Explain Maxam gilbert method of sequencing. | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Analyze the importance of southern blotting in molecular medicine. 8 Marks L1 CO3
b) Describe the DNA denaturation and renaturation kinetics. 8 Marks L2 CO3

(OR)

7. a) Discuss the t-RNA and mRNA structure and explain the biological function. 8 Marks L2 CO3
b) Elaborate the importance of Genomics in human health. 8 Marks L2 CO3

MODULE-IV

8. a) Demonstrate the importance of Heme, Cytochrome. 8 Marks L3 CO4
b) Explain the biological importance of Water soluble vitamins. 8 Marks L2 CO4

(OR)

9. a) Argue the Fat soluble vitamins in human health. 8 Marks L3 CO4
b) Describe the Structure and functions of chlorophyll. 8 Marks L2 CO4

MODULE-V

10. a) Discuss the role of Mitochondria and ribosome in energy and translation processes. 8 Marks L2 CO5
b) Differentiate the Eukaryotes and prokaryotes. 8 Marks L4 CO5

(OR)

11. a) Explain the Structure of cytoskeleton and its role in cell processes. 8 Marks L2 CO5
b) Enumerate the function of nucleus and cytoplasm in an animal cell. 8 Marks L2 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

ENZYMOLGY

[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 the structure of enzyme? | 2 Marks | L1 | CO1 |
| | b) | What are the differences between enzymes and chemical catalysts? | 2 Marks | L1 | CO1 |
| | c) | What is Michaelis-Menten equation? | 2 Marks | L1 | CO2 |
| | d) | How do you calculate Enzyme activity and enzyme specific activity? | 2 Marks | L1 | CO2 |
| | e) | Describe the ping-pong mechanism. | 2 Marks | L1 | CO3 |
| | f) | State Feedback and allosteric inhibition. | 2 Marks | L1 | CO3 |
| | g) | What do you understand by Nicotinamide nucleotides? | 2 Marks | L1 | CO4 |
| | h) | Differentiate coenzymes and cofactors. | 2 Marks | L1 | CO4 |
| | i) | Summarize Hill Plot for Myoglobin and Haemoglobin. | 2 Marks | L1 | CO5 |
| | j) | Mention the significances of Zymogen activation. | 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 Two Important Models of Enzyme Reaction with Suitable Examples. | 8 Marks | L2 | CO1 |
| | b) | Discuss the Major Enzymes Used in Pharmaceutical Process Industries. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain the following theories for Enzyme-Substrate reaction
i) Transition State Theory.
ii) Collision theory.
iii) Arrhenius equation. | 8 Marks | L4 | CO1 |
| | b) | Write the detailed note on structural components of enzyme and briefly explain the Methods that are used for characterization of Enzymes and their Applications. | 8 Marks | L5 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Under most <i>in vitro</i> conditions, the enzyme is used in catalytic amounts (10^{-12} to 10^{-8} M). Estimate the concentration of an enzyme in a living cell. Assume that fresh tissue is 80% water and all of it is intracellular, the total soluble protein in a cell represents 15% of the wet weight, all the soluble proteins are enzymes, the average | 6 Marks | L6 | CO2 |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|

molecular weight of a protein is 150000.

- b) The following results were obtained for an enzyme catalyzed reaction. Explain the significance of MM Kinetics. Substrate concentration (m.mol-1) 1.5, 2, 3, 3.5, 9. Initial velocity ($\mu\text{mol}/\text{min}$) 0.21, 0.25, 0.28, 0.33, 0.45. Determine the MM Parameters such as K_m and V_{max} . 10 Marks L2 CO2

(OR)

5. a) The initial rates of enzyme – catalyzed reaction for various substrate concentrations are listed below. Determine V_{max} and K_m by Lineweaver-Burk plot. 6 Marks L5 CO2

Rate $\times 10^6$, mol/L/min.	177	173	125	106	80	67	43
Substrate concentration $\times 10^4$, mol/L	41	9.5	5.2	1.03	0.49	0.106	0.051

- b) Here, a reactant, called the substrate, is converted to product by the action of an enzyme, a high molecular weight (mw > 10 000) protein-like substance. An enzyme is highly specific, catalyzing one particular reaction, or one group of reactions. Thus, $A \xrightarrow{E} R$. 10 Marks L6 CO2

Many of these reactions exhibit the following behavior:

- A rate proportional to the concentration of enzyme introduced into the mixture $[E_s]$.
- At low reactant concentration the rate is proportional to the reactant concentration, $[A]$.
- At high reactant concentration the rate levels off and becomes independent of reactant concentration.

Propose a mechanism to account for this behavior.

MODULE-III

6. a) Illustrate the difference between feedback and allosteric inhibition. 8 Marks L4 CO3
 b) Analyze the significance of compulsory and random order mechanism in substrate inhibition. 8 Marks L5 CO3

(OR)

7. a) Illustrate a detail note on Reversible Inhibition of Enzyme with examples. 6 Marks L4 CO3
 b) Derive the equation for Competitive Inhibition enzyme system and how does it differ from uncompetitive inhibition. 10 Marks L2 CO3

MODULE-IV

8. a) Distinguish between Synthetic enzymes and catalytic antibodies. 8 Marks L2 CO4
 b) What is PCR Site-directed mutagenesis? Explain it with suitable example. 8 Marks L2 CO4

(OR)

9. a) Analyze the significance of Ribonuclease and Lysozyme in mechanism of enzyme action. 8 Marks L5 CO4
 b) Describe the mechanism of enzyme action in Co-enzymes B12. 8 Marks L4 CO4

MODULE-V

10. a) Outline the various models used to determine the behavior of allosteric enzymes. 8 Marks L6 CO5
 b) Summarize the concept of binding of ligands to proteins Co-operativity. 8 Marks L4 CO5

(OR)

11. a) Explain various models used to determine sigmoidal kinetics of enzymes. 8 Marks L2 CO5
 b) Write down the functions and actions of pyruvate dehydrogenase complex in Enzyme-substrate complex. 8 Marks L2 CO5



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023**BASICS OF ORGANIC CHEMISTRY****[Organic Chemistry]****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 types of the organic reactions. | 2 Marks | L1 | CO1 |
| | b) | Differentiate the Heterolytic and homolytic cleavage. | 2 Marks | L1 | CO1 |
| | c) | Give some examples for nucleophiles. | 2 Marks | L1 | CO2 |
| | d) | Recall the classical and non classical carbo cations. | 2 Marks | L1 | CO2 |
| | e) | Define the Saytzeff rule. | 2 Marks | L1 | CO3 |
| | f) | Classify the types of elimination reactions. | 2 Marks | L1 | CO3 |
| | g) | Describe the anti addition. | 2 Marks | L1 | CO4 |
| | h) | Identify the reagents used for the syn addition reaction. | 2 Marks | L1 | CO4 |
| | i) | Differentiate conformational and configurational isomerism. | 2 Marks | L1 | CO5 |
| | j) | Give some examples for the Wedge dash formula. | 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. | Illustrate the generation, structure, stability and reactivity of carbocations. | 16 Marks | L2 | CO1 |
|----|---------------------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | | |
|----|----|---------------------------------------------------|---------|----|-----|
| 3. | a) | Explain the structure and reactivity of carbenes. | 8 Marks | L2 | CO1 |
| | b) | Explain the structure and reactivity of nitrenes. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the SN1 reaction mechanism with suitable examples. | 8 Marks | L2 | CO2 |
| | b) | Explain the SN2 reaction mechanism with suitable examples. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain the Single-electron mechanisms with suitable examples. | 8 Marks | L2 | CO2 |
| | b) | Illustrate the Classical and non-classical carbocations. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain the 1,2-Elimination reactions with suitable examples. | 8 Marks | L2 | CO3 |
| | b) | Explain the Elimination Unimolecular conjugate Base mechanism. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Illustrate the Saytzeff and Hoffmann rules with suitable examples. | 8 Marks | L2 | CO3 |
| | b) | Explain the stereochemistry in elimination reaction. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-----------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain the Conversion of alkenes to diols. | 8 Marks | L2 | CO4 |
| | b) | Explain the types of addition reactions with suitable examples. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------|---------|----|-----|
| 9. | a) | Illustrate the Conversion of alkenes to diols. | 8 Marks | L2 | CO4 |
| | b) | Explain the addition reaction in presence of Osmium oxide. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-----------------------------------------------------|---------|----|-----|
| 10. | a) | Explain the Axial Chirality with suitable examples. | 8 Marks | L2 | CO5 |
| | b) | Illustrate the E-Z – nomenclature. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain Cahn-Ingold-Prelog (CIP) rules for the nomenclature of Organic stereoisomers? | 8 Marks | L2 | CO5 |
| | b) | Apply the Cahn-Ingold-Prelog (CIP) rules for four molecules. | 8 Marks | L2 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023**INORGANIC CHEMISTRY-I****[Organic Chemistry]**

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.

All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | |
|----|----------------------------------------------------------------------------------------------|---------|----|-----|
| 1. | a) Define Nephelauxetic effect. | 2 Marks | L1 | CO1 |
| | b) When pairing energy is greater than CFSE? | 2 Marks | L2 | CO1 |
| | c) Why pi bonding ligands show large trans directing effect? | 2 Marks | L1 | CO2 |
| | d) Which complexes are labile? | 2 Marks | L1 | CO2 |
| | e) What is the application of metal nitrosyls? | 2 Marks | L1 | CO3 |
| | f) Draw the structure of Ru ₃ (CO) ₁₂ . | 2 Marks | L1 | CO3 |
| | g) What are non-transition elements give example? | 2 Marks | L1 | CO4 |
| | h) How many skeletal electrons are present in C ₂ B ₃ H ₅ ? | 2 Marks | L1 | CO4 |
| | i) What are organometallic compounds with examples? | 2 Marks | L1 | CO5 |
| | j) Why counting electrons in organometallic complexes is 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) Write a brief account on limitation and applications of crystal field theory. | 8 Marks | L2 | CO1 |
| | b) Discuss the molecular orbital diagram for squareplanar complexes. | 8 Marks | L3 | CO1 |
| | (OR) | | | |
| 3. | a) Calculate CFSE of the following complex:
i) [Fe (CN) ₆] ⁴⁻ ii) d ⁵ - low spin octahedral complexes. | 8 Marks | L3 | CO1 |
| | b) Discuss the Jahn-Teller distortion explain with example. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | |
|----|---------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Explain the trans effect with mechanism. | 8 Marks | L2 | CO2 |
| | b) Write an account on the following:
i) polarization ii) π-bonding | 8 Marks | L2 | CO2 |
| | (OR) | | | |
| 5. | a) Explain inner sphere mechanism for electron transfer reactions. | 8 Marks | L2 | CO2 |
| | b) Discuss the substitution reactions in square planar complexes. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | |
|----|-----------------------------------------------------------------------------------------|----------|----|-----|
| 6. | a) Discuss the ir spectra of metal carbonyls. | 8 Marks | L2 | CO3 |
| | b) Write an account on the following:
i) 18-electron rule ii) Synergistic effect. | 8 Marks | L2 | CO3 |
| | (OR) | | | |
| 7. | Explain the synthesis and bond of metal nitrosyls. | 16 Marks | L2 | CO3 |

MODULE-IV

8. Discuss the synthesis properties and Structure of halides and oxides. 16 Marks L2 CO4

(OR)

9. a) Write a brief account on wades rules. 8 Marks L2 CO4

b) Discuss the properties and structure of borazines and silicates. 8 Marks L2 CO4

MODULE-V

10. a) By applying 18-electron rule, calculate the number of electrons and predict the stability of complexes $\text{Mo}(\text{CO})_6$ and $\text{Ru}(\text{CO})_5$. 8 Marks L3 CO5

b) Explain isolobal concept with examples. 8 Marks L2 CO5

(OR)

11. Discuss different types of ligands in organometallic compounds. 16 Marks L2 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

PHYSICAL CHEMISTRY-I

[Organic Chemistry]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|---------------------------------------------------------|---------|----|-----|
| 1. | a) | Explain well behaved wave function. | 2 Marks | L1 | CO1 |
| | b) | Explain Heisenberg's uncertainty principle. | 2 Marks | L1 | CO1 |
| | c) | What is wave particle duality? Give its significance. | 2 Marks | L1 | CO1 |
| | d) | State Schrödinger equation and explain each term in it. | 2 Marks | L1 | CO1 |
| | e) | Define Fast, Moderate and slow reactions with examples. | 2 Marks | L1 | CO2 |
| | f) | Differentiate Complex and simple reactions. | 2 Marks | L1 | CO2 |
| | g) | Describe Isothermal process and Adiabatic process. | 2 Marks | L1 | CO3 |
| | h) | Differentiate intensive and extensive properties. | 2 Marks | L1 | CO3 |
| | i) | Define Helmholtz Electrical double layer. | 2 Marks | L1 | CO4 |
| | j) | Explain the Stern model. | 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) | Derive Schrodinger's time dependent wave equation. | 10 Marks | L3 | CO1 |
| | b) | Justify the need of quantum mechanics over classical mechanics. | 6 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------|----------|----|-----|
| 3. | a) | Derive the expression for Particle in Three Dimensional box. | 10 Marks | L3 | CO1 |
| | b) | Find the Eigen Values and Eigen Functions in the given mathematical expression $H\psi = E\psi$. | 6 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|--------------------------------------------------------------------------------|----------|----|-----|
| 4. | a) | What do you mean by normalization and orthogonality of a wave function? | 6 Marks | L2 | CO1 |
| | b) | Apply Schrodinger equation to a system of particle in a three dimensional box. | 10 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Discuss any 4 Postulates of Quantum Mechanics. | 8 Marks | L2 | CO1 |
| | b) | Derive the Schrodinger's time independent equation for a free particle. | 8 Marks | L3 | CO1 |

MODULE-III

6. a) Demonstrate pressure jump method to determine rate constant of a fast reaction. 8 Marks L3 CO2
b) Compare and contrast the relation between equilibrium constant and rate constants of a parallel reaction. 8 Marks L2 CO2

(OR)

7. a) Discuss the Lindemann-Hinshelwood theory of uni-molecular reaction. 8 Marks L2 CO2
b) Discuss the mechanisms of thermal and photochemical reactions between hydrogen and bromine. 8 Marks L2 CO2

MODULE-IV

8. a) Derive the thermodynamic expressions for C_v and C_p . Obtain the relation between them. 10 Marks L2 CO3
b) State and explain the Second law of thermodynamics in as many ways as possible. 6 Marks L2 CO3

(OR)

9. a) Define partial molar property and deduce the expression for Gibbs free energy. 8 Marks L2 CO4
b) Relate free energy, enthalpy and entropy and discuss its significance. 8 Marks L2 CO4

MODULE-V

10. a) Give a comparative account of the following models of double layer. 10 Marks L2 CO4
i) Helmholtz, ii) Gouy-Chapmann and iii) Stern model.
b) Derive Maxwell-Boltzmann distribution law for a system of an ideal gas containing n molecules. 6 Marks L3 CO4

(OR)

11. a) Define activity coefficient and mean ionic activity coefficient. Describe in detail Debye-Huckel theory of strong electrolytes. 8 Marks L2 CO4
b) Discuss the chemistry and applications of Lithium ion Battery. 8 Marks L3 CO4



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

COMPUTATIONAL STATISTICS

[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) State different measures of central tendency. 2 Marks L1 CO1
 b) An analysis of monthly incomes paid to the workers of two firms A and B belonging to the same industry gives the following results. 2 Marks L2 CO1

	Firm A	Firm B
No. of workers.	50	60
Average monthly incomes.	Rs. 169	Rs. 189
Variance of distribution of incomes	Rs. 64	Rs. 49

- i) Which firm, A or B, has a larger income bill?
 ii) In which firm, A or B, is the greater variability in individual income?
- c) State the difference between R and R Studios. 2 Marks L1 CO1
 d) List out the 3 math functions in R. 2 Marks L2 CO1
 e) Give two examples of Poisson distribution 2 Marks L1 CO2
 f) Given a standard normal distribution, find the area under the curve that lies
 i) to the right of $z=1.84$ and ii) Between $z=-1.97$ and $z = 0.86$ 2 Marks L2 CO2
 g) Draw scatter diagram which illustrates the positive and negative correlation with examples. 2 Marks L1 CO3
 h) Define multiple regressions. 2 Marks L1 CO3
 i) Summarize the basic steps involved in testing of hypothesis. 2 Marks L1 CO4
 j) Write any two conditions for the validity of chi-square test. 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) Calculate the median for the following frequency distribution. 8 Marks L2 CO1
- | | | | | | | | | | | |
|----|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|
| x: | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 | 45-50 |
| f: | 5 | 7 | 10 | 18 | 20 | 12 | 8 | 6 | 4 | 1 |
- b) Calculate the mean and standard deviation for the following table giving the age distribution of 542 members. 8 Marks L2 CO1

Age:	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Members	3	61	132	153	140	51	2

(OR)

3. a) From the following data regarding the income of 90 families, find out the average income by means of Mode. 8 Marks L1 CO1

Income	Upto100	100-150	150-200	200-250	250-300	300-350	350-400	Above 400
No. of families	8	10	15	25	12	11	7	2

- b) Calculate the Bowley's coefficient of skewness for the following data. 8 Marks L2 CO1

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
frequency	2	6	11	20	40	75	45	25	18	8

MODULE-II

4. a) Explain about Variables, Constants and Data Types in R Programming. 8 Marks L1 CO1

- b) Explain different types of operators in R. 8 Marks L2 CO1

(OR)

5. a) How to solve statistical problems in R programming? Explain in detail. 8 Marks L2 CO1

- b) How to create name, access, merging and manipulate list elements? Explain with examples. 8 Marks L2 CO1

MODULE-III

6. a) Fit a Binomial distribution to the following data 8 Marks L4 CO2

x	0	1	2	3	4	5	6
f	5	18	28	12	7	6	4

Also test the adequacy of the model.

- b) Show that in Poisson distribution with unit mean, mean deviation about mean is $(2/e)$ times the standard deviation. 8 Marks L2 CO2

(OR)

7. a) In a photographic process, the developing time of prints may be looked upon as a random variable having normal distribution with mean of 16.28 seconds and a standard deviation of 0.12 seconds. Find the probability that it will take i) anywhere from 16.00 to 16.50 seconds, ii) at least 16.20 seconds, iii) at most 16.35 seconds, to develop one of the prints. 8 Marks L1 CO2

- b) Fit a Poisson distribution to the following data with respect to the number of red blood corpuscles (x) per cell. 8 Marks L4 CO2

x	0	1	2	3	4	5
f	142	156	69	27	5	1

MODULE-IV

8. a) A researcher wished to determine if a person's age is related to the number of hours he or she exercises per week. The data obtained from a sample is given. State your opinion based on Karl Pearson's coefficient of correlation for the data also write the syntax to solve the problem in R. 8 Marks L2 CO3

Age x:	18	26	32	38	52	59
Hours y:	10	5	2	3	1.5	1

- b) The following data pertain to the number of computer jobs per day and the central processing unit (CPU) time required 8 Marks L2 CO3

Number of jobs x	1	2	3	4	5
CPU time	2	5	4	9	10

- i) Fit a straight line to the given data by the method of least squares.
 ii) Use the equation of the least squares line to estimate the mean CPU time at $x=3.5$.

(OR)

9. a) While calculating correlation coefficient between two variables x and y from 25 pairs of observations, the following results were obtained: 8 Marks L1 CO3

$$n = 25, \sum x = 125, \sum x^2 = 650, \sum y = 100, \sum y^2 = 460, \sum xy = 508.$$

Later it was discovered at the time of checking that the pairs of values.

x	y
8	12
6	8

were copied as

x	y
6	14
8	6

Obtain the correct value of correlation coefficient.

- b) The equations of two regression lines obtained in a correlation analysis are as follows: $3X + 12Y = 19$, $3Y + 9X = 46$. Obtain i) the value of correlation coefficient ii) mean values of X and Y. 8 Marks L1 CO3

MODULE-V

10. a) Nine measurements were made on a key performance indicator. 8 Marks L2 CO4
 123, 106, 114, 128, 113, 109, 120, 102, 111
 Conduct a test of hypothesis with the intent of showing that the mean key performance indicator is different from 107. Take $\alpha=0.05$ and assume a normal population.

- b) Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence. 200 men and 325 women were in favor of the proposal. Test the hypothesis that proportions of men and women in favor of the proposal, are same against that they are not, at 5% level. 8 Marks L1 CO4

(OR)

11. a) To compare two kinds of bumper guards, 6 of each kind, were mounted on a certain kind, of compact car. Then each car was run into a concrete wall at 5 miles per hour, and the following are the cost of repairs (in dollars). 8 Marks L4 CO4

Bumper guard 1: 407 448 423 465 402 419

Bumper guard 2: 434 415 412 451 433 429

Use the 0.01 level of significance to test whether the difference between the two-sample means is significant.

- b) The following table represents the number of boys and the number of girls who choose each of the five possible answers to an item in an attitude scale. 8 Marks L2 CO4

	Approve Strongly	Approve	Indifferent	Disapprove	Strongly Disapprove	Total
Boys	25	30	10	25	10	100
Girls	10	15	5	15	15	60
Total	35	45	15	40	25	160

Do these data indicate a significant difference in attitude towards this question? (Note: Test the independence (null hypothesis)).



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

COMPUTATIONAL STATISTICS SCHEME OF VALUATION [Computer Science]

Time: 3 hours

Max. Marks: 100

PART - A																	
Answer All Questions. All Questions Carry Equal Marks																	
			10 X 2 = 20 Marks														
			Mark s	BL	COs												
1.	a)	State different measures of central tendency. For writing Mean, Median and Mode.	2	L1	1												
			2M														
	b)	An analysis of monthly incomes paid to the workers of two firms A and B belonging to the same industry gives the following results <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">Firm A</td> <td style="text-align: center;">Firm B</td> </tr> <tr> <td style="text-align: center;">No. of workers</td> <td style="text-align: center;">50</td> <td style="text-align: center;">60</td> </tr> <tr> <td style="text-align: center;">Average monthly incomes</td> <td style="text-align: center;">Rs. 169</td> <td style="text-align: center;">Rs. 189</td> </tr> <tr> <td style="text-align: center;">Variance of distribution of incomes</td> <td style="text-align: center;">Rs. 64</td> <td style="text-align: center;">Rs.49</td> </tr> </table> <p>i) Which firm, A or B, has a larger income bill? ii) In which firm, A or B, is the greater variability in individual income?</p>		Firm A	Firm B	No. of workers	50	60	Average monthly incomes	Rs. 169	Rs. 189	Variance of distribution of incomes	Rs. 64	Rs.49	2	L2	1
	Firm A	Firm B															
No. of workers	50	60															
Average monthly incomes	Rs. 169	Rs. 189															
Variance of distribution of incomes	Rs. 64	Rs.49															
			Each carry 1Mark.														
	c)	State the difference between R and R Studio. For writing the difference between R and R Studio	2	L1	1												
			2M														
	d)	List out the 3 math functions in R. For writing '3' math functions in R	2	L2	1												
			2M														
	e)	Give two examples of Poisson distribution For two examples of Poisson distribution	2	L1	2												
			Each carry 1Mark.														
	f)	Given a standard normal distribution, find the area under the curve that lies a) to the right of $z=1.84$ and b) Between $z=-1.97$ and $z = 0.86$ Answers: a) 0.0329 b) 0.7807	2	L2	2												
			Each carry 1Mark.														
	g)	Draw scatter diagram which illustrates the positive and negative correlation with examples. Scatter diagram for positive and negative correlation with examples	2	L1	3												
			Each carry 1Mark.														
	h)	Define multiple regression. For defining multiple regression for several variables	2	L1	3												
			2M														
	i)	Summarize the basic steps involved in testing of hypothesis.	2	L1	4												

		For writing any '2' basic steps involved in testing hypothesis	2M		
	j)	Write any two conditions for the validity of chi-square test.	2	L1	4
		For any two conditions for the validity of chi-square test.	2M		

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Calculate the median for the following frequency distribution x: 0-5 5-10 10-15 15-20 20-25 25-30 30-35 35-40 40-45 45-50 f: 5 7 10 18 20 12 8 6 4 1	8	L2	1
		Solution: x: 0-5 5-10 10-15 15-20 20-25 25-30 30-35 35-40 40-45 45-50 f: 5 7 10 18 20 12 8 6 4 1 c.f: 5 12 22 40 60 72 80 86 90 91 Median=L+ ((N/2-c.f.)/f) x i L=20, N/2=45.5, c.f=40, f=20, i=5 =21.375	Cumulative frequency -2M Median formula=2M N/2 -1Mark Calculation of Median=3M		
	b)	Calculate the mean and standard deviation for the following table giving the age distribution of 542 members. Age: : 20-30 30-40 40-50 50-60 60-70 70-80 80-90 No. of members: 3 61 132 153 140 51 2	8	L2	1
		Solution: Mean formula-.....1M Standard deviation formula-.....1M Mean=54.72 3M Standard deviation=11.89208 .....3M			

(OR)

3.	a)	From the following data regarding the income of 90 families, find out the average income by means of Mode.	8	L1	1																		
		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Income</td> <td>Upto 100</td> <td>100-150</td> <td>150-200</td> <td>200-250</td> <td>250-300</td> <td>300-350</td> <td>350-400</td> <td>Above 400</td> </tr> <tr> <td>No. of families</td> <td>8</td> <td>10</td> <td>15</td> <td>25</td> <td>12</td> <td>11</td> <td>7</td> <td>2</td> </tr> </table>	Income	Upto 100	100-150	150-200	200-250	250-300	300-350	350-400	Above 400	No. of families	8	10	15	25	12	11	7	2			
Income	Upto 100	100-150	150-200	200-250	250-300	300-350	350-400	Above 400															
No. of families	8	10	15	25	12	11	7	2															
		Solution: Mode formula-..... 2M Mode=221.7391 calculation6M																					

	b)	Calculate the Bowley's coefficient of skewness for the following data	8	L2	1																												
		<table border="1"> <tr> <td>Class Interval</td> <td>0-10</td> <td>10-20</td> <td>20-30</td> <td>30-40</td> <td>40-50</td> <td>50-60</td> <td>60-70</td> <td>70-80</td> <td>80-90</td> <td>90-100</td> </tr> <tr> <td>frequency</td> <td>2</td> <td>6</td> <td>11</td> <td>20</td> <td>40</td> <td>75</td> <td>45</td> <td>25</td> <td>18</td> <td>8</td> </tr> </table>	Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	frequency	2	6	11	20	40	75	45	25	18	8									
Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100																							
frequency	2	6	11	20	40	75	45	25	18	8																							
		Solution: Bowley's coefficient of skewness formula..... 1M $Q_1=45.875$ 1M $Q_2=56.13$ 1M $Q_3=67.44$ 1M Bowley's coefficient of skewness= 0.0486 4M																															
MODULE-II																																	
4.	a)	Explain about Variables, Constants and Data Types in R Programming.	8	L1	1																												
		Solution: Explaining about variables 3M Constants..... 2M Datatypes in R programming..... 3M																															
	b)	Explain different types of operators in R.	8	L2	1																												
		Solution: For explaining different types of operators in R such as Arithmetic, Conditional, Logical and other operators 8M																															
(OR)																																	
5.	a)	How to solve statistical problems in R programming? Explain in detail	8	L2	1																												
		Solution: For explaining statistical problems in R programming..... 8M																															
	b)	How to create name, access, merging and manipulate list elements? Explain with examples.	8	L2	1																												
		Solution: For explaining how to create name, access the elements Merging and manipulate list..... Each carry 2M																															
MODULE-III																																	
6.	a)	Fit a Binomial distribution to the following data	8	L4	2																												
		<table border="1"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>f</td> <td>5</td> <td>18</td> <td>28</td> <td>12</td> <td>7</td> <td>6</td> <td>4</td> </tr> </table>	x	0	1	2	3	4	5	6	f	5	18	28	12	7	6	4															
x	0	1	2	3	4	5	6																										
f	5	18	28	12	7	6	4																										
		Also test the adequacy of the model.																															
		Solution: Binomial distribution formula-..... 1M Calculating expected frequencies..... 2M Calculation mean= 2.4 0.5M Calculation of $p=0.4$ 0.5M $P(X=x)=0.046656$ 0.1866 0.3110 0.2765 0.1382 0.03686 0.004096 2M Expected frequency: 3.73248 14.9292 24.88320 22.1184 11.0592 2.9491 0.32768 2M																															

	b)	Show that in Poisson distribution with unit mean, mean deviation about mean is $(2/e)$ times the standard deviation.	8	L2	2
		For showing Poisson distribution with unit mean Mean deviation about mean is $(2/e)$ times the standard deviation..... 8M			

(OR)

7.	a)	In a photographic process, the developing time of prints may be looked upon as a random variable having normal distribution with mean of 16.28 seconds and a standard deviation of 0.12 seconds. Find the probability that it will take (i) anywhere from 16.00 to 16.50 seconds, (ii) at least 16.20 seconds, (iii) at most 16.35 seconds, to develop one of the prints. Solution: Let $Z = \frac{X - \mu}{\sigma}$ 2M i) $P(16 \leq X \leq 16.50) = 0.9568082$ 2M ii) $P(X > 16.20) = 0.7475$ 2M iii) $P(X < 16.35) = 0.7202$ 2M	8	L1	2
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	b)	Fit a Poisson distribution to the following data with respect to the number of red blood corpuscles (x) per cell <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>f</td> <td>142</td> <td>156</td> <td>69</td> <td>27</td> <td>5</td> <td>1</td> </tr> </table>	x	0	1	2	3	4	5	f	142	156	69	27	5	1	8	L4	2
x	0	1	2	3	4	5													
f	142	156	69	27	5	1													

		Solution: Poisson distribution formula-..... 1M Calculating expected frequencies..... 2M Calculation mean=1..... 1M $P(X=x) = 0.3679 \quad 0.3679 \quad 0.1839 \quad 0.0613 \quad 0.0153 \quad 0.0030$ 1M Expected frequency: 147.15 147.15 73.576 24.525 6.131 1.2262..... 1M Test the adequacy using chi-square 2M			
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MODULE-IV

8.	a)	A researcher wished to determine if a person's age is related to the number of hours he or she exercises per week. The data obtained from a sample is given. State your opinion based on Karl Pearson's coefficient of correlation for the data also write the syntax to solve the problem in R. Age x: 18 26 32 38 52 59 Hours y: 10 5 2 3 1.5 1	8	L2	3
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Solution:

	Age x	Hours y	Xy	x ²	y ²
	18	10	180	324	100
	26	5	130	676	25
	32	2	64	1024	4
	38	3	114	1444	9
	52	1.5	78	2704	2.25
	59	1	59	3481	1
To	225	22.5	625	9653	141.25
tal					

.....2M

Here N=6

Mean of $x = \frac{\sum x}{N} = \frac{225}{6} = 37.5$ 1M

Mean of $y = \frac{\sum y}{N} = \frac{22.5}{6} = 3.75$ 1M

Standard deviation of x (S.D. of x) = $\sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2} = 14.2332$ 1M

Standard deviation of y (S. D. of y) = $\sqrt{\frac{\sum y^2}{N} - \left(\frac{\sum y}{N}\right)^2} = 3.0788$ 1M

Covariance (x,y) = $\frac{\sum xy}{N} - \left(\frac{\sum x}{N}\right)\left(\frac{\sum y}{N}\right) = -36.4583$ 1M

Correlation (r) = $\frac{\text{covariance of (x,y)}}{(\text{S.D.of x})(\text{S.D.of y})} = -0.8320$ 1M

❖ There is negative relationship exists between the age and the hours of exercise of the persons. Based on the above data, we conclude that, if the age of person increases then the exercise hours decreases.

b) The following data pertain to the number of computer jobs per day and the central processing unit (CPU) time required

8

L2

3

Number of jobs x	1	2	3	4	5
CPU time	2	5	4	9	10

i) Fit a straight line to the given data by the method of least squares

ii) Use the equation of the least squares line to estimate the mean CPU time at x=3.5.

Solution:

:Let the straight line of the form be $y=a+bx$

According to the principle of least squares, the normal equations are

$$\sum y = na + b \sum x$$

	$\sum xy = a \sum x + b \sum x^2$ <p>From the given data, the calculations are $\sum x = 15, \sum y = 30, \sum xy = 110, \sum x^2 = 55,$ $5a + 15b = 30$ $15a + 55b = 110$ Solving the above equations $a = 0, b = 2$ 2M</p> <p>$y = 2x$ (or) If the straight line is of the form $y = ax + b$ then we get $a = 2, b = 0$ that implies $y = 2x$ The least squares line to estimate the mean CPU time at $x = 3.5$ is $y = 7.$</p>	2M			
		2M			
		1M			
		1M			

(OR)

9.	a)	<p>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 the pairs of values</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>x</td><td>y</td></tr> <tr><td>8</td><td>12</td></tr> <tr><td>6</td><td>8</td></tr> </table> <p>were copied as</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>x</td><td>y</td></tr> <tr><td>6</td><td>14</td></tr> <tr><td>8</td><td>6</td></tr> </table> <p>Obtain the correct value of correlation coefficient.</p>	x	y	8	12	6	8	x	y	6	14	8	6	8	L1	3
x	y																
8	12																
6	8																
x	y																
6	14																
8	6																
		<p>Solution:</p> <p>Given, $n = 25, \sum x = 125, \sum x^2 = 650, \sum y = 100, \sum y^2 = 460, \sum xy = 508$</p> <p>Correlation (r) = $\frac{\text{covariance of (x,y)}}{(\text{S.D. of x})(\text{S.D. of y})}$1M</p> <p>Standard deviation of x (S.D. of x) = $\sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$</p> <p>Standard deviation of y (S. D. of y) = $\sqrt{\frac{\sum y^2}{N} - \left(\frac{\sum y}{N}\right)^2}$</p> <p>Covariance (x,y) = $\frac{\sum xy}{N} - \left(\frac{\sum x}{N}\right)\left(\frac{\sum y}{N}\right)$ 2M</p> <p>Correct $\sum x = 124$</p> <p>Correct $\sum y = 100$</p> <p>Correct $\sum xy = 520$</p> <p>Correct $\sum x^2 = 650$</p> <p>Correct $\sum y^2 = 436$</p> <p>Substituting the above values in the given formula then we get</p>															

		$r=0.67$	1M			
	b)	The equations of two regression lines obtained in a correlation analysis are as follows: $3X + 12Y = 19$, $3Y + 9X = 46$. Obtain i) the value of correlation coefficient ii) mean values of X and Y.		8	L1	3
		Solution: The two lines of regression X on Y and Y on X Value of correlation coefficient..... 4M Mean Values of X and Y..... 4M				
MODULE-V						
10.	a)	Nine measurements were made on a key performance indicator. 123, 106, 114, 128, 113, 109, 120, 102, 111 Conduct a test of hypothesis with the intent of showing that the mean key performance indicator is different from 107. Take $\alpha=0.05$ and assume a normal population.		8	L2	4
		Solution: Null Hypothesis H_0 : the mean key performance indicator is different from 107. i.e., $H_0: \mu=107$. 1M Alternative Hypothesis: $H_1: \mu \neq 107$. 1M Choose level of significance 0.05 1M Test statistic: Under H_0 , the test statistic is : $t = \frac{\bar{x} - \mu}{S/\sqrt{n}} \sim t_{n-1}$ 2M $t=2.519$ 2M Conclusion 1M				
	b)	Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence. 200 men and 325 women were in favor of the proposal. Test the hypothesis that proportions of men and women in favor of the proposal, are same against that they are not, at 5% level.		8	L1	4
		Solution: Null hypothesis: $H_0: P_1=P_2=P$ 1M Alternative hypothesis..... 1M Z formula for proportions..... 1M Estimated $P=0.525$ 1M Estimated $Q=0.475$ 1M $Z=-1.269$ 2M Conclusion: Men and women do not differ significantly as regards proposal of flyover is concerned..... 1M				
(OR)						
11.	a)	To compare two kinds of bumper guards, 6 of each kind, were mounted on a certain kind, of compact car. Then each car was run into a concrete wall at 5 miles per hour, and the following are the cost of repairs (in dollars) Bumper guard 1: 407 448 423 465 402 419 Bumper guard 2: 434 415 412 451 433 429 Use the 0.01 level of significance to test whether the difference between the two-sample means is significant.		8	L4	4

Solution:

For t-test

$$t = \frac{(\bar{x} - \bar{y}) - (\mu_x - \mu_y)}{S \sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \cong \frac{(\bar{x} - \bar{y}) - (\mu_x - \mu_y)}{\sigma \sqrt{\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \dots\dots\dots 1M$$

Step:1 : Set up Null hypothesis: $\mu_1 - \mu_2 = 0$

Step: 2: Set up Alternative hypothesis: $\mu_1 - \mu_2 \neq 0$

Step: 3: Choose the level of significance $\alpha = 0.01$

.....2M

Step: 4 Calculations

t- calculated value = -0.144 354M

Conclusion: Reject H_0 1M

b)

The following table represents the number of boys and the number of girls who choose each of the five possible answers to an item in an attitude scale.

	Approve strongly	Approve	indifferent	disapprove	Strongly disapprove	Total
Boys	25	30	10	25	10	100
Girls	10	15	5	15	15	60
Total	35	45	15	40	25	160

Do these data indicate a significant difference in attitude towards this question? (Note: Test the independence (null hypothesis))

To examine whether there any significant difference between the boys and girls in attitude towards the question or not

Step 1: Set up the null hypothesis: The attitude towards questions are independent.

Now, under the null hypothesis H_0 , the test statistic is

$$\chi^2 = \sum \left(\frac{(O_i - E_i)^2}{E_i} \right) \dots\dots\dots 1M$$

Where O_i = observed frequencies

8

L2

4

e_i = expected frequencies which is given by

expected frequency = (row total X column total) /grand total

The above test statistic χ^2 follows chi-square distribution at (r-1) (s-1)

degrees of freedom.

Calculations:

The given data can be tabulated as follows:

$$E(25) = \frac{100 \times 35}{160} = 21.875$$

$$E(30) = \frac{100 \times 45}{160} = 28.125$$

$$E(10) = \frac{100 \times 15}{160} = 9.375$$

$$E(25) = \frac{100 \times 40}{160} = 25$$

$$E(10) = \frac{100 \times 25}{160} = 15.625$$

$$E(10) = \frac{60 \times 35}{160} = 13.125$$

$$E(15) = \frac{60 \times 45}{160} = 16.875$$

$$E(5) = \frac{60 \times 15}{160} = 5.625$$

$$E(15) = \frac{60 \times 40}{160} = 15$$

$$E(15) = \frac{60 \times 25}{160} = 9.375$$

Observed frequency (o_i)	Expected frequency (e_i)	$o_i - e_i$	$(o_i - e_i)^2$	$\frac{(o_i - e_i)^2}{e_i}$
25	21.875	3.125	9.7656	0.4464
30	28.125	1.875	3.5156	0.1250
10	9.375	0.625	0.3906	0.0417
25	25	0	0	0
10	15.625	-5.625	31.6406	2.0250
10	13.125	-3.125	9.7656	0.7440

15	16.875	-1.875	3.5156	0.2083
5	5.625	-0.625	0.3906	0.0694
15	15	0	0	0
15	9.375	5.625	31.6406	3.3750
160	160			7.0348

.....**3M**

Now, under the null hypothesis H_0 , the test statistic is

$$\chi^2 = \sum \left(\frac{oi - ei}{ei} \right)^2 = 7.0348 \quad \text{.....2M}$$

The table value of χ^2 at $(r-1)(s-1) = (5-1)(2-1) = 4$ d.f. and at 5% level of significance is 9.49.**1M**

χ^2 calculated value is less than χ^2 table value, so we accept the null hypothesis H_0 .
Hence we may conclude that there is no significant difference towards the question between the boys and girls that they are independent.
.....**1M**



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

COMPUTER ARCHITECTURE AND ORGANIZATION

[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) | Comment on: computer architecture and computer organization. | 2 Marks | L1 | CO1 |
| | b) | Draw the functional units of a computer. | 2 Marks | L2 | CO1 |
| | c) | Define addressing Modes. | 2 Marks | L2 | CO2 |
| | d) | Differentiate RISC and CISC. | 2 Marks | L2 | CO2 |
| | e) | Compare hardwired and micro programmed controls. | 2 Marks | L1 | CO3 |
| | f) | What is control Word and control address registers? | 2 Marks | L2 | CO3 |
| | g) | List the various types of semiconductor RAMs. | 2 Marks | L1 | CO4 |
| | h) | Explain the necessary for memory hierarchy. | 2 Marks | L2 | CO4 |
| | i) | Define HIT and MISS ratio in memory with an example. | 2 Marks | L2 | CO5 |
| | j) | Differentiate SRAM and DRAM. | 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 various functions of a computer. | 8 Marks | L2 | CO1 |
| | b) | Differentiate the Von-Neumann and Harvard Architecture. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Draw and explain the block diagram of a simple computer with five functional units. | 8 Marks | L1 | CO1 |
| | b) | Discuss about Error detection and correction codes | 8 Marks | L1 | CO1 |

MODULE-II

- | | | | | | |
|----|----|--------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the need of stack in CPU. | 8 Marks | L2 | CO2 |
| | b) | Discuss about different instruction formats in detail. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------|---------|----|-----|
| 5. | a) | Differentiate RISC vs CISC. | 8 Marks | L2 | CO2 |
| | b) | Explain about instruction cycle with neat sketch. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What are logical micro operations? Explain about applications of logical micro operation. | 8 Marks | L1 | CO3 |
| | b) | Explain the mapping from micro-operation to a micro instruction address? | 8 Marks | L2 | CO3 |

(OR)

- | | | | | |
|----|------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----|-----|
| 7. | Write a program to evaluate the arithmetic statement.
$X = (A + B) * (C + D)$. | 16 Marks | L3 | CO3 |
| | i) | Using a general register computer with two address instructions. | | |
| | ii) | Using stack organized computer with zero address operation instruction. | | |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 8. | a) | Describe different types of memory and explain its advantages. | 8 Marks | L2 | CO4 |
| | b) | Explain about paging in detail. | 8 Marks | L1 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain auxiliary memory in a computer system with an example. | 8 Marks | L2 | CO4 |
| | b) | Write a short note on virtual memory. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-----------------------------------------------------|---------|----|-----|
| 10. | a) | Explain DMA Controller with the block diagram. | 8 Marks | L2 | CO5 |
| | b) | Discuss memory mapped I/O in computer organization. | 8 Marks | L1 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain system bus structure for multiprocessors. | 8 Marks | L2 | CO5 |
| | b) | Describe cache coherence and why is it important in shared memory multiprocessor systems? How can the problem be solved with a snoopy cache controller? | 8 Marks | L2 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

COMPUTER NETWORKS

[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 some basic network Devices. | 2 Marks | L1 | CO1 |
| | b) List out the advantages of guided transmission medium. | 2 Marks | L1 | CO1 |
| | c) Define vulnerable time of pure ALOHA. | 2 Marks | L1 | CO3 |
| | d) Define throughput. | 2 Marks | L1 | CO3 |
| | e) Define the different types of link in OSPF. | 2 Marks | L1 | CO2 |
| | f) Define congestion. | 2 Marks | L1 | CO2 |
| | g) List out the elements of Control field in TCP header. | 2 Marks | L1 | CO3 |
| | h) Define Silly Window Syndrome | 2 Marks | L1 | CO3 |
| | i) Write down the three types of WWW documents | 2 Marks | L1 | CO4 |
| | j) Give the different sections of DNS. | 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. | Describe the importance of switching in communication and explain about different switching technologies with relevant sketches. | 16 Marks | L3 | CO1 |
| (OR) | | | | |
| 3. | a) Illustrate the functionalities of TCP /IP reference model layer. | 8 Marks | L3 | CO1 |
| | b) Discuss in detail about IEEE 802.11. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Discuss about Sliding window protocol with relevant sketches. | 8 Marks | L3 | CO3 |
| | b) Encode a binary word 11001 into the even parity hamming code. | 8 Marks | L3 | CO3 |
| (OR) | | | | |
| 5. | a) Discuss about Slotted ALOHA in detail. | 8 Marks | L3 | CO3 |
| | b) A bit stream 1101011011 is transmitted using the standard CRC method. The generator polynomial is x^4+x+1 . What is the actual bit string transmitted? | 8 Marks | L3 | CO3 |

MODULE-III

6. Discuss about IPV4 and IPV6 header formats. 16 Marks L3 CO3

(OR)

7. a) Illustrate the concept of distance vector routing in detail. 8 Marks L3 CO2
b) Discuss in detail about OSPF. 8 Marks L3 CO2

MODULE-IV

8. a) Discuss about UDP header format. 8 Marks L3 CO3
b) Explain the connection establishment procedure in TCP. 8 Marks L3 CO3

(OR)

9. a) Describe the services provided by the transport layer. 8 Marks L3 CO3
b) Discuss in detail about Real time transport Protocol. 8 Marks L3 CO3

MODULE-V

10. a) Discuss about different agents and message formats in email. 8 Marks L3 CO4
b) Explain in detail about HTTP. 8 Marks L3 CO4

(OR)

11. a) Discuss about the resource records of DNS. 8 Marks L3 CO4
b) Discuss about the architectural over view of email. 8 Marks L3 CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

DESIGN AND ANALYSIS OF ALGORITHM

[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 an Algorithm and give an example. | 2 Marks | L1 | CO1 |
| | b) | Compare aggregate method with accounting method. | 2 Marks | L1 | CO1 |
| | c) | Discuss about potential method. | 2 Marks | L1 | CO2 |
| | d) | Define Disjoint set and give an example. | 2 Marks | L1 | CO2 |
| | e) | List out any 4 applications of Dynamic Programming. | 2 Marks | L1 | CO3 |
| | f) | What is optimal binary search tree? Give an example. | 2 Marks | L1 | CO3 |
| | g) | What is Huffman coding? | 2 Marks | L1 | CO4 |
| | h) | What is Graph coloring? Give an example. | 2 Marks | L1 | CO4 |
| | i) | What are divide and conquer technique. | 2 Marks | L1 | CO2 |
| | j) | List out any two NP-hard problems. | 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) | Outline the parameters to determine the performance analysis of an algorithm. | 8 Marks | L2 | CO1 |
| | b) | List out the methods in solving recurrence relations and explain any two methods. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | What are the various criteria's used to improve the effectiveness of the algorithm. | 8 Marks | L2 | CO1 |
| | b) | Explain the three types of Asymptotic notations. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Illustrate Union() and Find() algorithms with an example. | 8 Marks | L3 | CO2 |
| | b) | Explain the algorithm to find maximum and minimum with a suitable example. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------|---------|----|-----|
| 5. | a) | Write a binary Search Algorithm with an example. | 8 Marks | L2 | CO2 |
| | b) | Explain the basic methodology of divide and conquer. | 8 Marks | L2 | CO2 |

MODULE-III

6. a) Discuss All pairs shortest path algorithm with an example and write its time complexity. 8 Marks L2 CO3
b) Explain 0/1 Knapsack problem with a relevant example. 8 Marks L2 CO3

(OR)

7. a) Find the optimal binary search tree for $N = 6$, having keys $k_1 \dots k_6$ and weights $p_1 = 10, p_2 = 3, p_3 = 9, p_4 = 2, p_5 = 0, p_6 = 10; q_0 = 5, q_1 = 6, q_2 = 4, q_3 = 4, q_4 = 3, q_5 = 8, q_6 = 0$. 8 Marks L2 CO3
b) Explain Traveling salesperson problem with a suitable example. 8 Marks L2 CO3

MODULE-IV

8. a) Compute a minimum cost spanning tree for any weighted graph with 5 vertices and 11 edges using Kruskal's algorithm. 8 Marks L3 CO4
b) Use backtracking algorithm to find all m colorings of a graph. 8 Marks L3 CO4

(OR)

9. a) Illustrate Huffman coding with an example. 8 Marks L3 CO4
b) Explain 8-Queens problem and write its algorithm. 8 Marks L2 CO4

MODULE-V

10. a) Write and demonstrate control abstraction for LC-search algorithm. 8 Marks L2 CO5
b) State and derive Cook's theorem. 8 Marks L2 CO5

(OR)

11. a) Discuss about 0/1 knapsack problem using branch and bound technique. Give an example. 8 Marks L2 CO5
b) Explain in detail about Nondeterministic algorithms. 8 Marks L2 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations, March – 2023

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) | Explain any Three main functions of Operating Systems. | 2 Marks | L1 | CO1 |
| | b) | Defend your views on the below statement: "The method in which the processes communicate with each other without using any kind of shared memory". | 2 Marks | L2 | CO1 |
| | c) | Compare and Contrast Deadlock with Starvation. | 2 Marks | L4 | CO2 |
| | d) | Discuss the Four essential elements of the critical selection. | 2 Marks | L2 | CO2 |
| | e) | List out the commonly used Disk Scheduling Strategies. | 2 Marks | L1 | CO3 |
| | f) | Thrashing causes serious performance issues with the operating system. So, initiate the different techniques to handle thrashing. | 2 Marks | L1 | CO3 |
| | g) | With the help of neat sketch, show the basic operations for file manipulations. | 2 Marks | L1 | CO4 |
| | h) | The information stored in a file can be accessed by using variety of methods. List them out. | 2 Marks | L1 | CO4 |
| | i) | List out the various methods in implementing the access matrix in the operating systems. | 2 Marks | L2 | CO5 |
| | j) | Security may be compromised through the breaches. Name some of the breaches with definitions. | 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) | "Operating system is resource manager"- Justify this statement with suitable functionality of OS. | 8 Marks | L6 | CO1 |
| | b) | Summarize your views on the Task Control Block with neat sketches. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Construct the Flowchart for Round Robin Scheduling problem. List out its Advantages & Disadvantages. | 8 Marks | L2 | CO1 |
| | b) | Consider the set of 5 Processes whose arrival time and burst time are given below :- | 8 Marks | L3 | CO1 |

The CPU scheduling policy is Round Robin with time quantum = 2 unit, calculate the Average Waiting Time and Average Turn Around Time.

Process Id	Arrival Time	Burst Time
P1	0	5
P2	1	3
P3	2	1
P4	3	2
P5	4	3

MODULE-II

4. a) How characterize the structure of deadlock? Explain the two solutions of recovery from deadlock. 8 Marks L3 CO2
b) Mention some classical problems of synchronization. Explain any two of them in detail 8 Marks L2 CO2

(OR)

5. a) Consider deadlock situation in dining philosopher's problem. Discuss how necessary conditions indeed hold in sitting and also how they are avoided? 8 Marks L3 CO2
b) Explain the Bankers algorithm with a suitable example. 8 Marks L2 CO2

MODULE-III

6. a) Summarize in detail about variety of techniques used to improve the efficiency and performance of secondary storage. 8 Marks L2 CO3
b) Consider the below reference string: 4,7,6,1,7,6,1,2,7,2. The number of frames in the memory is 3. Find out the number of Page Faults respective to : FIFO Page Replacement Algorithm. 8 Marks L3 CO3

(OR)

7. a) Interpret your views on translation of logical address into physical address by segment table. 6 Marks L6 CO3
b) Formulate your views on the resource management technique that allows the parent and child process to share the same pages of the memory initially. If any process either parent or child modifies the shared page, only then the page is copied. 10 Marks L5 CO3

MODULE-IV

8. a) Compare and Contrast Contiguous allocation & Linked allocation with advantages and disadvantages. 8 Marks L4 CO4
b) Predict the different issues that exist in the file system. Extend your views on the below statement: "The main disadvantage of linked list allocation is that the Random access to a particular block is not provided". 8 Marks L2 CO4

(OR)

9. a) Classify the different file access methods with neat sketches. 10 Marks L2 CO4
b) What are directories? List different types of directory structures with an example. Mention their advantages and disadvantages. 6 Marks L3 CO4

MODULE-V

10. a) Critique the different goals and principles of security. 6 Marks L4 CO5
b) Categorize your views on Symmetric Key and Asymmetric key encryption with examples. 10 Marks L3 CO5

(OR)

11. a) Define Access Matrix. Enumerate the implementation aspects of Access Matrix with Advantages and Disadvantages. 8 Marks L2 CO5
b) Examine the different ways of protecting the firewalls systems and networks. 8 Marks L3 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Regular Examinations March – 2023

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[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) | Distinguish between procedural language and OOPs? | 2 Marks | L3 | CO1 |
| | b) | Define type conversion? | 2 Marks | L1 | CO1 |
| | c) | Write the advantage of static keyword. | 2 Marks | L2 | CO2 |
| | d) | What is Object class? | 2 Marks | L1 | CO2 |
| | e) | List out benefits of exception handling. | 2 Marks | L1 | CO3 |
| | f) | What is the significance of CLASSPATH? | 2 Marks | L1 | CO3 |
| | g) | What is significance of Runnable interface. | 2 Marks | L2 | CO4 |
| | h) | Mention different Event classes. | 2 Marks | L2 | CO4 |
| | i) | Write about Japplet ? | 2 Marks | L2 | CO5 |
| | j) | Byte Streams Vs Character Streams. | 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 key elements of Object-Oriented Programming and briefly explain. | 8 Marks | L1 | CO1 |
| | b) | Summarize the general java program compilation and execution. | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | Implement a java program to pass the arguments through command line. | 8 Marks | L3 | CO1 |
| | b) | Define Loop? What are the iterative constructs supported by Java? Explain. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|------|----|----------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the different types of constructors in java. | 8 Marks | L1 | CO2 |
| | b) | What is inheritance? Explain in detail the types of inheritance in java with examples. | 8 Marks | L2 | CO2 |
| (OR) | | | | | |
| 5. | a) | Distinguish Method Overriding and Method Overloading. | 8 Marks | L3 | CO2 |
| | b) | Explain the usage of abstract classes and methods? With an example program. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Discuss in detail about creating and importing packages with an example. | 8 Marks | L2 | CO3 |
| | b) | What is an exception? Explain how an exception can be handled in Java? And also list the benefits of Exception Handling. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | How interfaces can be extended? Explain. | 8 Marks | L3 | CO3 |
| | b) | Discuss the various levels of Access protection available for packages and their implications. | 8 Marks | L3 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------|---------|----|-----|
| 8. | a) | How is interthread communication achieved? Give an example. | 8 Marks | L2 | CO4 |
| | b) | How to Insert Applets in a Web Page explain with example. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Which steps are must for event handling and what are the models available for event handling. | 8 Marks | L1 | CO4 |
| | b) | Analyze the Local and Remote Applets. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|----------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | How to Use Buttons, Check Boxes, and Radio Buttons? | 8 Marks | L2 | CO5 |
| | b) | Explain in detail about binary input/output file operations with examples. | 8 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Discuss the process of connecting to database using JDBC. | 8 Marks | L3 | CO5 |
| | b) | Distinguish between:
i) Input Stream and Reader classes.
ii) Output Stream and Writer Classes. | 8 Marks | L3 | CO5 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

M.C.A. I Semester (SVEC-20) Supplementary Examinations March – 2023

COMPUTER ORIENTED STATISTICAL TECHNIQUES

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Calculate the mean and median of the marks from the following table: 6 Marks L4 CO1 PO2

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	12	18	27	20	17	6

- b) Calculate coefficient of variation for the following data and comment on the result. 6 Marks L4 CO1 PO2

Class Interval	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	3	61	132	153	140	51	2

(OR)

2. a) An incomplete frequency distribution is given as follows: 6 Marks L3 CO1 PO2

Variable	10-20	20-30	30-40	40-50	50-60	60-70	70-80
frequency	12	30	?	65	?	25	18

Given that the median value is 46, determine the missing frequencies, using median formula.

- b) Derive Non-Central limits in terms of central moments. 6 Marks L2 CO1 PO1

UNIT-II

3. Define Data Frame in R. Illustrate the use of data frames with example. 12 Marks L1 CO1 PO1

(OR)

4. a) Compare and contrast between data frames and lists in R. 6 Marks L4 CO1 PO1
 b) Demonstrate R program for employee details using data frame. 6 Marks L3 CO3 PO1

UNIT-III

5. a) Obtain mean and variance of binomial distribution. 6 Marks L3 CO2 PO1
 b) Fit a Poisson distribution to the following data. 6 Marks L4 CO3 PO4

x	0	1	2	3	4	5	Total
F	142	156	69	27	5	1	400

Also test the adequacy of model, using R.

(OR)

6. a) A manufacturer of cotter pins knows that 5% of his product is defective. If he sells cotter pins in boxes of 100 and guarantees that not more than 10 pins will be defective, what is the approximate probability that a box will fail to meet the guaranteed quality? 6 Marks L3 CO2 PO2

- b) In a sample of 1000 cases, the mean of certain test is 14 and standard deviations 2.5. Assuming the distribution to be normal, find: 6 L4 CO3 PO3
Marks
- How many students score between 12 and 15?
 - How many score above 18?
 - How many score below 18? Using R.

UNIT-IV

7. Calculate the coefficient of correlation to the following data using R. 12 L4 CO3 PO4
Marks
- | | | | | | | | | |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| X | 65 | 66 | 67 | 67 | 68 | 69 | 70 | 72 |
| Y | 67 | 68 | 65 | 68 | 72 | 72 | 69 | 71 |

(OR)

8. The equations of two regression lines obtained in a correlation analysis are: 12 L4 CO4 PO3
Marks
 $3X + 12Y = 19$, $3Y + 9X = 46$.
 Find :
 - Coefficient of correlation
 - Mean values of X and Y and
 - The ratio of the coefficient of variability of X to that of Y.

UNIT-V

9. a) A sample of heights of 6400 English men has a mean of 67.85 inches and S.D. 2.56 inches, while another sample of heights of 1600, Australians has a mean of 68.55 inches and a S.D. of 2.52 inches. Do the data indicate that Australians are on the average, taller than Englishmen? 6 L3 CO2 PO3
Marks
- b) Random samples of 400 men and 600 women were asked whether they would like to have flyover near their residence. 200 men and 325 women were in favor of the proposal. Test the hypothesis that proportions of men and women were in favor of the proposal are same against that they are not at 5% level. 6 L3 CO2 PO3
Marks

(OR)

10. a) Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results. 6 L3 CO2 PO3
Marks

Horse-A	28	30	32	33	33	29	34
Horse-B	29	30	30	24	27	29	-

Test whether the two horses have the same running capacity. (use 5% LOS).

- b) A pair of dice are thrown 360 times and the frequency of each sum is indicated below: 6 L4 CO2 PO4
Marks

Sum	2	3	4	5	6	7	8	9	10	11	12
frequency	8	24	35	37	44	65	51	42	26	14	14

Would you say that the dice are fair on the basis of the chi-square test at 5% level of significance?



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

M.C.A. I Semester (SVEC-20) Supplementary Examinations March - 2023

COMPUTER NETWORKS

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) Distinguish between connection-oriented and connectionless services. | 5 Marks | L2 | CO1 | PO2 |
| | b) Define Topology. Write short notes on Mesh topology. Find the number of links required to connect 5 nodes using mesh topology? | 7 Marks | L1 | CO1 | PO1 |

(OR)

- | | | | | | |
|----|------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) What is Multiplexing? Mention the significance and usage of multiplexing in networks. | 6 Marks | L2 | CO1 | PO2 |
| | b) Compare and contrast TCP/IP Model with ISO/OSI Model. | 6 Marks | L2 | CO1 | PO3 |

UNIT-II

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Distinguish between forward errors corrections versus error correction by retransmission. | 6 Marks | L4 | CO3 | PO3 |
| | b) What is the remainder obtained by dividing x^7+x^5+1 by the generator polynomial x^3+1 ? | 6 Marks | L2 | CO2 | PO5 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------|----------|----|-----|-----|
| 4. | Demonstrate the implementation of elementary data link protocols. | 12 Marks | L3 | CO2 | PO3 |
|----|-------------------------------------------------------------------|----------|----|-----|-----|

UNIT-III

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | What is an IP Address? Discuss the following:
i) Subnetting
ii) Classful addressing
iii) Network Address Translation (NAT) | 12 Marks | L2 | CO3 | PO2 |
|----|-------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|----|--------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Define Congestion. Examine the factors that lead to congestion. | 6 Marks | L3 | CO3 | PO4 |
| | b) Discuss the design issues of Network layer. | 6 Marks | L2 | CO3 | PO3 |

UNIT-IV

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Describe the following:
i) Transport Service Primitives ii) Berkeley Socket | 12 Marks | L2 | CO3 | PO2 |
|----|-----------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) Explain the following terms:
i) The TCP Service Model ii) TCP Connection Establishment | 6 Marks | L2 | CO3 | PO2 |
| | b) Demonstrate the TCP sliding window mechanism in Transport Layer with a neat sketch. | 6 Marks | L3 | CO3 | PO2 |

UNIT-V

- | | | | | | |
|----|-------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | Draw the architecture of an e-mail. Explain the role of user and message transfer agents. | 12 Marks | L2 | CO4 | PO2 |
|----|-------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|-----|-------------------------------------------------------------------------|---------|----|-----|-----|
| 10. | a) Sketch and explain the message formats supported by an e-mail. | 6 Marks | L3 | CO4 | PO6 |
| | b) Define MIME. Tabulate the MIME header and explain the content types. | 6 Marks | L2 | CO4 | PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

M.C.A. I Semester (SVEC-20) Supplementary Examinations March – 2023**DATABASE MANAGEMENT SYSTEMS**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

- | | | | | | |
|----|-------------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) Define Database Management Systems. List any two advantages of DBMS. | 5 Marks | L1 | CO1 | PO1 |
| | b) With a neat diagram, explain three-schema architecture of database system. | 7 Marks | L2 | CO2 | PO2 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Write short note on data models, schemas and instances. | 6 Marks | L2 | CO2 | PO2 |
| | b) Analyze the concepts of class hierarchy and aggregation features of Entity Relationship model with an example. | 6 Marks | L4 | CO3 | PO3 |

UNIT-II

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Construct an Entity Relationship diagram for a University database. Assume your own entities (Minimum of 5 entities), attributes and relations. Explain in detail. | 12 Marks | L3 | CO3 | PO3 |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

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|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 4. | Identify and list various Data Definition Language (DDL) commands. Create a table by specifying key and referential constraints in Structured Query Language. | 12 Marks | L3 | CO3 | PO3 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

UNIT-III

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|----|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | Make use of Structured Query Language in solving the following with proper example:
i) Nested queries ii) Joins iii) Aggregate functions | 12Marks | L3 | CO4 | PO4 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|

(OR)

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|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | Define normalization. Interpret the data by applying various normalization techniques such as 1NF, 2NF and 3NF to reduce redundancy in database tables. | 12Marks | L3 | CO2 | PO2 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|

UNIT-IV

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|----|-----------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Define term ACID properties. Apply strict two-phase locking technique for serial execution and interleaved execution. | 12 Marks | L3 | CO5 | PO5 |
|----|-----------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

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|----|------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 8. | Discover the steps used in ARIES while recovering the system from crash. Inspect the goal of analysis phase, redo phase, and undo phase. | 12 Marks | L3 | CO5 | PO5 |
|----|------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

UNIT-V

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|----|-------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | Identify how data can be stored on external storage devices. Illustrate the importance of magnetic disks with a neat diagram. | 12 Marks | L3 | CO2 | PO2 |
|----|-------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

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|-----|------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 10. | How the data is organized in a hash-based and tree-based indexing? Elaborate on hash based indexing and tree-based indexing. | 12 Marks | L2 | CO2 | PO2 |
|-----|------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

M.C.A. I Semester (SVEC-20) Supplementary Examinations, March – 2023

DATA STRUCTURES AND ALGORITHMS

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|----|---------------------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) Illustrate the bubble sort with algorithm. | 6 Marks | L3 | CO2 | PO5 |
| | b) Explain the following with examples:
i) Space Complexity ii) Time complexity | 6 Marks | L2 | CO1 | PO1 |

(OR)

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|----|-------------------------------------------------------|----------|----|-----|-----|
| 2. | Write a program to implement binary search algorithm. | 12 Marks | L3 | CO2 | PO5 |
|----|-------------------------------------------------------|----------|----|-----|-----|

UNIT-II

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|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Write a program to represent a Sparse matrix using a linked list. | 12 Marks | L3 | CO3 | PO3 |
| | (OR) | | | | |
| 4. | Write a program to concatenate two single linked lists i.e., list1 and list2. The resultant list list3 should contain elements from list2 followed by list1. | 12 Marks | L4 | CO3 | PO3 |

UNIT-III

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|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Convert the following infix expression to postfix expression:
$((a + ((b \wedge c) - d)) * (e - (a / c)))$.
Note: Assume \wedge as an exponentiation operator | 6 Marks | L3 | CO4 | PO3 |
| | b) Write a program to check whether a string is palindrome or not using stacks. | 6 Marks | L3 | CO4 | PO5 |

(OR)

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|----|---------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Explain in detail different operations performed on Deque. | 6 Marks | L2 | CO4 | PO1 |
| | b) Name the major drawbacks of a linear queue. How to overcome drawbacks of a linear queue. | 6 Marks | L2 | CO4 | PO1 |

UNIT-IV

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|----|----------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Describe the process of inserting and deleting a node from an AVL tree with proper illustrations. | 12 Marks | L2 | CO5 | PO2 |
| | (OR) | | | | |
| 8. | a) Construct a binary tree using the following traversals:
Postorder : A B D J K E C F H I G L
Inorder : J K D B E A H I F C G L | 6 Marks | L3 | CO5 | PO5 |
| | b) Differentiate max-heap and min-heap and write a program to implement max-heap operations. | 6 Marks | L4 | CO5 | PO2 |

UNIT-V

- | | | | | | |
|-----|-------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | Demonstrate insertion operation in B-tree of order 3 by using the following keys: {23,46,57,89,3,4,67,194,45,2,8} | 12 Marks | L3 | CO5 | PO2 |
| | (OR) | | | | |
| 10. | a) Write a program to implement Depth First Search Algorithm. | 8 Marks | L4 | CO5 | PO5 |
| | b) Differentiate B-tree and B+ tree along with examples. | 4 Marks | L4 | CO5 | PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

M.C.A. II Semester (SVEC-20) Supplementary Examinations March – 2023**FINANCIAL AND MANAGEMENT ACCOUNTING**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Distinguish between Double entry book keeping and Accounting. 12 Marks L2 CO1 PO2
(OR)
2. Following information is related to a trader. You are required to prepare a trial balance as on 31-12-2020. 12 Marks L3 CO2 PO3
Purchases – 122000, purchase returns – 2000, cash in hand – 18000, cash at bank – 25000, salaries – 3000, advertisement – 2000, debtors – 30000, creditors – 25000, capital – 50000, sales – 125000.

UNIT-II

3. From the following balances of Balaji paints prepare Trading Account, Profit and Loss Account for the year ending 31st December 2019 and Balance sheet as on the date. 12 Marks L3 CO2 PO3

Particulars	Rs.	Particulars	Rs.
Purchases	1,40,000	Commission Received	10,000
Sales	2,88,000	Debtors	50,000
Opening Stock	30,000	Salaries	48,000
Machinery	80,000	Insurance	12,000
Cash	20,000	Buildings	1,50,000
Creditors	5,000	Bills Payable	20,000
Wages	30,000	Furniture	5,000
Printing & Stationary	7,000	Interest received	8,000
Capital	2,50,000	Patents	40,000
Factory Rent	3,000	Bank overdraft	34,000

Adjustments:

- i) Closing stock Rs 55,000.
- ii) Outstanding printing charges Rs. 3,000.
- iii) Insurance paid in advance Rs. 2,000.
- iv) Unpaid wages Rs. 5,000.

(OR)

4. Describe various steps involved in preparation of final accounts. 12 Marks L2 CO1 PO2

UNIT-III

5. Comment on liquidity ratios with your own example. 12 Marks L2 CO1 PO2

(OR)

6. The Balance Sheet as on 2018 and 2019 are as under:

12 Marks L3 CO2 PO3

Liabilities	2018	2019	Assets	2018	2019
Equity share capital	1,00,000	1,25,000	Land and Buildings	50,000	75,000
General Reserve	12,500	15,000	Plant	57,500	55,000
Profit & Loss A/c	10,000	7,500	Machinery	10,000	12,500
Creditors	5,000	6,250	Stock	7,500	10,000
Bills payable	3,750	7,500	Debtors	5,000	7,500
O/s. Expenses	1,250	3,750	Cash & Bank	2,500	5,000
Provident Fund	7,500	5,000	Bills Receivable	7,500	5,000
	1,40,000	1,70,000	Preliminary Exp.	1,40,000	1,70,000

Profit & Loss A/c.

Particulars	2018	2019	Particulars	2018	2019
To Op. Stock	5,000	10,000	By Sales	62,500	1,12,500
To Purchase	37,500	47,500	By Closing Stock	10,000	12,500
To Office Exp.	7,500	10,000	By Profit on Sale of Furniture	2,500	—
To Selling exp.	2,500	15,000			
To Fin. Exp.	17,500	30,000			
To Net Profit	75,000	1,25,000		75,000	1,25,000

Find out i) Current Ratio ii) Stock Turnover Ratio
iii) Gross Profit Ratio iv) Liquid Ratio

UNIT-IV

7. A company makes a single product with a sales price of Rs 10 and a variable cost of Rs 6 per unit, fixed costs are Rs 60000. Calculate

12 Marks L3 CO2 PO3

- Number units to Break even.
- Sales at Break even.
- Contribution to sales ratio in terms of percentage.
- What number of units will need to be sold to achieve a profit of Rs. 10000?
- If an increase in the fixed cost by Rs 10000 per annum and increase in the variable cost by Rs.2, what will be the new BEP in units?

(OR)

8. Explain the following concepts: i) Make or buy decision, ii) add or drop decision and iii) Choosing the product mix with one limiting factor.

12 Marks L2 CO1 PO2

UNIT-V

9. Write short notes on:

12 Marks L2 CO1 PO2

- Payback period method and.
- Accounting rate of return method.

(OR)

10. Two proposals costing Rs 100000 and 150000 are under consideration. The company wants to earn atleast 6% on its investment. Rate the projects under NPV.

12 Marks L3 CO2 PO3

Year/proposal	Proposal 1	Proposal 2
1	80000	110000
2	95000	145000
3	105000	122000
4	135000	82000
5	98000	165000



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC-20) Supplementary Examinations March – 2023**DATA WAREHOUSING AND DATA MINING**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 1. | What are the steps in implementing a Datamart? List out advantages and disadvantages of a Datamart. | 12 Marks | L2 | CO1 | PO1
PO2 |
|----|-----------------------------------------------------------------------------------------------------|----------|----|-----|------------|

(OR)

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|----|-------------------------------------------------------|----------|----|-----|-----|
| 2. | Demonstrate snowflake and fact constellation schemas. | 12 Marks | L3 | CO1 | PO1 |
|----|-------------------------------------------------------|----------|----|-----|-----|

UNIT-II

- | | | | | | |
|----|---------------------------------------------------------|----------|----|-----|-----|
| 3. | Explain in detail about functionalities of data mining. | 12 Marks | L2 | CO4 | PO2 |
|----|---------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------|----------|----|-----|------------|
| 4. | Explain in detail about various methods for data normalization. | 12 Marks | L1 | CO4 | PO1
PO2 |
|----|-----------------------------------------------------------------|----------|----|-----|------------|

UNIT-III

- | | | | | | |
|----|--------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 5. | Apply an FP-growth algorithm and generate frequent item sets from FP-tree with an example. | 12 Marks | L3 | CO2 | PO1
PO3 |
|----|--------------------------------------------------------------------------------------------|----------|----|-----|------------|

(OR)

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|----|------------------------------------------------------------------------------------|----------|----|-----|------------|
| 6. | Define classification. Illustrate rule-based classification with suitable example. | 12 Marks | L3 | CO2 | PO1
PO2 |
|----|------------------------------------------------------------------------------------|----------|----|-----|------------|

UNIT-IV

- | | | | | | |
|----|---------------------------------------------------|----------|----|-----|------------|
| 7. | Discuss in detail about DBSCAN clustering method. | 12 Marks | L3 | CO3 | PO1
PO3 |
|----|---------------------------------------------------|----------|----|-----|------------|

(OR)

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|----|---------------------------------------------------------------|----------|----|-----|------------|
| 8. | Apply K-means clustering technique by using suitable dataset. | 12 Marks | L3 | CO3 | PO1
PO2 |
|----|---------------------------------------------------------------|----------|----|-----|------------|

UNIT-V

- | | | | | | |
|----|---------------------------------------|----------|----|-----|------------|
| 9. | Write in detail about spatial mining. | 12 Marks | L1 | CO4 | PO2
PO3 |
|----|---------------------------------------|----------|----|-----|------------|

(OR)

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|-----|---------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 10. | Write a brief note on web mining? Illustrate different mining methods used in web database. | 12 Marks | L4 | CO4 | PO1 |
|-----|---------------------------------------------------------------------------------------------|----------|----|-----|-----|



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC-20) Supplementary Examinations, March -2023**OBJECT ORIENTED PROGRAMMING THROUGH JAVA**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

1. Develop Java class for below case study. 12 Marks L4 CO3 PO5
A timer having properties like hour.min and seconds and support methods like getHour(), setHour(), getMin(), setMin(), getSecond() and setSecond().
- (OR)**
2. Enlighten below in short descriptions. 12 Marks L3 CO1 PO1 PO3
i) Garbage collector.
ii) Class.
iii) Object.

UNIT-II

3. a) Implement “Dynamic Method Dispatch” using simple java program. 6 Marks L4 CO3 PO4
b) Define Package. Explain importing packages concept with an example. 6 Marks L3 CO1 PO2 PO3
- (OR)**
4. Implement interfaces with suitable example. 12 Marks L4 CO3 PO2 PO3

UNIT-III

5. Identify the importance of Scanner class and illustrate with an example. 12 Marks L2 CO1 PO2 PO3
- (OR)**
6. Elaborate character stream input output operations with example java program. 12 Marks L3 CO3 PO2 PO3

UNIT-IV

7. Defend “exceptions are backbone of any robust object oriented programming” with example. 12 Marks L3 CO4 PO2 PO3
- (OR)**
8. Discuss inter thread communication. 12 Marks L3 CO1 PO2 PO3

UNIT-V

9. What is Event delegation model? Investigate Sources of event. 12 Marks L2 CO4 PO2 PO3
- (OR)**
10. Design AWT/Swing GUI Application using any three GUI components. 12 Marks L3 CO3 PO2 PO5



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. II Semester (SVEC-20) Supplementary Examinations, March – 2023**CRYPTOGRAPHY AND NETWORK SECURITY**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

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|-------------|--------------------------------------------------------|----------|----|-----|-----|
| 1. | Describe attack surfaces and attack trees. | 12 Marks | L2 | CO1 | PO1 |
| (OR) | | | | | |
| 2. | a) Design the Play fair Cipher scheme with an example. | 6 Marks | L3 | CO1 | PO3 |
| | b) Illustrate various security attacks. | 6 Marks | L3 | CO1 | PO1 |

UNIT-II

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|-------------|---------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Analyze the structure of Feistel cipher encryption and decryption | 6 Marks | L3 | CO1 | PO2 |
| | b) Mention the strength and weakness of DES. | 6 Marks | L1 | CO1 | PO1 |
| (OR) | | | | | |
| 4. | a) Write the RSA algorithm and perform encryption and decryption using the RSA algorithm for $p=5; q=11; e=3$ and $m=9$. | 6 Marks | L3 | CO3 | PO3 |
| | b) Write Diffie-Hellman Key exchange algorithm and explain with an example. | 6 Marks | L2 | CO3 | PO3 |

UNIT-III

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|-------------|--------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | Examine the Secure Hash Algorithm. | 12 Marks | L4 | CO3 | PO4 |
| (OR) | | | | | |
| 6. | a) Explain the Distribution of Public keys. | 6 Marks | L2 | CO3 | PO1 |
| | b) Design X.509 Certificate frame format and Revocation of the certification format. | 6 Marks | L3 | CO3 | PO3 |

UNIT-IV

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|-------------|-----------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Illustrate the Operational description and implementation of PGP. | 12 Marks | L3 | CO2 | PO5 |
| (OR) | | | | | |
| 8. | Sketch Authentication Header (AH) and Encapsulation Security Payload (ESP) frame format with explanation. | 12 Marks | L2 | CO2 | PO3 |

UNIT-V

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|-------------|-----------------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) List various issues in Trusted Systems. | 4 Marks | L1 | CO4 | PO1 |
| | b) With a neat sketch, illustrate the typical steps in digital immune system operation. | 8 Marks | L3 | CO4 | PO5 |
| (OR) | | | | | |
| 10. | a) Define a Firewall. Examine the Packet Filtering firewall. | 6 Marks | L4 | CO4 | PO2 |
| | b) Explain Secure Electronic Transaction (SET). | 6 Marks | L2 | CO4 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC-20) Regular/Supplementary Examinations March – 2023**CLOUD COMPUTING**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks**UNIT-I**

- | | | | | | |
|-------------|------------------------------------------------------|----------|----|-----|-----|
| 1. | Discuss about Goals and Benefits of cloud computing. | 12 Marks | L1 | CO1 | PO1 |
| (OR) | | | | | |
| 2. | Explain about cloud characteristics in detail. | 12 Marks | L1 | CO1 | PO2 |

UNIT-II

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|-------------|--------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Describe the following technologies:
i) Web technology
ii) Data Center technology | 12 Marks | L1 | CO1 | PO1 |
| (OR) | | | | | |
| 4. | How Resource Pooling, Dynamic Scalability achieved in cloud environment Discuss in detail. | 12 Marks | L2 | CO4 | PO3 |

UNIT-III

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|-------------|------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | How can the provisioning of IT resources be automated and made available to cloud consumer's on-demand? | 12 Marks | L4 | CO4 | PO4 |
| (OR) | | | | | |
| 6. | Illustrate about Hypervisor Clustering and Load Balanced Virtual. Server Instances Architecture in detail. | 12 Marks | L3 | CO2 | PO5 |

UNIT-IV

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|-------------|-----------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Discuss about Security Controls, Security Mechanisms, and policies in cloud environment. | 12 Marks | L2 | CO5 | PO5 |
| (OR) | | | | | |
| 8. | Write a short note on the following:
i) Public Key Infrastructure.
ii) Cloud-Based Security Groups. | 12 Marks | L1 | CO5 | PO6 |

UNIT-V

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|-------------|------------------------------------------------------------|----------|----|-----|-----|
| 9. | Discuss about Google App Engine, MS-Azure and IBM Bluemix. | 12 Marks | L2 | CO3 | PO4 |
| (OR) | | | | | |
| 10. | Differentiate between Amazon EC2, Amazon S3 and Netflix. | 12 Marks | L2 | CO3 | PO4 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC-20) Regular/Supplementary Examinations March – 2023**DATA ANALYTICS**

Time: 3 hours

Max. Marks: 60

**Answer One Question from each Unit
All questions carry equal marks****UNIT-I**

- | | | | | | |
|----|--------------------------------------------------|----------|----|-----|-----|
| 1. | Explain all phases of Data Analytics life cycle. | 12 Marks | L3 | CO1 | PO3 |
| | (OR) | | | | |
| 2. | a) Discuss the concept of Apache Hadoop . | 6 Marks | L2 | CO1 | PO1 |
| | b) Explain the concept of Hadoop EcoSystem. | 6 Marks | L3 | CO1 | PO3 |

UNIT-II

- | | | | | | |
|----|------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Explain the Hadoop Input and output concepts with example. | 12 Marks | L3 | CO2 | PO3 |
| | (OR) | | | | |
| | i) Data Integrity. | | | | |
| | ii) Compression. | | | | |
| 4. | Define HDFS. Discuss the HDFS Architecture and HDFS basic Commands in brief. | 12 Marks | L2 | CO2 | PO2 |

UNIT-III

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|----|---------------------------------------------------------------|----------|----|-----|-----|
| 5. | Explain the function of following terms: | 12 Marks | L3 | CO3 | PO3 |
| | i) Mapper ii) Reducer iii) combiner | | | | |
| | (OR) | | | | |
| 6. | Discuss the workflow in a basic word count MapReduce program. | 12 Marks | L2 | CO3 | PO2 |

UNIT-IV

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|----|---------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Distinguish various built-in counters in Hadoop. | 12 Marks | L2 | CO4 | PO4 |
| | (OR) | | | | |
| 8. | Discuss different Applications on Big Data Using Hadoop with real time example. | 12 Marks | L1 | CO4 | PO1 |

UNIT-V

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|-----|--------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) Write the Hive command to create a table with four columns: First name, last name, age, and Gender. | 6 Marks | L2 | CO5 | PO5 |
| | b) Explain different operators in Hive QL. | 6 Marks | L3 | CO5 | PO3 |
| | (OR) | | | | |
| 10. | a) How Apache Hive is different with traditional Database. | 6 Marks | L2 | CO5 | PO1 |
| | b) Explain the aggregate functions in Apache Hive. | 6 Marks | L3 | CO5 | PO4 |



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC-20) Regular/Supplementary Examinations March – 2023

WEB PROGRAMMING

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|-------------|-------------------------------------------------------------------------------|----------|----|-----|-----|
| 1. | a) Implement a simple website with two pages which includes tables and forms. | 6 Marks | L3 | CO2 | PO3 |
| | b) Describe the usage of fonts, boxes and back ground images in CSS. | 6 Marks | L1 | CO1 | PO1 |
| (OR) | | | | | |
| 2. | Explain in detail about the various formatting tags in HTML5 with example. | 12 Marks | L2 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|-------------|------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Write a JavaScript to find sum of the first n even numbers and display the result. | 12 Marks | L3 | CO2 | PO3 |
| (OR) | | | | | |
| 4. | a) Explain the use of AJAX. | 6 Marks | L2 | CO1 | PO1 |
| | b) Describe Event capturing and buttons with example. | 6 Marks | L1 | CO1 | PO1 |

UNIT-III

- | | | | | | |
|-------------|-------------------------------------------------------------|----------|----|-----|-----|
| 5. | Describe the steps to create a simple Servlet with example. | 12 Marks | L1 | CO4 | PO1 |
| (OR) | | | | | |
| 6. | a) Differentiate ServletConfig and ServletContext. | 6 Marks | L4 | CO1 | PO1 |
| | b) List out the steps to connect to the database in Java. | 6 Marks | L1 | CO2 | PO2 |

UNIT-IV

- | | | | | | |
|-------------|------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 7. | Describe the life cycle phases of JSP with examples. | 12 Marks | L1 | CO4 | PO2 |
| (OR) | | | | | |
| 8. | Implement a JSP program calculates factorial values for an integer number, while the input is taken from an HTML form. | 12 Marks | L3 | CO6 | PO3
PO4 |

UNIT-V

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|-------------|---------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) Explain in detail about multidimensional array in PHP with example. | 6 Marks | L2 | CO3 | PO2 |
| | b) Implement a program to connect PHP Webpage with MySQL. | 6 Marks | L3 | CO3 | PO3 |
| (OR) | | | | | |
| 10. | a) Explain in detail about any five data manipulation functions in MySQL. | 6 Marks | L2 | CO3 | PO2 |
| | b) Define Cookie. How to set and delete Cookie in PHP? | 6 Marks | L1 | CO5 | PO1 |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. III Semester (SVEC-20) Regular Examinations March – 2023**ARTIFICIAL INTELLIGENCE**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|----|---------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) Explain some of the Task Domains of Artificial Intelligence in detail. | 6 Marks | L2 | CO1 | PO2 |
| | b) Illustrate 8-puzzle problem with neat diagram. | 6 Marks | L3 | CO1 | PO3 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Discuss different kind of techniques useful for solving AI Problems. | 6 Marks | L2 | CO1 | PO2 |
| | b) Describe travelling salesman problem. | 6 Marks | L2 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|----|---------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Explain A* algorithm with an example. | 6 Marks | L2 | CO2 | PO2 |
| | b) Demonstrate Depth First Search algorithms with suitable example. | 6 Marks | L3 | CO2 | PO3 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Illustrate the concept of steepest ascent hill climbing algorithm. | 6 Marks | L3 | CO2 | PO3 |
| | b) Describe the Best First search algorithm with an example. | 6 Marks | L2 | CO2 | PO2 |

UNIT-III

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Illustrate various components of the knowledge based agents in detail. | 6 Marks | L3 | CO3 | PO3 |
| | b) Discuss how backward chaining procedure is used in drawing inferences with the help of an example. | 6 Marks | L2 | CO3 | PO2 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Consider the following sentences:
<ul style="list-style-type: none"> • John likes all kinds of food. • Apples are food. • Chicken is food. • Anything anyone eats and isn't killed by is food. • Bill eats peanuts and is still alive. • Sue eats everything Bill eats. | 6 Marks | L4 | CO3 | PO5 |
| | i) Translate these sentences into formulas in FOPC. | | | | |
| | ii) Convert the formulas into clause form. | | | | |
| | b) Using the data given 6a. solve the following | 6 Marks | L4 | CO3 | PO3 |
| | i) Use resolution to prove that John likes peanuts. | | | | |
| | ii) Use resolution to answer the question, "What food does Sue eat?" | | | | |

UNIT-IV

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Illustrate the concept of rule based system with an example. | 6 Marks | L3 | CO4 | PO3 |
| | b) Describe knowledge representation in Sales advisory-consultative situation in buying a complex technical product. | 6 Marks | L2 | CO4 | PO2 |

(OR)

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) Write a short note on ontological engineering. | 6 Marks | L1 | CO4 | PO3 |
| | b) Define how fuzzy logic can be used to represent the list of propositions for ex: John is very ill, Mary is slightly ill, Sue and Linda are close friends. | 6 Marks | L1 | CO4 | PO2 |

UNIT-V

9. a) Outline the syntax and semantics of Genetic Algorithm with the help of an example. Illustrate the Crossover and Mutation operators. Highlight the need for fitness function and stopping criteria. 6 Marks L1 CO5 PO2
- b) Describe bagging and boosting techniques in ensemble learning and explain its importance. 6 Marks L2 CO5 PO2

(OR)

10. a) Illustrate the concept of evolutionary computation. 6 Marks L3 CO5 PO3
- b) Explain the importance of entropy and information gain while generating the decision tree. 6 Marks L2 CO5 PO2



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

M.C.A. III Semester (SVEC-20) Regular Examinations March – 2023

FULL STACK DEVELOPMENT

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- 1. a) Create an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next in the list. Add CSS to customize the properties of the font of the capital (color, bold and font size). 6 Marks L1 CO1 PO1
- b) Create a web page for COURSE REGISTRATION with following fields. 6 Marks L5 CO1 PO3
 Roll No (text box) ,Name(Text Box),Course ID(text box), Course Name(drop down list), Number of Credits(1-4)(drop down list) ,semester (I to 8)(drop down list) and Year (2-4) (drop down list) along with submit and reset buttons.

(OR)

- 2. a) Develop a HTML program to create a static webpage using List and Nested List. 6 Marks L2 CO1 PO2
- b) Create a web page as shown below: 6 Marks L3 CO1 PO3

Pizza Shop 2.0	
Name	<input style="width: 95%;" type="text"/>
Pizza Topping	<input type="radio"/> Supreme <input type="radio"/> Vegetarian <input type="radio"/> Hawaiian
Pizza Sauce	<input type="text" value="Tomato"/>
Optional Extras	<input type="checkbox"/> Extra Cheese <input type="checkbox"/> Gluten Free Base
Delivery Instructions:	
<div style="border: 1px solid black; width: 100%; height: 100%;"></div>	
<input type="button" value="Send my Order"/>	

UNIT-II

- 3. a) Build a java script that read four integers and display the largest and smallest integers from the given integers. 6 Marks L3 CO1 PO4
- b) Build a JavaScript which accepts the text in lower case and displays the text in uppercase. 6 Marks L4 CO1 PO5

(OR)

- 4. a) Demonstrate any three objects of JavaScript with examples 7 Marks L2 CO3 PO5
- b) List out the methods of Window Object Model with an example. 5 Marks L5 CO3 PO1

UNIT-III

5. a) List and explain the features of ReactJS. 5 Marks L2 CO3 PO1
b) Illustrate the ways of creation of App in ReactJS. 7 Marks L3 CO3 PO3

(OR)

6. Demonstrate Router in ReactJS. Steps to create project in ReactJS with example program. 12 Marks L2 CO3 PO1

UNIT-IV

7. Demonstrate NodeJS project directory structure with example. 12 Marks L2 CO2 PO3

(OR)

8. List different types of modules in NodeJS With example. 12 Marks L2 CO2 PO3

UNIT-V

9. a) Differentiate between advantages and disadvantages of MongoDB. 6 Marks L2 CO4 PO1
b) Demonstrate steps to create migration of data in MongoDB. 6 Marks L1 CO4 PO1

(OR)

10. Develop a program to demonstrate the steps of Database connectivity with select command using MongoDB. 12 Marks L2 CO4 PO2



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2023

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) Construct truth table for $p \wedge (q \rightarrow p)$. | 2 Marks | L2 | CO1 |
| | b) Define well-formed formula with an example. | 2 Marks | L1 | CO1 |
| | c) Define partial order relation on a non-empty set. | 2 Marks | L1 | CO2 |
| | d) Find the power set of the set $A = \{0, 1, 2\}$. | 2 Marks | L2 | CO2 |
| | e) Check the commutative property of the binary operation $a * b = b$. | 2 Marks | L3 | CO3 |
| | f) State pigeon's hole principle. | 2 Marks | L2 | CO3 |
| | g) Define generating function with an example. | 2 Marks | L2 | CO4 |
| | h) Find first four terms of the sequence defined by the recurrence relation $a_n = 9a_{n-1}$, where $a_0 = 1$. | 2 Marks | L3 | CO4 |
| | i) Give an example of a regular graph but not complete. | 2 Marks | L3 | CO5 |
| | j) Define binary tree with an example. | 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 CNF and find CNF of $\neg(p \vee q) \leftrightarrow (p \vee q)$. | 8 Marks | L2 | CO1 |
| | b) Show that $(q \rightarrow (p \wedge \neg p)) \rightarrow (r \rightarrow (p \wedge \neg p))$ tautologically implies $(r \rightarrow q)$. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | |
|----|--------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) Show that $\neg p \rightarrow (q \rightarrow r)$ and $q \rightarrow (p \vee r)$ are logically equivalent. | 8 Marks | L3 | CO1 |
| | b) Obtain PDNF of $(\neg p \rightarrow) \wedge (q \leftrightarrow p)$. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Define | 8 Marks | L2 | CO2 |
| | i) Reflexive relation | | | |
| | ii) Transitive relation | | | |
| | iii) Anti-symmetric relation | | | |
| | iv) Irreflexive relation | | | |
| | with examples. | | | |
| | b) Draw Hasse diagram of the lattice (S_{45}, D) , where S_{45} is the set of all divisors of 45, D is the division order. | 8 Marks | L3 | CO2 |

(OR)

5. a) If f and g are function from R to R defined by $f(x) = x^2+1$ and $g(x)= x+2$, then find $f \circ g$, $g \circ f$, $f \circ f$ and $g \circ g$. 8 Marks L3 CO2
- b) If $X = \{1, 2, 3, 4\}$ $R = \{(1, 2), (1, 1), (2, 1), (3, 4), (2, 4)\}$ and $S = \{(2, 2), (3, 3), (4, 4), (1, 4), (4, 1), (3, 1)\}$, then find
i) R ii) S iii) RoS iv) SoR . 8 Marks L3 CO2

MODULE-III

6. a) If G is the set of real numbers except 1, for any $a, b \in G$, define $a * b = a + b - ab$, then prove that $(G, *)$ is an abelian group. 8 Marks L2 CO3
- b) Using mathematical induction, prove that $1 + 2 + 2^2 + \dots + 2^n = 2^{n+1} - 1$. 8 Marks L3 CO3

(OR)

7. a) Discuss an example a group but not commutative. 8 Marks L2 CO3
Discuss an example of an algebraic structure but not a semi-group.
- b) Let n be a positive integer. Then show that in any set of n consecutive integers there is exactly one divisible by n . 8 Marks L3 CO3

MODULE-IV

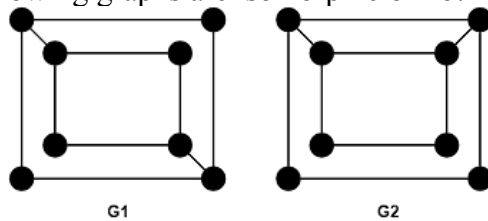
8. Find the complete solution of the recurrence relation 16 Marks L3 CO4
 $a_n = 7a_{n-1} - 16a_{n-2} + 12a_{n-3} + n4^n$, where
 $a_0 = -2, a_1 = 0$ and $a_2 = 5$.

(OR)

9. a) Solve the recurrence relation $a_n = 6a_{n-1} - 11a_{n-2} + 6a_{n-3}$, where 8 Marks L3 CO4
 $a_0 = 2, a_1 = 5$ and $a_2 = 15$.
- b) Find the quotient of x^{10} in the power series of $\frac{1}{(1+x)^2}$. 8 Marks L3 CO4

MODULE-V

10. a) Check, the following graphs are isomorphic or not 8 Marks L4 CO5



- b) State and prove the handshake lemma. 8 Marks L2 CO5

(OR)

11. a) Define the following with examples. 8 Marks L3 CO5
i) Tree
ii) Shortest spanning tree
iii) Weighted graph
iv) Spanning tree
- b) Explain Depth First Search algorithm with an example. 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 – 2023

DATA STRUCTURES AND ALGORITHMS

[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) | Explain about Big Oh notation. | 2 Marks | L2 | CO1 |
| | b) | Define Space Complexity of algorithm. | 2 Marks | L2 | CO1 |
| | c) | Define a node of List. | 2 Marks | L1 | CO2 |
| | d) | Can we represent Queue using Linked list? Justify. | 2 Marks | L2 | CO2 |
| | e) | List the operations of a Queue. | 2 Marks | L1 | CO3 |
| | f) | Discuss any two applications of Stacks. | 2 Marks | L2 | CO3 |
| | g) | Define Heap Trees. | 2 Marks | L1 | CO4 |
| | h) | Specify the operations on an AVL tree. | 2 Marks | L2 | CO4 |
| | i) | Define m-way search trees. | 2 Marks | L2 | CO5 |
| | j) | Define chaining in hashing. | 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 importance of Data structures and need of Algorithm briefly. | 8 Marks | L1 | CO1 |
| | b) | Examine the performance of Binary Search with a routine and an example. | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | Explain how Time Complexity is calculated with suitable example. | 8 Marks | L2 | CO1 |
| | b) | Explain the procedure of Radix sort with suitable example. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|------|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Define sorted linked list and write a program for adding an element in sorted linked list. | 8 Marks | L2 | CO2 |
| | b) | Write the performance analysis of addition of polynomial. | 8 Marks | L3 | CO2 |
| (OR) | | | | | |
| 5. | a) | Write a program that remove nodes in the double ended linked list. | 8 Marks | L2 | CO2 |
| | b) | Discuss about how Circular linked list can be used in real time with an example. | 8 Marks | L3 | CO2 |

MODULE-III

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 6. | a) | Discuss the Stack implementation using Arrays with an example. | 8 Marks | L2 | CO3 |
| | b) | Elaborate linked list implementation of Circular Queue. | 8 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Can we use stacks for evaluating an arithmetic expression justify. | 8 Marks | L3 | CO3 |
| | b) | Discuss about the Priority Queue and where they can be applied. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Discuss about the importance Binary Search Trees and its applications . | 8 Marks | L2 | CO4 |
| | b) | Consider the following list of numbers 14, 15, 3, 8, 7, 18, 6, 5, 16, 4, 20, 16, 9, 1 4, 5. Using these numbers construct an AVL Tree. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Discuss about the Binary Tree Traversals with an example. | 8 Marks | L2 | CO4 |
| | b) | Give an algorithm for finding the Maximum element in binary tree without recursion. | 8 Marks | L3 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-----------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Discuss about Complexity of depth-first search with an example. | 8 Marks | L3 | CO5 |
| | b) | Define a hash function. What are the characteristics of good hash function? | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|----------------------------------------------------------|---------|----|-----|
| 11. | a) | Discuss about the Operations on B-trees with an example. | 8 Marks | L2 | CO5 |
| | b) | Define Hashing and discuss about Linear Open Addressing. | 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 – 2023

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)]

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 primitive and non-primitive data types in java. | 2 Marks | L1 | CO1 |
| | b) | Write a piece of code to access the members of a class. | 2 Marks | L1 | CO1 |
| | c) | What are access modifiers in java? | 2 Marks | L1 | CO1 |
| | d) | Explain the usage of ternary operator with example. | 2 Marks | L1 | CO1 |
| | e) | Define the implementation of Inheritance in java. | 2 Marks | L2 | CO2 |
| | f) | Differentiate between this() and super() in java. | 2 Marks | L2 | CO2 |
| | g) | Illustrate the types of exceptions in java | 2 Marks | L3 | CO2 |
| | h) | Differentiate between thread and process. | 2 Marks | L2 | CO3 |
| | i) | What is hashtable? Differentiate between hashtable and hashmap. | 2 Marks | L1 | CO4 |
| | j) | Write the different type of collections in java. | 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 main tasks of JVM? Explain the memory management in JVM. | 8 Marks | L1 | CO1 |
| | b) | Explain Methods in Java. Write a program using method with parameter & without parameter. | 8 Marks | L1 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | What is method overloading? Explain with a program. | 8 Marks | L1 | CO1 |
| | b) | Explain the need of object oriented programming language, by comparing with procedural languages. | 8 Marks | L1 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Demonstrate the concept constructor overloading with a program | 8 Marks | L2 | CO1 |
| | b) | Explain the significance access specifiers in inheritance with an example program. | 8 Marks | L1 | CO1 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Implement single level inheritance by writing a program, by taking suitable data. | 8 Marks | L2 | CO1 |
|----|----|-----------------------------------------------------------------------------------|---------|----|-----|

- b) Illustrate overloading and overriding using relationship between the classes, assuming that you have class 'Student' and a class 'B.Tech' which extends from 'Student'. 8 Marks L3 CO1

MODULE-III

6. a) Illustrate exceptions in Java; explain the types of exceptions with a program. 8 Marks L3 CO2
 b) Demonstrate built in exceptions; write suitable code to use built in exceptions. 8 Marks L2 CO2

(OR)

7. a) Differentiate between thread and process. Explain in detail. 8 Marks L2 CO2
 b) Explain how the keywords throw, throws finally are used with respect to exception. Write code to generate exception using throw 8 Marks L1 CO2

MODULE-IV

8. a) Explain with suitable code 8 Marks L1 CO3
 a) Linked list b) Vector
 b) Elaborate Constructors and Methods of an ArrayList class in java. 8 Marks L2 CO3

(OR)

9. a) Illustrate hierarchy of Collection Framework with neat diagram. 8 Marks L3 CO3
 b) Explain ArrayList class. Write a suitable program. 8 Marks L1 CO3

MODULE-V

10. a) Design an Applet that accepts two integers and display the sum and the difference of those integers. 8 Marks L2 CO4
 b) Swing is light weight! Justify your answer. And which method of swing is thread-safe? 8 Marks L1 CO4

(OR)

11. a) Elaborate Swing features in java. Differentiate Container and Component. 8 Marks L2 CO4
 b) Describe the different stages in the life cycle of an Applet. 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 – 2023

ENGINEERING CHEMISTRY

[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) | Differentiate between temporary and permanent hardness. | 2 Marks | L2 | CO1 |
| | b) | What is meant by softening of water? | 2 Marks | L1 | CO1 |
| | c) | Define conducting polymers and give example. | 2 Marks | L1 | CO2 |
| | d) | Give a few applications of nanomaterials | 2 Marks | L1 | CO2 |
| | e) | Define the emf of a cell. | 2 Marks | L1 | CO3 |
| | f) | What is a fuel cell? Give example. | 2 Marks | L1 | CO3 |
| | g) | What is the significance of spectroscopy? | 2 Marks | L2 | CO4 |
| | h) | State Beer-Lambert's Law. | 2 Marks | L1 | CO4 |
| | i) | How are lubricants advantageous? | 2 Marks | L2 | CO5 |
| | j) | Differentiate between flash and fire point. | 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 meant by external treatment of water? Explain the ion exchange process with a neat diagram. | 8 Marks | L3 | CO1 |
| | b) | Define potable water. What are the characteristics of potable water? | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | How is reverse osmosis employed for water purification? Explain. | 8 Marks | L3 | CO1 |
| | b) | Discuss the units of hardness. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|------|----|------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the mechanism of degradation of biodegradable polymers and mention their applications. | 8 Marks | L3 | CO2 |
| | b) | What are the general properties of engineering plastics? | 8 Marks | L2 | CO2 |
| (OR) | | | | | |
| 5. | a) | Describe the synthesis and properties of PMMA. | 8 Marks | L3 | CO2 |
| | b) | Comment on the size-dependent properties of nanomaterials. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What are the types of sensors? Explain about electrochemical sensors. | 8 Marks | L2 | CO3 |
| | b) | What is the working principle of solid oxide fuel cell and list out its uses? | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------|---------|----|-----|
| 7. | a) | Detail about lithium-ion batteries. | 8 Marks | L2 | CO3 |
| | b) | How are batteries classified? Give appropriate examples. | 8 Marks | L3 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|------------------------------------------------------------|---------|----|-----|
| 8. | a) | Write an explanatory note on Scanning electron microscopy. | 8 Marks | L2 | CO4 |
| | b) | Explain the types of energy present in molecules. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Discuss the working principle and applications of UV spectroscopy. | 8 Marks | L2 | CO4 |
| | b) | Why is X-ray diffraction used? | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|---------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Elaborate on the Bergius process for the preparation of synthetic petrol. | 8 Marks | L2 | CO5 |
| | b) | Explain the thick-film lubrication mechanism. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Compare solid, liquid and gaseous fuels. | 8 Marks | L3 | CO5 |
| | b) | What are the types of lubricants? Write a note on solid lubricants. | 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 – 2023

ENVIRONMENTAL SCIENCE

[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]

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) | Write briefly on desertification. | 2 Marks | L1 | CO1 |
| | c) | Define biological magnification | 2 Marks | L4 | CO2 |
| | d) | Discuss briefly public awareness. | 2 Marks | L1 | CO2 |
| | e) | Give an account of indoor pollution. | 2 Marks | L2 | CO3 |
| | f) | Write about World food problems. | 2 Marks | L2 | CO3 |
| | g) | What is meant by acid rain? | 2 Marks | L1 | CO4 |
| | h) | What are sustainable lifestyles? | 2 Marks | L2 | CO4 |
| | i) | Write about Wildlife Protection Act. | 2 Marks | L1 | CO5 |
| | j) | What do you mean by 'Doubling Time'? | 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 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) | Write a detailed note on the forest ecosystem, bringing out its functions. | 8 Marks | L2 | CO1 |
| | b) | How do forests get degraded and what is the outcome of deforestation? | 8 Marks | L1 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Classify and explain the aquatic ecosystem. | 8 Marks | L1 | CO2 |
| | b) | Explain in brief food chains and food webs, and their significance. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------|---------|----|-----|
| 5. | a) | Explain about Threats to biodiversity. | 8 Marks | L1 | CO2 |
| | b) | Explain about 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 L4 CO3

(OR)

7. a) Discuss adverse effects and control measures for noise pollution. 8 Marks L1 CO3
b) Explain about the causes, effects, and control measures of urban and solid waste. 8 Marks L3 CO3

MODULE-IV

8. a) Briefly explain the major impacts of acid rain. List and brief the measures to be taken to control it. 8 Marks L1 CO4
b) What are the different methods to propagate environmental awareness in the society? 8 Marks L1 CO4

(OR)

9. a) Explain about Urban problems related to energy. 8 Marks L2 CO4
b) Explain about Forest Conservation Act. 8 Marks L3 CO4

MODULE-V

10. a) What is meant by 'Population Explosion'? Discuss the Indian scenario. 8 Marks L2 CO5
b) Discuss the family welfare and family planning programs in Indian context. 8 Marks L4 CO5

(OR)

11. a) Discuss the role of information technology in environment and human health. 8 Marks L2 CO5
b) How would conduct a survey of solid waste pollution in a town? 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 – 2023

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) | Distinguish between urban and rural areas. | 2 Marks | L4 | CO1 |
| | b) | Why is infrastructure important for rural development? | 2 Marks | L2 | CO1 |
| | c) | Distinguish between non-conventional source and conventional source of energy. | 2 Marks | L4 | CO2 |
| | d) | List out various types of alternative sources of energy. | 2 Marks | L1 | CO2 |
| | e) | Mention building and construction technologies. | 2 Marks | L1 | CO3 |
| | f) | Define the term Totipotency. | 2 Marks | L1 | CO3 |
| | g) | Mention Drinking Water standards. | 2 Marks | L1 | CO4 |
| | h) | Give two reasons for rain water harvesting. | 2 Marks | L4 | CO4 |
| | i) | Expand the term SAGY. | 2 Marks | L1 | CO5 |
| | j) | State the role of Information Technology (IT) in rural areas. | 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 development of technology in India before and after Independence period. | 8 Marks | L2 | CO1 |
| | b) | What are the innovative technologies that are adopted in rural development? | 8 Marks | L4 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | State the objectives and functions of the NABARD. | 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) | Define energy and describe various types of alternative sources of energy. | 8 Marks | L2 | CO2 |
| | b) | Draw the sketch of solar heater and explain its working principle. | 8 Marks | L4 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Sketch biogas digester plant. Discuss the need for harvesting the biogas as an alternate source of energy in the view of sustainability. | 8 Marks | L2 | CO2 |
|----|----|------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|

- b) Explain the working principle of solar water pumps. How the implementation this technique in agriculture fields foster sustainability. 8 Marks L4 CO2

MODULE-III

6. a) Explain how food and agro based technologies gives empowerment to people who are living in rural areas. 8 Marks L5 CO3
 b) What are the various traditional and innovative technologies in building construction? Discuss briefly. 8 Marks L4 CO3

(OR)

7. a) Write notes on any two agro-based technologies that contribute to economic development of the villages. 8 Marks L5 CO3
 b) Justify the role of cottage industries in rural development. 8 Marks L4 CO3

MODULE-IV

8. a) In a village the ground water levels were dropped up to great depths. Suggest better techniques to increase the ground water levels by adopting rainwater harvesting technologies. 8 Marks L4 CO4
 b) Suggest the suitable water purification techniques to solve drinking water problems in rural areas. 8 Marks L3 CO4

(OR)

9. a) Write a detailed note on rain water harvesting. 8 Marks L4 CO4
 b) What is meant by apiculture? Explain opportunities present in apiculture. 8 Marks L3 CO4

MODULE-V

10. a) Discuss with a case study how the government schemes will effect on rural development 8 Marks L4 CO5
 b) Write a note on village adoptions 8 Marks L4 CO5
- (OR)**
11. a) State the role of private sector in provision of employment and education in rural areas. 8 Marks L2 CO5
 b) Explain how ICT is helpful to the people living in rural areas. 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 – 2023

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) | Find the value of base r if $(121)_r = (144)_8$. | 2 Marks | L1 | CO1 |
| | b) | How do you obtain the dual of an expression? | 2 Marks | L2 | CO1 |
| | c) | What is the difference between combinational circuit and a sequential circuit? | 2 Marks | L1 | CO2 |
| | d) | Give the characteristic equation of T-flip-flop. | 2 Marks | L2 | CO2 |
| | e) | Mention the drawbacks of ring counter. | 2 Marks | L1 | CO3 |
| | f) | What is a multiplexer? | 2 Marks | L2 | CO3 |
| | g) | Draw the state table of JK-flip-flop. | 2 Marks | L2 | CO4 |
| | h) | Mention the drawbacks of ring counter. | 2 Marks | L1 | CO4 |
| | i) | State De-Morgan's theorems. | 2 Marks | L2 | CO5 |
| | j) | Compare edge triggering and level triggering. | 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 procedure to convert a decimal number to an equivalent number in any number system with examples. | 8 Marks | L2 | CO1 |
| | b) | Perform the subtraction with the following unsigned binary numbers by taking the 1's Complement of the subtrahend.
i) 11110 – 10000 ii) 11010 – 1100 | 8 Marks | L2 | CO1 |
| | | (OR) | | | |
| 3. | a) | For the given binary numbers $A=101011$, $B=101$ perform $A+B$, $A-B$, $A*B$. | 8 Marks | L2 | CO1 |
| | b) | Simplify the expression $Y=(A+B'+C'+D)(A+B'+C+D')$ ($A'+B'+C'+D'$)($A+B+C+D$) and produce a logic circuit for the simplified expression. | 8 Marks | L1 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Simplify the following function and implement with logic gates
$F = \sum m(2, 4, 5, 7, 9, 10, 12)$. | 8 Marks | L2 | CO2 |
| | b) | Design a 3 bit odd and even parity generator using logic gates. | 8 Marks | L2 | CO2 |

(OR)

5. a) Design a Half adder and Full adder using appropriate logic gates. 8 Marks L1 CO2
 b) Simplify the Boolean function together with the don't care conditions in sum of products. 8 Marks L2 CO2

$$F(w,x,y,z) = \sum (0,1,2,3,7,8,10) + \sum (5,6,11,15)$$

MODULE-III

6. a) Demonstrate half adder and full adder using decoder and OR gates. 8 Marks L2 CO3
 b) Explain the operation of 2:4 decoder using logical circuit. 8 Marks L1 CO3

(OR)

7. a) Demonstrate and design 2-bit comparator with logic diagram. 8 Marks L2 CO3
 b) With the help of block diagram, explain working of JK-flip flop. 8 Marks L3 CO3

MODULE-IV

8. a) Explain clearly the working of a 4-bit binary-up counter with T flip-flop. Draw the logic diagram and give its excitation table. 8 Marks L2 CO4
 b) Illustrate the operation of BCD counter. 8 Marks L2 CO4

(OR)

9. a) Differentiate between Mealy and Moore models of sequential circuits. 8 Marks L1 CO4
 b) A ring counter is a shift register with the serial output connected to the serial input. Starting from an initial state of 1000, list the sequence of states of the four flip-flops after each shift. Beginning in state 10...0, how many states are there in the count sequence of an n-bit ring counter? 8 Marks L3 CO4

MODULE-V

10. a) Implement full adder using PLA model. 8 Marks L2 CO5
 b) Obtain the realization of 3 bit even parity generator using a PROM 8 Marks L3 CO5

(OR)

11. a) Design a PLA based logic circuit for $F = A'B + ABC' + AB + A'C'$ and $G = A'C + ABC + A'B'$. 8 Marks L2 CO5
 b) Explain in detail about PLA and PAL. 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 – 2023

PYTHON 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) | Define the scope and lifetime of a variable in Python. | 2 Marks | L1 | CO1 |
| | b) | List different data types available in Python. | 2 Marks | L1 | CO1 |
| | c) | List various loop statements with syntax. | 2 Marks | L1 | CO1 |
| | d) | Differentiate between break and continue statements. | 2 Marks | L4 | CO1 |
| | e) | What are the features of tuple data structure? | 2 Marks | L2 | CO1 |
| | f) | Summarize regular expressions for matching special characters. | 2 Marks | L2 | CO2 |
| | g) | What is the general form of lambda? | 2 Marks | L2 | CO3 |
| | h) | List different types of files. | 2 Marks | L1 | CO4 |
| | i) | Differentiate between class variables and instance variables | 2 Marks | L4 | CO5 |
| | j) | Explain the self-variable with an example. | 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 different operators with suitable examples. | 8 Marks | L2 | CO1 |
| | b) | Write a Python program to find if the given year is a leap year or not. | 8 Marks | L3 | CO1 |
| (OR) | | | | | |
| 3. | a) | Why is type conversion required? Discuss type conversion with examples. | 8 Marks | L2 | CO1 |
| | b) | Write a Python program to print the first 10 Fibonacci numbers. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Discuss the if, if-else, and if-elif-else statements with suitable examples. | 8 Marks | L2 | CO1 |
| | b) | Write a Python code to read the height of the person and print the output "Too Tall" if height is greater than equal to 7ft, "Tall" if height is greater than equal to 6ft and less than 7ft, and short if the height less than 5ft, and other range print "Normal Height" | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Describe the use of pass and else statements with loops with a suitable example. | 8 Marks | L2 | CO1 |
| | b) | Write a Python program that calculates the number of seconds in a day. | 8 Marks | L3 | CO1 |

MODULE-III

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Discuss exceptions with arguments in Python. | 8 Marks | L2 | CO1 |
| | b) | Write a Python program to read a string and print the number of vowels in the given string. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Write a Python program using regular expressions to find digits in the given string. | 8 Marks | L2 | CO2 |
| | b) | Write a Python program to illustrate the searching, and sorting operations on tuples. | 8 Marks | L3 | CO1 |

MODULE-IV

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Describe default arguments with a suitable program. | 8 Marks | L2 | CO3 |
| | b) | Write a function <code>displayContent()</code> in Python to read a file "myProject.txt", and display contents in upper case. | 8 Marks | L4 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain creating a class and objects in Python. | 8 Marks | L2 | CO3 |
| | b) | Write a Python program to print the first N prime numbers using recursion. | 8 Marks | L3 | CO3 |

MODULE-V

- | | | | | | |
|-----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Explain how to implement polymorphism in Python. | 8 Marks | L2 | CO5 |
| | b) | Create a Python class with two variables length and breadth of a room and a method that computes area. Illustrate the program operation with an example. | 8 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Discuss various types of exceptions with suitable examples. | 8 Marks | L2 | CO5 |
| | b) | Write a Python class with one variable that reads a number N and a method that checks whether the number is odd or not. Illustrate the program operation with an example. | 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 – 2023

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) | List any four dynamic characteristics of transducer. | 2 Marks | L1 | CO1 |
| | b) | Describe Accuracy and Precision. | 2 Marks | L2 | CO1 |
| | c) | List the applications of Piezoelectric Sensors. | 2 Marks | L1 | CO2 |
| | d) | State the working Principle of a Thermistor. | 2 Marks | L2 | CO2 |
| | e) | Which measurement can be carried out by Maxwell bridge? | 2 Marks | L1 | CO3 |
| | f) | State the advantages of using the bridge circuits for the measurement. | 2 Marks | L2 | CO3 |
| | g) | Specify the applications of wave analyzers. | 2 Marks | L1 | CO4 |
| | h) | What is the sweeper in oscilloscope? | 2 Marks | L2 | CO4 |
| | i) | Mention the controllers normally found on XY recorder. | 2 Marks | L1 | CO5 |
| | j) | List the advantages of LCD. | 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) | Give the types of AC Voltmeter and explain with related sketches. | 8 Marks | L2 | CO1 |
| | b) | How the range of DC voltmeter can be extended? Derive the expressions to calculate multiplier resistance | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Mention any four static characteristics of transducers and explain. | 8 Marks | L2 | CO1 |
| | b) | Specify the types of error and describe them in detail with examples. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the construction and principle of working of a LVDT. | 8 Marks | L2 | CO2 |
| | b) | Give the applications of ultrasonic sensors and explain the attenuation in ultrasonic sensor. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------|---------|----|-----|
| 5. | a) | What is RTD? Explain in detail. | 8 Marks | L2 | CO2 |
| | b) | Write the applications of resistive and capacitive sensors. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Derive the bridge balance condition for the Schering bridge. | 8 Marks | L2 | CO3 |
| | b) | Which method is used for high resistance measurement and explains the measurement procedure? | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain how the inductance is measured in terms of known capacitance using Maxwell's bridge. | 8 Marks | L2 | CO3 |
| | b) | With neat diagram explain in detail about Hay bridge. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain about the measurement of Amplitude, Frequency and Phase (Lissajous method) in CRO. | 8 Marks | L2 | CO4 |
| | b) | Draw the block diagram and explain the construction and working principle of oscilloscope. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Write in detail about Heterodyne Wave Analyzer. | 8 Marks | L2 | CO4 |
| | b) | Compare Analog storage oscilloscope and Digital Storage oscilloscope. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-------------------------------------------------------|---------|----|-----|
| 10. | a) | Discuss in detail about X-Y recorder. | 8 Marks | L2 | CO5 |
| | b) | Convert BCD to Seven Segment with necessary sketches. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|--------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain how to select the recorder for specific application. | 8 Marks | L2 | CO5 |
| | b) | How to implement digital data recording? Explain. | 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 – 2023

SEMICONDUCTOR DEVICES AND CIRCUITS

[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 drift and diffusion currents. | 2 Marks | L2 | CO1 |
| | b) | Draw the V-I characteristics of PN junction diode in forward and reverse biased condition. | 2 Marks | L1 | CO1 |
| | c) | Give the differences between series and shunt voltage regulator. | 2 Marks | L1 | CO2 |
| | d) | Explain Punch-through mechanism in transistor. | 2 Marks | L2 | CO3 |
| | e) | Draw the symbol of Schottky diode and give its applications. | 2 Marks | L1 | CO1 |
| | f) | Define and give the expression for stability factor of a self bias circuit. | 2 Marks | L2 | CO3 |
| | g) | What are the constraints of a practical diode? | 2 Marks | L2 | CO2 |
| | h) | What is meant by ripple factor? Give its expression. | 2 Marks | L1 | CO2 |
| | i) | What is meant by resonant frequency? | 2 Marks | L1 | CO4 |
| | j) | Write the differences between clippers and clampers. | 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) | What is meant by Mass-Action law in a Semi-conductor? Explain. | 8 Marks | L1 | CO1 |
| | b) | Write a Short note on charge-densities of a Semi-conductor. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------|----------|----|-----|
| 3. | a) | Derive the expressions for transition and diffusion capacitance. | 6 Marks | L2 | CO1 |
| | b) | Write detailed notes on operational mechanism of a Tunnel diode. | 10 Marks | L1 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Draw and explain the characteristics of Zener diode. | 8 Marks | L1 | CO2 |
| | b) | Compute efficiency and voltage regulation of a Half -Wave Rectifier. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|--|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 5. | | Explain positive and negative peak clippers with input and output waveforms for a reference voltage of 2V. Write the applications of clipper circuits. | 16 Marks | L3 | CO2 |
|----|--|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|

MODULE-III

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------|----------|----|-----|
| 6. | a) | Obtain the transistor amplifier model of a CE configuration using small signal analysis. | 10 Marks | L2 | CO3 |
| | b) | Explain which transistor configuration is preferred as efficient. Justify. | 6 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|--|-----------------------------------------------------------------------------------------------------------|----------|----|-----|
| 7. | | Demonstrate the bias compensation techniques in a transistor with neat diagrams and relevant expressions. | 16 Marks | L2 | CO3 |
|----|--|-----------------------------------------------------------------------------------------------------------|----------|----|-----|

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------------|----------|----|-----|
| 8. | a) | Explain the analysis of small signal model for CS amplifier circuit. | 10 Marks | L2 | CO3 |
| | b) | Draw the V-I characteristics of MOSFET. | 6 Marks | L1 | CO3 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------|----------|----|-----|
| 9. | a) | Demonstrate the source follower circuit and give its applications. | 10 Marks | L2 | CO3 |
| | b) | Give the classification of MOSFETs depending upon the construction type. | 6 Marks | L1 | CO3 |

MODULE-V

- | | | | | | |
|-----|----|----------------------------------------------------|----------|----|-----|
| 10. | a) | Explain the working of a basic oscillator circuit. | 6 Marks | L1 | CO4 |
| | b) | Explain in detail about RC feedback oscillators. | 10 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------------------------------------------------------|----------|----|-----|
| 11. | a) | Explain the working of a Wein bridge oscillator circuit with a neat diagram and relevant expressions. | 10 Marks | L1 | CO4 |
| | b) | Demonstrate Piezo-electric effect in oscillators. | 6 Marks | L2 | CO4 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2023

BASIC ELECTRICAL AND ELECTRONICS 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) Determine the total inductance of a parallel combination of 100mH, 50mH and 10mH. | 2 Marks | L3 | CO1 |
| | b) Define r.m.s and average value. | 2 Marks | L2 | CO1 |
| | c) What is the purpose of earthing? | 2 Marks | L2 | CO2 |
| | d) What is the function of relay? | 2 Marks | L2 | CO2 |
| | e) Why CFL and LED lamps are becoming more popular now-a-days? | 2 Marks | L2 | CO3 |
| | f) Identify the drawbacks of battery storage systems. | 2 Marks | L2 | CO3 |
| | g) What is the difference between sensor and transducer? | 2 Marks | L2 | CO4 |
| | h) What is the major difference between active and passive transducers? | 2 Marks | L2 | CO4 |
| | i) Draw the circuit diagram of half wave rectifier and wave forms. | 2 Marks | L2 | CO5 |
| | j) Draw adder using op-amp. | 2 Marks | L2 | CO5 |

PART - B

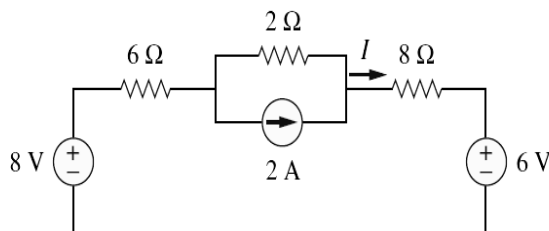
Answer One Question from each Module.

All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

- | | | | | |
|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 2. | a) Explain the difference between ideal and practical voltage sources and current sources. | 8 Marks | L2 | CO1 |
| | b) Find I in the circuit shown below. | 8 Marks | L4 | CO1 |



(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | A resistor of 10Ω , inductor of $0.06H$ and capacitor of $60\mu F$ are connected in series. A supply voltage $230V$, $50Hz$ is connected across the series combination. Calculate the following:
i) Impedance
ii) Current drawn by the circuit
iii) Phase difference and power factor. | 8 Marks | L4 | CO1 |
| | b) | Draw phasor representation of voltage and current vectors for R, L and C elements. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the construction details of the single-phase transformers. | 8 Marks | L2 | CO2 |
| | b) | List the applications of various types of motors. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain the working of stepper motor. | 8 Marks | L2 | CO2 |
| | b) | With neat diagram explain the working of Miniature circuit breaker and function of relay. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Two lamps one $200cp$ and another $500cp$ are hung at a height of $10m$ and $25m$ respectively. The horizontal distance between poles is $80m$ determine the illumination at the midpoint between the poles and the ground. | 8 Marks | L2 | CO3 |
| | b) | Draw the block diagram of UPS and explain the function of each component. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | List different types of batteries and explain the working of any one with neat internal diagram and required chemical equations. | 8 Marks | L2 | CO3 |
| | b) | Differentiate interior lighting and exterior lighting. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain the working of temperature sensor and voltage sensors. | 8 Marks | L2 | CO4 |
| | b) | Define transducer and list the basic requirements of transducers. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Describe the distance measurement using the ultrasound sensor. | 8 Marks | L2 | CO4 |
| | b) | Explain working and applications of the following:
i) Hall effect transducer
ii) Piezo electric transducer | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Explain the working of full wave bridge rectifier with neat circuit diagram and waveforms. | 8 Marks | L2 | CO5 |
| | b) | Explain:
i) Comparator and ii) Differentiator | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain inverting and non-inverting amplifiers. | 8 Marks | L2 | CO5 |
| | b) | Explain the block diagram of analog to digital converters. | 8 Marks | L2 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2023

NETWORK ANALYSIS

[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) State and explain the Thevenin's theorem. | 2 Marks | L1 | CO1 |
| | b) State the Maximum power transfer theorem. | 2 Marks | L1 | CO1 |
| | c) Mention the necessary conditions for an entire <u>3-phase system</u> to be balanced. | 2 Marks | L2 | CO2 |
| | d) How to measure power in three phase unbalanced load system. | 2 Marks | L2 | CO2 |
| | e) What are the differences between h-parameters and inverse h-parameters? | 2 Marks | L1 | CO3 |
| | f) Write the expressions for Y-parameters in terms of Z-Parameters for a two port network | 2 Marks | L2 | CO3 |
| | g) Find the expression for time constant of the series R-C circuit. | 2 Marks | L2 | CO4 |
| | h) Explain the significance of transient response. | 2 Marks | L1 | CO4 |
| | i) Mention the any two characteristic of the filters | 2 Marks | L1 | CO5 |
| | j) Define constant K low pass filter | 2 Marks | L1 | CO5 |

PART - B

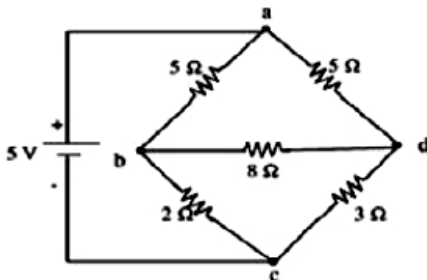
Answer One Question from each Module.

All Questions Carry Equal Marks

5 x 16 = 80 Marks

MODULE-I

- | | | | | |
|------|-------------------------------------------------------------------------------------------|---------|----|-----|
| 2. | a) Explain Thevenin's theorem with an example | 8 Marks | L1 | CO1 |
| | b) State and explain the Reciprocity theorem. | 8 Marks | L1 | CO1 |
| (OR) | | | | |
| 3. | a) Find the current through 8 Ω resistance for the network shown using Thevenin's theorem | 8 Marks | L3 | CO1 |



- | | | | | |
|----|---------------------------------------|---------|----|-----|
| b) | State and explain Milliman's theorem. | 8 Marks | L1 | CO1 |
|----|---------------------------------------|---------|----|-----|

MODULE-II

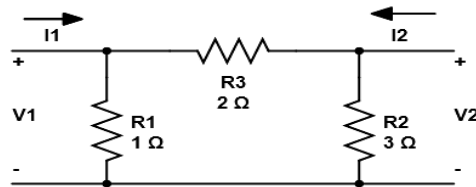
4. a) 8 Marks L2 CO2
- The three equal impedances of each of $10\angle 60^\circ$, are connected in star across a three-phase, 400 V, 50 Hz supply. Calculate the i) line voltage and phase voltage, ii) power factor and active power consumed.
- b) 8 Marks L2 CO2
- The two wattmeters are connected to measure the input power to a balanced 3-phase load by the two-wattmeter method. If the instrument readings are 8kW and 4kW, determine i) the total power input and ii) the load power factor.

(OR)

5. a) 8 Marks L2 CO2
- Draw the circuit for two wattmeter method of measurement of three-phase power and deduce the expressions.
- b) 8 Marks L2 CO2
- Calculate the total power and readings of the two wattmeter's connected to measure power in a three-phase balanced load, if the reactive power is 15 kVAR and load pf is 0.8 lagging.

MODULE-III

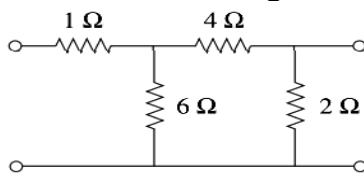
6. a) 8 Marks L3 CO3
- Find the y parameters of the two-port network shown in Fig. Determine the current in a 4Ω load, which is connected to the output port when a 2A source is applied at the input port.



- b) 8 Marks L1 CO3
- Explain the cascading of two port networks and derive the transmission parameters matrix.

(OR)

7. a) 8 Marks L3 CO3
- Find the Z- parameters for the following circuit.



- b) 8 Marks L1 CO3
- Why the Y-parameters are known as short circuit parameters?

MODULE-IV

8. a) 8 Marks L2 CO4
- Derive the expression for voltage across capacitance of a parallel R-C circuit excited with a sinusoidal current source at $t=0$.
- b) 8 Marks L2 CO4
- A parallel RLC circuit having an inductance of 10 mH and a capacitance of 100 μ F. Determine the resistor values that would lead to over damped and under damped responses.

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Derive the expression for $i(t)$ and voltage across capacitor $V_c(t)$ for series R-C circuit with D.C voltage applied to it at $t=0$. | 8 Marks | L2 | CO4 |
| | b) | Deduce the transient response source free series RC circuit. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Give the analysis for the design of constant-K band pass filter. | 8 Marks | L2 | CO5 |
| | b) | Design an m-derived p-section low-pass filter having cut-off frequency of 1500 Hz, design impedance of 500 Ω and infinite attenuation frequency of 2000 Hz. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | 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 | L2 | CO5 |
| | b) | Derive the expression for characteristic impedance in a pass band filter. | 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 – 2023

ENGLISH FOR PROFESSIONALS

[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) | Complete the statements using a suitable question tag. | 2 Marks | L2 | CO1 |
| | i) Rehana plays cricket very well, _____? | | | |
| | ii) Samyukta is a brilliant dancer, _____? | | | |
| b) | Fill in the blank using the correct article.
_____ Sun is _____ star. | 2 Marks | L1 | CO1 |
| c) | Write the meaning of the following Idiomatic expression.
A blessing in disguise | 2 Marks | L3 | CO2 |
| d) | Write the meaning of the following Idiomatic expression.
Beat around the bush | 2 Marks | L3 | CO2 |
| e) | Write the meaning of the following Idiomatic expression.
Break a leg | 2 Marks | L3 | CO2 |
| f) | Write the meaning of the following Idiomatic expression.
Let the cat out of the bag | 2 Marks | L3 | CO2 |
| g) | Write a one-word substitute for the following.
Certain to happen | 2 Marks | L2 | CO3 |
| h) | Write a one-word substitute for the following.
One who feeds on human flesh | 2 Marks | L2 | CO3 |
| i) | Complete the following If-Clause sentences using an appropriate verb form.
i) If he(run) a bit faster, he could have won.
ii) If I hadn't been so tired, I(not give) up. | 2 Marks | L2 | CO2 |
| j) | Complete the following If-Clause sentences using an appropriate verb form.
i) If she _____ (ask) me, I would have told her.
ii) If they are late, we _____ (start) without them. | 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) | Complete the following statements using correct question tags. | 8 Marks | L2 | CO1 |
| | i) Let's go out tonight, _____? | | | |
| | ii) Kate won't be late, _____? | | | |
| | iii) This isn't very interesting, _____? | | | |
| | iv) I'm too impatient, _____? | | | |
| | v) Katie's applied for a job, _____? | | | |
| | vi) He should not have lost his temper, _____? | | | |
| | vii) You're tired, _____? | | | |

- viii) Sue doesn't know Ann, _____?
- b) Differentiate Verbal and Non-Verbal communication with examples. 8 Marks L2 CO4

(OR)

3. a) Explain Active and Passive listening with examples. 8 Marks L2 CO1
 b) You have bought a new laptop on an online platform. Write a review of the product when you received it and then after using it for one month. 8 Marks L3 CO5

MODULE-II

4. a) Illustrate Intensive and Extensive Reading. 8 Marks L2 CO1
 b) Fill in the blanks using appropriate article. Write 'No Article' if no article is to be used. 8 Marks L2 CO2
- i) I don't listen to _____ radio a lot but I watch _____ television a lot.
 ii) Joe had _____ accident last week. He was taken to _____ hospital in Gachhiowli.
 iii) _____ English people usually drink a lot of tea. _____ English people I know drink a lot of coffee.
 iv) This morning I bought _____ newspaper and _____ magazine. _____ newspaper is in my bag, but I can't remember where I put _____ magazine.
 v) There are two cars parked outside: _____ blue one and _____ orange one. _____ blue one belongs to my neighbors; I don't know about _____ orange one.
 vi) _____ heart pumps _____ blood through the body.

(OR)

5. a) Write one word substitutes of the following 8 Marks L3 CO4
- i) Study of ancient things
 ii) Fear of closed spaces
 iii) A Self moving vehicle
 iv) Indefinite period of time
 v) Huge fire for celebration
 vi) A person who loves music
 vii) Government by elected representatives.
 viii) One who doesn't believe in the presence of God
- b) What type of communication channel should managers opt to carry out effective communication? Explain. 8 Marks L2 CO4

MODULE-III

6. a) Fill in the blanks with the correct tense of the Verb. 8 Marks L2 CO2
- i) At last the bus came. I _____ (wait) for 20 mins.
 ii) James is out of breath. He _____ (run).
 iii) It _____ (rain) when we went out.
 iv) I didn't know who she was. I _____ (see) her before.
 v) Was Tom there when you arrived? No He _____ (leave) already.
 vi) This is the first time I _____ (drive) a car.
 vii) Matt _____ (phone) while we _____ (have) dinner.
- b) What are communication barriers? Discuss any four communication barriers. 8 Marks L2 CO4

(OR)

7. a) Describe skimming and scanning with examples. 8 Marks L2 CO1
 b) Describe how Raman Effect was invented. 8 Marks L2 CO5

MODULE-IV

8. a) Define technology-based communication. Explain the following modes of technology-based communication. 8 Marks L3 CO4
i) Email
ii) Blogs
- b) You have won the young talent award. A college in your locality has invited you to give a speech advising and suggesting students prepare for competitive exams. Prepare your Speech. 8 Marks L3 CO1
- (OR)**
9. a) What is Intonation? How does it differ from statements and orders? 8 Marks L2 CO3
- b) Your neighbor is a tech-illiterate. Describe him how to open a Face book account and get connected to the world. 8 Marks L2 CO5

MODULE-V

10. a) Describe your job role as a student. 8 Marks L3 CO1
- b) Fill in the blanks in the following sentences with suitable modal verbs. 8 Marks L2 CO2
- i) Gary has traveled a lot. He ____ speak five languages.
- ii) I looked everywhere for the book, but I _____ find it.
- iii) You have been traveling all day. You _____ be tired.
- iv) I can't find my bag anywhere. I _____ have left it in the shop.
- v) I haven't decided yet where to go. I _____ go to Iceland.
- vi) If the pain gets worse, You'll _____ go to the doctor.
- vii) This is a secret, you _____ tell anyone.
- viii) _____ we invite Susan to the party!!! _____
- (OR)**
11. a) You are the student convenor of the upcoming fest in your college. Submit a proposal regarding the fest. 8 Marks L2 CO5
- b) Consider you are selling your mobile on an online platform. Write a detailed description of your phone and its specificities. 8 Marks L3 CO4



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2023

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) If 1,-2, 3 are the Eigen Values of the non-singular matrix then find the Eigen Values of A^2 . | 2 Marks | L1 | CO1 |
| | b) What is the rank of $A = \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$? | 2 Marks | L1 | CO1 |
| | c) The Eigen Values of the matrix are $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & -4 & 2 \\ 0 & 0 & 7 \end{bmatrix}$. | 2 Marks | L1 | CO2 |
| | d) Write the characteristic polynomial for the given matrix
$A = \begin{bmatrix} 5 & 2 \\ 2 & 1 \end{bmatrix}$. | 2 Marks | L1 | CO2 |
| | e) Write the Four fundamental subspaces of a matrix | 2 Marks | L1 | CO3 |
| | f) Define Linearly Independent. | 2 Marks | L1 | CO3 |
| | g) What is matrix linear transformation? | 2 Marks | L1 | CO3 |
| | h) What is range of linear transformation? | 2 Marks | L1 | CO3 |
| | i) Define inner product space. | 2 Marks | L1 | CO4 |
| | j) Define orthonormal basis. | 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) Solve the system of Equation $3x+2y-z=1, x-2y+z=0, 2x+y-3z=-1$ | 8 Marks | L1 | CO1 |
| | b) Find the solution for the following linear equations using Echelon form $x-2y+z=-1; 2x+y-3z=8; 4x-7y+z=-2$. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) Determine the values of λ so that the equations $x+y+z=1; x+2y+4z=\lambda; x+4y+10z=\lambda^2$ have solution and solve them completely in each case. | 8 Marks | L2 | CO1 |
| | b) Test for consistency for the given system of equations. If consistent then find the solution $2x + y + z = 5; x + y + z = 4; x - y + 2z = 1$. | 8 Marks | L1 | CO1 |

MODULE-II

4. a) Find the inverse of the matrix using Cayley Hamilton Theorem. 8 Marks L3 CO2

$$\begin{pmatrix} -1 & 2 & 0 \\ 1 & 1 & 0 \\ 2 & -1 & 2 \end{pmatrix}.$$

b) Find all eigen values and corresponding eigenvectors for the 8 Marks L3 CO2
matrix A if. $\begin{pmatrix} 2 & -3 & 0 \\ 2 & -5 & 0 \\ 0 & 0 & 3 \end{pmatrix}.$

(OR)

5. Show that the given matrix is diagonalizable $A = \begin{bmatrix} 2 & 6 \\ 0 & -1 \end{bmatrix}.$ 16 Marks L2 CO2

MODULE-III

6. a) If W is the subspace of $V_4(\mathbb{R})$ generated by the vectors (1,-2,5,-3), 8 Marks L2 CO3
(2,3,1,-4) and (3,8,-3,-5) then find a basis of W and its dimension.

b) Find the basis and dimension for the subspace of \mathbb{R}^3 spanned by 8 Marks L2 CO3
the vectors (2,7,3), (1,-1,0), (1,2,1) and (0,3,1).

(OR)

7. a) Show that the vectors (1, 2), (3, 4) form a basis of \mathbb{R}^2 . 8 Marks L4 CO3

b) Are the vectors $\mathbf{v}_1 = (4, 1, -2)$, $\mathbf{v}_2 = (-3, 0, 1)$, and $\mathbf{v}_3 = (1, -2, 1)$ 8 Marks L1 CO3
linearly independent?

MODULE-IV

8. a) If $T : \mathbb{R}_3 \rightarrow \mathbb{R}_3$ be a linear transformation defined by 8 Marks L2 CO3
 $T(x,y,z) = (x-y, y-z, z-x)$ then show that T is linear Transformation and find its rank.

b) Verify the rank-nullity theorem for the linear transformation 8 Marks L2 CO3
 $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ defined by $T(x,y,z) = (x-y, 2y+z, x+y+z)$.

(OR)

9. a) Find the kernel of the linear transformation $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ defined by 8 Marks L1 CO3
 $T(1,0) = (1,1)$ and $T(0,1) = (-1,2)$.

b) Find the null space of the linear transformation $T: \mathbb{R}^3 \rightarrow \mathbb{R}^2$ define 8 Marks L3 CO3
by $T(x,y,z) = (x+y, z)$.

MODULE-V

10. a) Find the unit vector corresponding to $(2-i, 3+2i, 2+\sqrt{3}i)$ of $V_3(\mathbb{C})$ 8 Marks L1 CO4
with respect to the standard inner product.

b) Let α, β, γ be three vectors in the inner product space $V_2(\mathbb{R})$ with 8 Marks L1 CO4
the standard inner product defined on it and $(\alpha, \gamma) = -1$, $(\beta, \gamma) = 3$. If $\alpha = (1,2)$, $\beta = (-1,1)$ then find γ .

(OR)

11. Let $V(\mathbb{C})$ be the vector space of all continuous complex valued 16 Marks L3 CO4
functions on $[0,1]$. If $f(t), g(t)$ in V then show that

$$(f(t), g(t)) = \int_0^1 f(t) \overline{g(t)} dt \text{ defines an inner product on } V(\mathbb{C}).$$



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2023

CALCULUS AND TRANSFORMATION TECHNIQUES

[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) | State Rolle's theorem. | 2 Marks | L1 | CO1 |
| b) | Write the Maclaurin's series for the function $f(x) = e^x$. | 2 Marks | L1 | CO1 |
| c) | Find $\frac{\partial f}{\partial x} + \frac{\partial f}{\partial y}$ for the function $f = x^2 + y$. | 2 Marks | L1 | CO2 |
| d) | Locate the stationary points of the function $f = 1 - x^2 - y^2$. | 2 Marks | L1 | CO2 |
| e) | Find the Laplace transform of $\sin^2(at)$. | 2 Marks | L1 | CO3 |
| f) | Find the Laplace transform of $\sin h(kt)$. | 2 Marks | L1 | CO3 |
| g) | Find the inverse Laplace transform of $\frac{s+1}{s^2+4}$. | 2 Marks | L1 | CO4 |
| h) | State the Laplace Transform of the first derivative of $f(t)$. | 2 Marks | L1 | CO4 |
| i) | Determine the Fourier coefficient a_0 for the function $f(x) = x - x^2$ in the interval $[-\pi, \pi]$. | 2 Marks | L1 | CO5 |
| j) | Define Fourier cosine transform of $f(x)$. | 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 applicability of Rolle's theorem on $f(x) = x^3 - 6x^2 + 11x - 6$, $a = 1$, $b = 3$. | 8 Marks | L4 | CO1 |
| b) | Show that $1+x < e^x < 1 + xe^x$ for all $x > 0$ by using Lagrange's mean value theorem. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | |
|-------|-------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. a) | Verify Cauchy's mean value theorem for the functions $f(x) = x^2$, $g(x) = x^3$ in the interval $[1, 2]$. | 8 Marks | L4 | CO1 |
| b) | Verify Lagrange's Mean value theorem for the function $f(x) = \cos x$ in $(0, \frac{\pi}{2})$. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. a) | Verify whether the following functions are functionally dependent, and if so, find the relation between them.
$u = \frac{x+y}{1-xy}$, $v = \tan^{-1}x + \tan^{-1}y$. | 8 Marks | L5 | CO2 |
| b) | Find the value of the Jacobian $\frac{\partial(u,v)}{\partial(r,\theta)}$, where $u = x^2 - y^2$, $v = 2xy$ and $x = r \cos\theta$, $y = r \sin\theta$. | 8 Marks | L5 | CO2 |

(OR)

5. a) By using the Lagrange's method of multipliers, find a point on the plane $3x+2y+z=12$ which is nearest to the origin. 8 Marks L3 CO2
- b) If $u = u(x, y, z) = \log(x^3 + y^3 + z^3 - 3xyz)$, 8 Marks L5 CO2
- then find the value of $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z}$.

MODULE-III

6. a) Find the Laplace transform of $(t^2 e^t \sin 4t)$. 8 Marks L5 CO3
- b) Find the Laplace transform of $\frac{\sin 2t}{t}$. 8 Marks L3 CO3

(OR)

7. a) Find the Laplace transform of saw-tooth wave 8 Marks L3 CO3
- $f(t) = \frac{k}{p}t \quad 0 < t < p$ and $f(t+p) = f(t)$.
- b) Using Laplace transform, evaluate $\int_0^{\infty} \frac{\cos 3t - \cos 2t}{t} dt$. 8 Marks L2 CO3

MODULE-IV

8. a) Find the inverse Laplace transform of $\frac{s}{(s+a)^2 + b^2}$. 8 Marks L5 CO4
- b) Use convolution theorem, find the inverse Laplace transform of $\frac{1}{(s^2 + a^2)^2}$. 8 Marks L3 CO4

(OR)

9. a) Find the inverse Laplace transform of $\cot^{-1} s$. 8 Marks L3 CO4
- b) Find $L^{-1} \left[\frac{se^{-2s}}{s^2 + 16} \right]$. 8 Marks L2 CO4

MODULE-V

10. a) Obtain the Fourier series for x^2 in the interval $-\pi < x < \pi$. 8 Marks L4 CO5
- Hence show that $1 - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \frac{1}{5^2} \dots = \frac{\pi^2}{12}$
- b) Find the Fourier cosine transform of $f(x) = e^{-ax}$ for $x \geq 0, a > 0$. 8 Marks L2 CO5
- (OR)**
11. a) Find the Fourier sine series for the function $f(x) = e^{ax}$ for $0 < x < \pi$ where a is a constant. 8 Marks L2 CO5
- b) Find the Fourier transform of 8 Marks L4 CO5
- $$f(x) = \begin{cases} \frac{1}{2a} & \text{if } |x| \leq a \\ 0 & \text{if } |x| > a. \end{cases}$$



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations May – 2023

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) Write the conditions for a function f(x) to be expressed as a Fourier Series. | 2 Marks | L1 | CO1 |
| | b) Derive the shifting theorem on Fourier Transforms | 2 Marks | L1 | CO1 |
| | c) Find the Laplace transform of f(t)=sin 2t.sin 3t | 2 Marks | L1 | CO2 |
| | d) Find the Laplace transform of f(t)=t ³ e ^{-3t} | 2 Marks | L1 | CO2 |
| | e) Find the inverse Laplace transform of (s ² -3s+4)/s ³ | 2 Marks | L1 | CO2 |
| | f) Find the inverse Laplace transform of cot ⁻¹ (s/2) | 2 Marks | L1 | CO2 |
| | g) Find the rank of the matrix A= $\begin{bmatrix} 1 & -2 & 3 \\ 2 & -4 & 6 \\ 3 & -6 & 9 \end{bmatrix}$ | 2 Marks | L1 | CO3 |
| | h) Determine the Eigen values of the matrix A= $\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$ | 2 Marks | L1 | CO3 |
| | i) Define Vector Space | 2 Marks | L1 | CO4 |
| | j) Define linear transformation | 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) Expand the function f(x)= e ^x as a Fourier series in [-π, π] | 8 Marks | L1 | CO1 |
| | b) Determine the half range Fourier cosine series of f(x)=x ² in [0, π] | 8 Marks | L4 | CO1 |
| | (OR) | | | |
| | c) Find the Fourier transform of $f(x) = \begin{cases} 1-x^2, & x \leq 1 \\ 0, & x > 1 \end{cases}$ | 8 Marks | L3 | CO1 |
| | Hence, evaluate $\int_0^{\infty} \left(\frac{\sin x - x \cos x}{x^3} \right) \cos \frac{x}{2} dx$ | | | |
| | b) Find the Fourier cosine and sine transforms of $f(x) = \begin{cases} 1, & 0 < x < a \\ 0, & x > a \end{cases}$ | 8 Marks | L1 | CO1 |

MODULE-II

4. a) Find the Laplace transform of $f(t) = \begin{cases} \cos t, & 0 < t < \pi \\ \sin t, & t > \pi \end{cases}$ 8 Marks L3 CO2

b) Determine the Laplace transform of $\cosh at \cos at$ 8 Marks L1 CO2
(OR)

5. a) Determine $L\left(\frac{\cosh 2t \sin 2t}{t}\right)$ 8 Marks L3 CO2

b) Determine the Laplace transform of $f(t) = k \frac{t}{T}, 0 < t < T$ 8 Marks L1 CO2

MODULE-III

6. a) Find the inverse Laplace transform of $F(s) = \frac{s+2}{s^2(s+3)}$ 8 Marks L1 CO2

b) Determine the inverse Laplace transform of $F(s) = \frac{1}{(s+1)(s^2+1)}$ 8 Marks L5 CO2
using convolution theorem

(OR)

7. Solve the differential equation $(D^2 - 2D + 1)y = e^t, y(0) = 2, y'(0) = -1$ using Laplace transform technique 16 Marks L3 CO2

MODULE-IV

8. a) Determine the rank of the matrix $A = \begin{bmatrix} 3 & -2 & 0 & -1 \\ 0 & 2 & 2 & 1 \\ 1 & -2 & -3 & 2 \\ 0 & 1 & 2 & 1 \end{bmatrix}$ 8 Marks L1 CO3

by reducing to echelon form.

b) Discuss the consistency of the system and if consistent, solve the equations $x + y + z = 6, x + 2y + 3z = 14, 2x + 4y + 7z = 30$. 8 Marks L3 CO3

(OR)

9. a) Determine the Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 4 & 6 & 6 \\ 1 & 3 & 2 \\ -1 & -4 & -3 \end{bmatrix}$. 8 Marks L3 CO3

b) Using Cayley-Hamilton theorem, determine A^{-1} where $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$. 8 Marks L3 CO3

MODULE-V

10. a) If v_1, v_2, \dots, v_p are in vector space V , then $\text{span}\{v_1, v_2, \dots, v_p\}$ is subspace of V . 8 Marks L2 CO4
- b) Show that the following transformation is linear. 8 Marks L3 CO4
 $T: C^2 \rightarrow C^2$ defined by $T(z_1, z_2) = (z_1 + z_2, z_1 - 2z_2)$
- (OR)**
11. a) Let V and W be a vector space, and let $T: V \rightarrow W$ be a linear transformation. Then prove that the set Kernel (T) is subspace of V . 8 Marks L5 CO4
- b) If $T: V \rightarrow W$ is a linear transformation and $\dim V = n$, then prove that $R(T) + \eta(T) = n$. 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 – 2023

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) | List out any two differences between interference and diffraction. | 2 Marks | L2 | CO1 |
| | b) | Define double refraction. | 2 Marks | L2 | CO1 |
| | c) | Draw the graphical representation of Fermi function with respect to temperature. | 2 Marks | L2 | CO2 |
| | d) | Recall Schrodinger time independent one-dimensional wave equation. | 2 Marks | L2 | CO2 |
| | e) | Draw the energy band diagram of conductors and insulators. | 2 Marks | L2 | CO3 |
| | f) | Draw the Kronig-Penney model of energy band formation. | 2 Marks | L2 | CO3 |
| | g) | Define diffusion current. | 2 Marks | L2 | CO4 |
| | h) | Draw the energy band diagrams and direct and indirect band diagrams. | 2 Marks | L2 | CO4 |
| | i) | Define critical angle. | 2 Marks | L2 | CO5 |
| | j) | Draw the graded index optical fiber. | 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 the necessary theory to determine the wavelength of sodium light using Newton's rings. | 12 Marks | L2 | CO1 |
| | b) | A plano-convex lens of radius of curvature 95 m is placed on an optically plane glass plate. The space between the lens and the glass plate is filled with water having a refractive index of 1.333. It is illuminated by a parallel beam of monochromatic light. The diameter of the 15th dark ring as seen by the transmitted light is 0.45 cm. Calculate the wavelength of the light. | 4 Marks | L3 | CO1 |
| (OR) | | | | | |
| 3. | a) | Derive an expression for the intensity distribution of Fraunhofer single slit diffraction pattern. | 12 Marks | L2 | CO1 |
| | b) | A slit of width 6.2×10^{-4} cm is illuminated with a light of wavelength 5800 Å. Determine the angular separation between the first order minima on either side of central maxima. | 4 Marks | L3 | CO1 |

MODULE-II

4. a) Explain in detail de-Broglie hypothesis and derive an expression for the wavelength of the electron which is accelerated by an electric field. 10 Marks L2 CO2
b) Compare the wavelengths associated with an electron and a car moving with velocities 3×10^8 m/s and 50 Kmph and having masses 9.1×10^{-31} kg and 500 kg. Given $h = 6.625 \times 10^{-34}$ J-s. 6 Marks L3 CO2

(OR)

5. a) Derive an expression for Schrodinger time independent wave equation in one dimension and then write it in three dimensions. 12 Marks L2 CO2
b) Signify the physical significance of wave function. 4 Marks L2 CO2

MODULE-III

6. a) Basing on the concept of potential well explain the phenomenon of tunneling of electrons. 9 Marks L2 CO3
b) Basing on the graph plotted in Kronig-Penney model signify the inferences from the graph. 7 Marks L2 CO3

(OR)

7. a) Obtain normalized wave function for a free particle in a infinite walled potential Box/Well using Schrodinger 1D time independent equation 10 Marks L2 CO3
b) The first excited state energy of an electron in an infinite well is 240 eV. What will be its ground state energy when the width of the potential well is doubled? 6 Marks L3 CO3

MODULE-IV

8. a) Derive an expression majority charge carriers in n-type semiconductors. 10 Marks L2 CO4
b) List the differences between direct and indirect band gap semiconductors. 6 Marks L2 CO4

(OR)

9. a) Explain the principle, construction and working of LASER diode. 10 Marks L2 CO4
b) Explain the formation of p-n junction 6 Marks L2 CO4

MODULE-V

10. a) Classify the optical fibers based on refractive index profile and modes. 12 Marks L2 CO5
b) Draw the structure of an optical fiber. 4 Marks L2 CO5

(OR)

11. a) Define numerical aperture. Obtain an expression for numerical aperture in terms of refractive indices of core and cladding, and then arrive at the condition for propagation. 10 Marks L2 CO5
b) Explain any one fiber optic sensor. 6 Marks L2 CO5



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech (SVEC14) Supplementary Examinations May - 2023**ENGINEERING MATHEMATICS**

[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: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 Solve the Differential equation: $\frac{dy}{dx} + y \cos x = y^3 \sin 2x$. 14 Marks

(OR)

2 a) Solve the differential equation $(D^2 + 2D + 2)y = e^{-x} + \sin 2x$. 7 Marks

b) Applying the method of variation of parameters solve $(D^2 + 4)y = \sec 2x$. 7 Marks

UNIT-II

3 If $u = x^2 - y^2$, $v = 2xy$ where $x = r \cos \theta$ and $y = r \sin \theta$ then show
 that $\frac{\partial(x, y)}{\partial(r, \theta)} = 4r^3$ 14 Marks

(OR)

4 a) Sketch the curve for the equation $y^2(a - x) = x^3$ ($a > 0$). 7 Marks

b) Estimate the radius of curvature ρ at any point of the cycloid $x = a(\theta + \sin \theta)$,
 $y = a(1 - \cos \theta)$ and evaluate ρ at $\theta = \pi/2$. 7 Marks

UNIT-III

5 Estimate the length of the arc of the parabola $y^2 = 4ax$ cut off by its latus rectum
 is $2a(\sqrt{2} + \log(1 + \sqrt{2}))$. 14 Marks

(OR)

6 By transforming into polar coordinates, evaluate $\int_0^a \int_0^{\sqrt{a^2 - x^2}} y \sqrt{x^2 + y^2} dx dy$. 14 Marks

UNIT-IV

7 State convolution theorem and hence evaluate $L^{-1} \left[\frac{s}{(s^2 + 4)(s^2 + 1)} \right]$. 14 Marks

(OR)

8 Using Laplace transform solve $y'' - 3y' + 2y = 4x + e^{2x}$ where $y = 1, y' = -1$ at $x = 0$. 14 Marks

UNIT-V

9 a) A vector field is given by $A = (x^2 + xy^2)\hat{i} + (y^2 + yx^2)\hat{j}$. Show that the field is
 irrotational, and find the scalar potential. 7 Marks

b) Find the work done in moving a particle in the force field $\vec{F} = 3x^2\hat{i} + (2xz - y)\hat{j} + z\hat{k}$,
 along the straight line from $(0, 0, 0)$ to $(2, 1, 3)$. 7 Marks

(OR)

10 Verify Green's theorem for $\oint_c (xy + y^2)dx + x^2dy$ where c is bounded by
 $y = x$ and $y = x^2$. 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**ENGINEERING CHEMISTRY****[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. a) Explain estimation of water hardness by EDTA method. 8 Marks
b) Discuss advanced purification method developed for obtaining reliable drinking water from challenging water sources. 6 Marks

(OR)

2. a) What is the principle of reverse osmosis? Explain the process of reverse osmosis. 7 Marks
b) Give the specifications of water for "steam generation". Explain Caustic embrittlement, Priming and Foaming 7 Marks

UNIT-II

3. Write the synthesis, properties and applications of the following engineering plastics 14 Marks
i) Poly Carbonates. ii) Teflon.

(OR)

4. Classify the conducting polymers and write their applications in electronics and medical sectors. 14 Marks

UNIT-III

5. Explain the following tools with suitable examples. 14 Marks
i) Alternative feed stocks.
ii) Alternative products.
iii) Alternative reaction conditions.

(OR)

6. a) Explain the synthesis of Biodiesel. 6 Marks
b) Explain sol-gel synthesis of Nanomaterials. 8 Marks

UNIT-IV

7. Define Battery. Explain lithium polymer batteries and mention their applications. 14 Marks

(OR)

8. a) Discuss the chemistry, construction and future application of Hydrogen - Oxygen Fuel cell used in earlier space missions. 8 Marks
b) Write the similarities between Lithium-ion battery and Lithium-polymer batteries. 6 Marks

UNIT-V

9. a) Classify the lubricants based on their state. 7 Marks
b) Examine the influence of 'pH' and 'purity of metal' on the rate of corrosion. 7 Marks
- (OR)**
10. a) Discuss the role of Galvanizing in corrosion control methods. 7 Marks
b) Discuss the functions of lubricants with suitable examples. 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech I Semester (SVEC16) Supplementary Examinations, May – 2023**MULTI-VARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS**[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: 70

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

1. a) Determine the solution of $2xydy - (x^2 + y^2 + 1)dx = 0$. 7 Marks
- b) Determine the orthogonal trajectories of the family of circles $x^2 + y^2 + 2fy + 1 = 0$. 7 Marks

(OR)

2. a) Identify the order and degree and determine the solution of the differential equation $\frac{dy}{dx} + \frac{y}{x} = y^2x \sin x$. 7 Marks
- b) Determine the orthogonal trajectories of the family of cardioids $r = a(1 - \cos\theta)$, where 'a' is the parameter. 7 Marks

UNIT-II

3. a) Determine the solution of $(D^2 - 5D + 6)y = xe^{4x}$. 7 Marks
- b) Solve the differential equation $(D^2 + 3D + 2)y = 2 \cos(2x + 3) + 2e^x + x^2$. 7 Marks

(OR)

4. a) Determine the solution of $(D^2 + D + 1)y = x^3$. 7 Marks
- b) Determine the solution of $(D^2 + 2)y = e^x \cos x$. 7 Marks

UNIT-III

5. a) If $u = \sin^{-1}(x - y)$ where $x = 3t$ and $y = 4t^3$ then show that $\frac{du}{dt} = \frac{3}{\sqrt{1-t^2}}$ 7 Marks

- b) Apply Taylor's theorem to expand polynomial $x^2y + 3y - 2$ in powers of $(x - 1)$ and $(y + 2)$. 7 Marks

(OR)

6. If $u = f(r, s, t)$ where $r = \frac{x}{y}$, $s = \frac{y}{z}$, $t = \frac{z}{x}$, then show that 14 Marks

$$x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z} = 0$$

UNIT-IV

7. a) Evaluate the length of the arc of the parabola $x^2 = 4ay$ measured from the vertex to one extremity of the latus-rectum. 7 Marks
- b) Apply triple integration and obtain the volume of the sphere $x^2 + y^2 + z^2 = a^2$. 7 Marks

(OR)

8. a) Show that the whole length of the curve $x^2(a^2 - x^2) = 8a^2y^2$ is $\pi a\sqrt{2}$. 7 Marks
- b) Show that the area of the surface generated by the revolution about x-axis of the loop of the curve $3ay^2 = x(x-a)^2$. 7 Marks

UNIT-V

9. a) Evaluate the directional derivative of $\phi = x^2yz + 4xz^2$ at the point (1,-2,1) in the direction of the vector $2i - j - 2k$. 7 Marks
- b) Evaluate $\oint_S F \cdot ds$ where $F = 4xi - 2y^2j + z^2k$ and S is the surface bounded by the region $x^2 + y^2 = 4, z = 0$ and $z = 3$. 7 Marks

(OR)

10. a) Prove the vector identity $\nabla^2(r^n) = n(n+1)r^{n-2}$. 7 Marks
- b) Verify Gauss Divergence theorem for the vector function $F = yi + xj + z^2k$ over the cylindrical region bounded by $x^2 + y^2 = 9, z = 0$ and $z = 2$. 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-16) Supplementary Examinations May – 2023

ELECTRICAL CIRCUITS
[Electrical and Electronics Engineering]

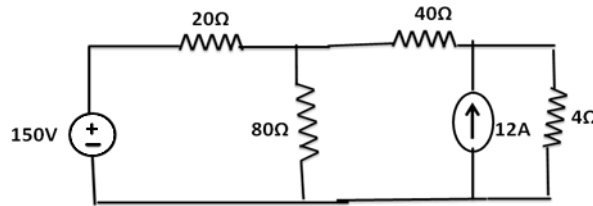
Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- 1 a) Use Nodal analysis to determine the current through $40\ \Omega$ resistor in the circuit shown in Figure. 7 Marks



- b) For the circuit shown in Figure, Use a series of source transformations to find the current from 6V source. 7 Marks

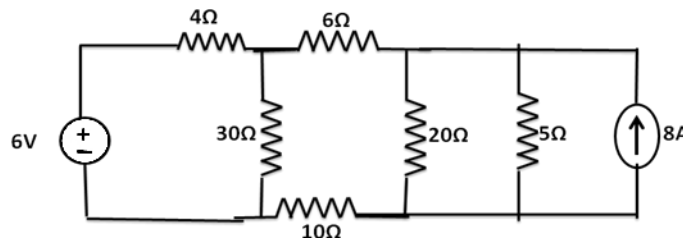
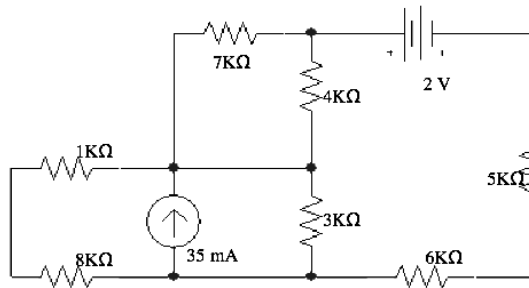


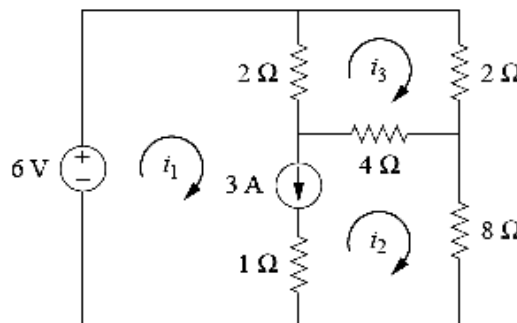
Figure
(OR)

- 2 a) First simplify the network shown in Figure and apply the nodal analysis to solve current passing through $3\ \text{k}\Omega$. 9 Marks



Figure

- b) Write the mesh equations for the circuit shown in Figure. 5 Marks



Figure

UNIT-II

- 3 a) Compute active and reactive components of the current taken by a series circuit consisting of a coil of inductance 0.1 H and resistance 8Ω and a capacitor of $120 \mu\text{F}$ connected to a 230 V , 50 Hz supply mains. Find the value of the capacitor that has to be connected in parallel with the above series circuit so that the power factor of the entire circuit is unity. 7 Marks
- b) Compute the effective value, average value, form factor and peak factor of the waveform shown in Figure. 7 Marks

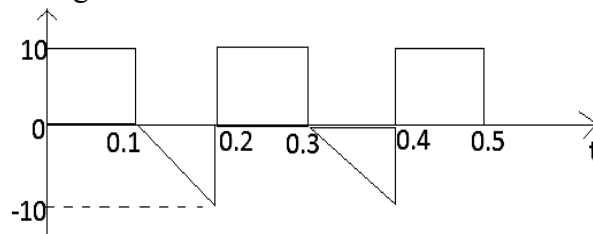
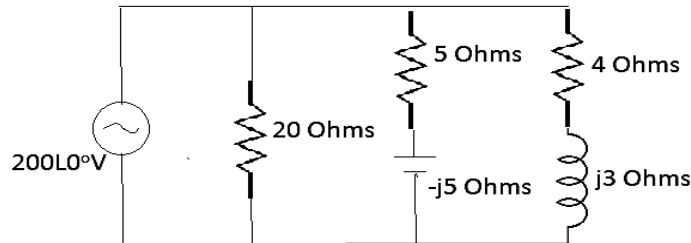


Figure
(OR)

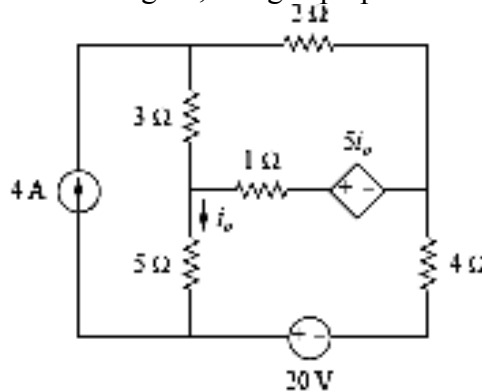
- 4 a) Find the average and RMS values of the half wave rectified sine wave. 6 Marks
- b) Find the branch current, total current and power supplied by the source. For the circuit shown in Figure. 8 Marks



Figure

UNIT-III

- 5 a) Find i_0 in the circuit shown in Figure, using superposition theorem. 7 Marks



Figure

- b) State Millmann's theorem and use the same theorem to find the current passing through 10Ω resistor shown in Figure. 7 Marks

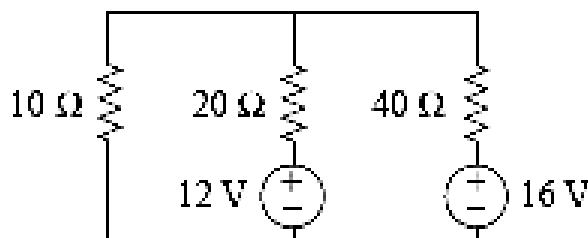
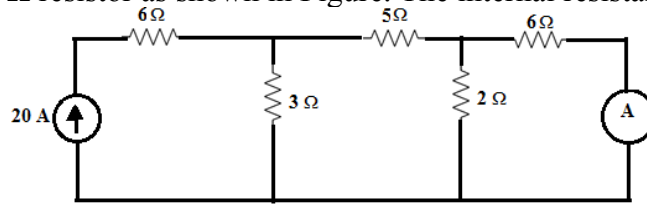


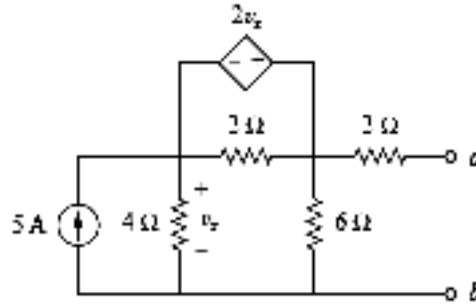
Figure
(OR)

- 6 a) Using the compensation theorem, determine the ammeter reading where it is connected to $6\ \Omega$ resistor as shown in Figure. The internal resistance is $2\ \Omega$. 8 Marks



Figure

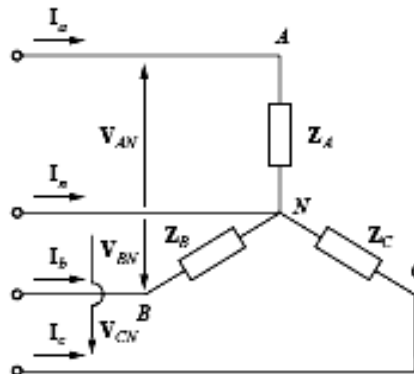
- b) Find the Thevenin's equivalent across the terminals a and b shown in Figure. 6 Marks



Figure

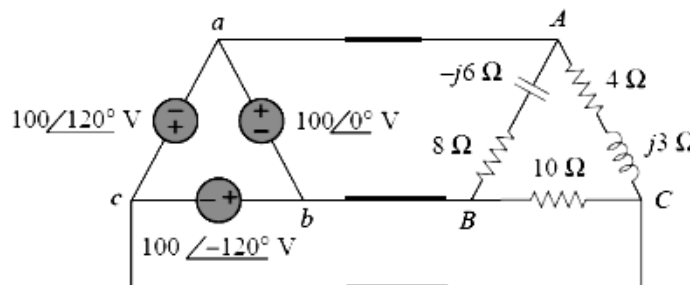
UNIT-IV

- 7 a) The unbalanced Y connected load shown in Figure was excited by balanced source of voltage 100 V with acb phase sequence. Calculate the line currents and the neutral current. Take $Z_A = 15\ \Omega$, $Z_B = 10 + j5\ \Omega$ and $Z_C = 6 - j8\ \Omega$. 7 Marks



Figure

- b) Compute the phase and line current three phase unbalanced load driven by balanced source shown in Figure. Also find the real power absorbed by the load. 7 Marks



Figure

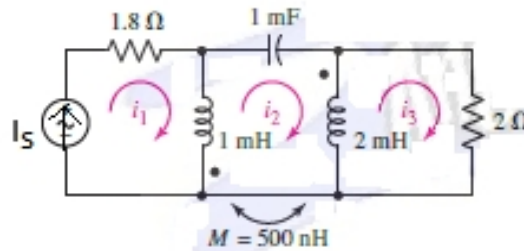
(OR)

- 8 a) A 3-phase, 3-wire Δ -connected $400\angle 00\text{V}$ supply is connected to a balanced 3-phase, 3-wire, Y-connected load of $(3+j4)\ \Omega$ per phase. Calculate the 7 Marks
- i) Phase currents,
 - ii) Line currents and
 - iii) Power in each phase
 - iv) Draw the Phasor diagram indicating voltages and currents.

- b) A 3-phase, 3 wire RYB, Y-connected VBR=294.2∠00 V supply is connected to 3-phase, 3-wire, Y- connected Unbalanced load impedances of $Z_R = 12 \angle 450 \Omega$, $Z_Y = 10 \angle 300 \Omega$ and $Z_B = 8 \angle 00 \Omega$. Obtain the line currents. Determine the power consumed by the load. Draw the phasor diagram indicating voltages and current 7 Marks

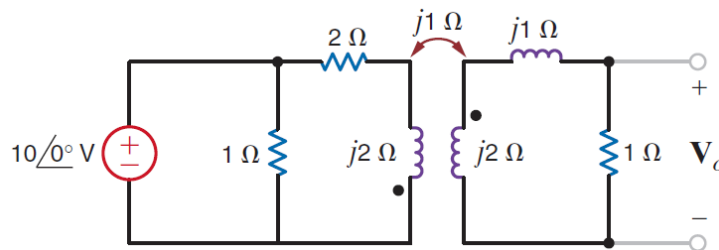
UNIT-V

- 9 a) Compute the voltage across 2 mH shown in Figure, if source current $I_s = 10 \sin(720t)$ Amps. 7 Marks



Figure

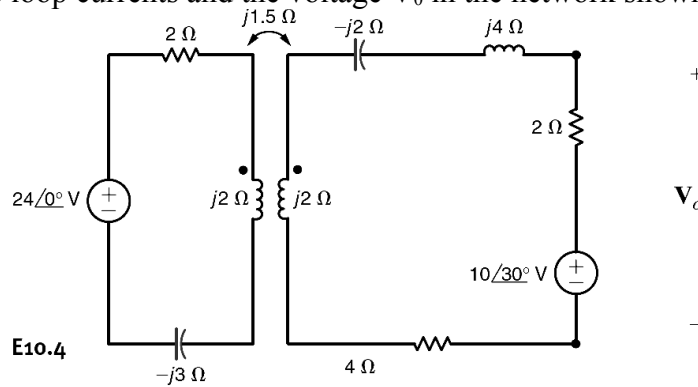
- b) Compute the V_0 , shown in Figure. 7 Marks



Figure

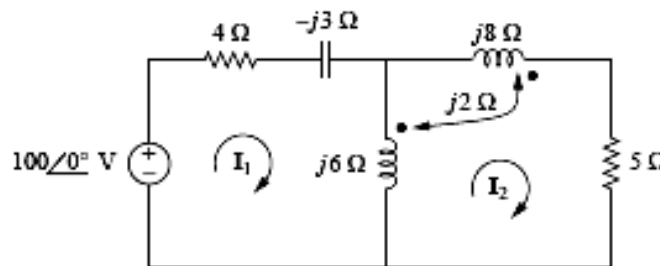
(OR)

- 10 a) Compute the loop currents and the voltage V_0 in the network shown in Figure. 7 Marks



Figure

- b) Compute the mesh currents shown in Figure and also find the voltage across $j6 \Omega$ inductor. 7 Marks



Figure



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**PROGRAMMING IN C**

[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: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) What is an operator? Describe different types of operators that are included within the C language. 7 Marks
 - b) Describe the use of the conditional operator to form conditional expressions. How is a conditional expression evaluated? 7 Marks
- (OR)
2. a) How are initial values assigned to variables within a type declaration? How are strings assigned to one dimensional, character-type arrays? 7 Marks
 - b) What is a subscript? What range of values is permitted for the subscript of a one-dimensional, n-element array? 7 Marks

UNIT-II

3. a) Write a short notes on gets() and puts() functions with suitable examples. 7 Marks
- b) Write a C program to calculate electricity bill using else-if ladder. Read the starting and ending meter readings. The charges are as follows: 7 Marks

No. of Units	Consumed rates in (Rs.) per unit
0-50	1.50
51-100	2.00
101-150	2.50
151-200	2.75
>200	3.00

(OR)

4. a) Can any of the three initial expressions in the *for*-statement be omitted? If so, what are the consequences of each omission? 7 Marks
- b) Write a program to check input type 7 Marks
 - i) Uppercase
 - ii) Lower case
 - iii) Digit
 - iv) Symbol

UNIT-III

5. a) How arrays are usually processed in C? Can entire arrays be processed with single instructions, without repetition? 7 Marks
 - b) Illustrate the concept of Pointer to an Array and Array of Pointers with an example Program. 7 Marks
- (OR)
6. a) How 1-dimensional and 2-Dimensional arrays will be Passed to functions? Explain with suitable examples. 7 Marks
 - b) Write a 'C' Program to find Transpose of a Given Matrix using Functions? 7 Marks

UNIT-IV

7. a) What is the relationship between an array name and a pointer? How is an array name interpreted when it appears **as** an argument to a function? 7 Marks
b) Develop a program to read a line of text and then convert that long text into a long string. 7 Marks

(OR)

8. a) Develop a program to read two strings **str1** and **str2** and then find out whether the string **str2** is the substring of **str1** or not. 7 Marks
b) Develop a program to read two strings **str1** and **str2** from the user and then find whether the given two strings are equal or not without using **string.h** library functions. 7 Marks

UNIT-V

9. a) How a member of a union variable is assigned an initial value? In what way does the initialization of a union variable differ from the initialization of a structure variable? 7 Marks
b) Define a structure CRICKET whose fields are name of the player, number of innings played, total runs scored and batting average. Using CRICKET declare an array x with 50 elements and write a program to read the name, number of innings and total runs scored by each of the 50 players, and find the batting average. Display all the 50 players details sorted by batting average in tabular form. 7 Marks

(OR)

10. a) Describe the Significance of Files and explain the String oriented functions in Files. Write a Program to read a File consisting of Strings. 7 Marks
b) Explain the fopen() function in files and illustrate the different modes of Opening a file. 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-19) Supplementary Examinations May - 2023**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]

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 6 Marks L3 CO1 PO1

$$\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = 6e^{3x} + 7e^{-2x} - \log 2.$$
 PO2
- b) Solve the differential equation 6 Marks L3 CO1 PO1

$$(D^3 + 2D^2 + D)y = x^2e^{2x} + \sin^2 x.$$
 PO2
- (OR)**
2. a) Using the method of variation of parameters solve 6 Marks L3 CO1 PO1

$$\frac{d^2y}{dx^2} + y = \operatorname{Cosec} x$$
 PO2
- b) Reduce the differential equation 6 Marks L2 CO1 PO1

$$x^3 \frac{d^3y}{dx^3} + 3x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} + 8y = 65 \cos(\log x)$$
 into linear PO2
equation with constant coefficients and find its general solution.

UNIT-II

3. a) Solve $p \tan x + q \tan y = \tan z$. 6 Marks L3 CO1 PO1
- b) Find the complete solution of the partial differential equation 6 Marks L3 CO1 PO2

$$(p^2 + q^2)y = qz$$
- (OR)**
4. a) Solve the partial differential equation 6 Marks L3 CO1 PO1

$$(D^2 + DD' + D' - 1)z = \sin(x + 2y).$$
 PO2
- b) Using method of separation of variables Solve $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$, 6 Marks L3 CO1 PO1
where $u(x,0) = 6e^{-3x}$. PO2

UNIT-III

5. a) Determine $\frac{du}{dx}$ when $u = x \log xy$ and $x^3 + y^3 + 3xy = 1$. 6 Marks L1 CO2 PO1
- b) Define Jacobian for three variables and find the Jacobian of the 6 Marks L1 CO2 PO1
variables $u = x^2 + y^2 + z^2$, $v = xy + yz + zx$ and $w = x + y + z$.
- (OR)**
6. a) Find the maximum and minimum values of $x^3 + y^3 - 3axy$. 6 Marks L3 CO2 PO1
PO2
- b) Find the dimensions of the rectangular box, open at the top of 6 Marks L4 CO2 PO1
maximum capacity whose surface area is 432 sqcm. PO2

UNIT-IV

7. a) Change the order of integration in the following integral and evaluate $\int_0^{4a} \int_{\frac{x^2}{4a}}^{2\sqrt{ax}} dy dx$. 6 Marks L3 CO2 PO1 PO2
- b) Change the variables to polar coordinates and evaluate $\int_0^2 \int_0^{\sqrt{4-y^2}} (x^2 + y^2) dx dy$. 6 Marks L3 CO2 PO1 PO2

(OR)

8. a) Evaluate $\int_0^a \int_0^x \int_0^{x+y} e^{x+y+z} dz dy dx$. 6 Marks L5 CO2 PO1
- b) Find by double integration, the area of $r^2 = 4 \cos 2\theta$. 6 Marks L3 CO2 PO1 PO2

UNIT-V

9. a) Find $\text{div } \vec{F}$ and $\text{curl } \vec{F}$ where $\vec{F} = xy\vec{i} - xz^2\vec{j} + (xy + yx^2)\vec{k}$ at a point (1, -1, 1). 6 Marks L5 CO3 PO1
- b) Determine directional derivative of $f = xy^2 + yz^3$ at the point (2, -1, 1) in the direction of the normal to the surface $x \log z - y^2 = -4$ at (-1, 2, 1). 6 Marks L3 CO3 PO1

(OR)

10. Verify Gauss divergence theorem for the function $\vec{F} = y\vec{i} + x\vec{j} + z^2\vec{k}$ over the cylindrical region bounded by $x^2 + y^2 = 9$, $z = 0$ and $z = 2$. 12 Marks L5 CO3 PO1 PO2



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-19) Supplementary Examinations May - 2023**ENGINEERING PHYSICS****[Electrical and Electronics Engineering, 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) Explain the formation of Newton rings. Determine the wave length of sodium light by Newton rings experiment. 9 Marks L3 CO1 PO1
 b) State the conditions necessary for obtaining sustainable interference pattern using two sources. 3 Marks L1 CO1 PO1

(OR)

2. a) Discuss the Fraunhofer diffraction at a single slit. Obtain the condition for principal maximum and minimum. 8 Marks L2 CO1 PO1
 b) Discuss the construction and working of Nicol prism. 4 Marks L2 CO1 PO1

UNIT-II

3. a) State Maxwell's equations from the basic laws of electro magnetism. 8 Marks L1 CO2 PO1
 b) Explain the physical significance of gradient, divergence, curl. 4 Marks L2 CO2 PO1

(OR)

4. a) Explain the principle of optical fibre as a wave guide for light. 4 Marks L1 CO2 PO1
 b) Explain the different types of optical fibre, along with the refractive index profile and mode propagation sketches. 8 Marks L4 CO2 PO1

UNIT-III

5. a) Differentiate direct and indirect band gap semiconductors. 4 Marks L3 CO3 PO2
 b) Derive the expressions for drift and diffusion currents. 8 Marks L2 CO3 PO2

(OR)

6. a) What is p-n junction diode? Derive an expression for built in potential in p-n junction diode. 6 Marks L2 CO3 PO1
 b) Discuss the construction and working of photo diode. 6 Marks L1 CO3 PO1

UNIT-IV

7. a) Explain the concept of internal electric field in dielectrics and derive an expression for it having a cubic symmetry. 8 Marks L3 CO4 PO1
 b) Discuss the various dielectric break down mechanisms. 4 Marks L2 CO4 PO1

(OR)

8. a) Define magnetic susceptibility and permeability. 2 Marks L1 CO4 PO1
 b) Describe diamagnetic, paramagnetic and ferromagnetic materials. Explain their classification on the basis of permanent magnetic moment. 10 Marks L4 CO4 PO1

UNIT-V

9. a) Explain the Josephson's effect (ac and dc fields) in superconductivity. 8 Marks L2 CO5 PO1
 b) Describe the principle of SQUID and mention its applications. 4 Marks L1 CO5 PO1
 PO2

(OR)

10. a) Explain the electric, magnetic and optical properties of Nano materials. 6 Marks L3 CO5 PO2
 b) List the applications of Nano materials. 6 Marks L2 CO5 PO1

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-19) Supplementary Examinations May - 2023**ENGINEERING CHEMISTRY****[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. What is Schrodinger's wave equation? Apply the equation to the hydrogen atom. 12 Marks L3 CO1 PO1 PO2

(OR)

2. Explain the postulates of VSEPR theory with the examples CH₄, NH₃ and H₂O. 12 Marks L2 CO1 PO1 PO2

UNIT-II

3. a) Define hardness of water? Explain how to determine hardness of water using EDTA method. 8 Marks L2 CO2 PO1 PO2

- b) Calculate the temporary, permanent and total hardness of water sample containing the following salts CaSO₄=34.0 mg/l, Ca(HCO₃)₂=162 mg/l, MgSO₄=45 mg/l, Mg(HCO₃)₂=109.5mg/l, NaCl =29.25 mg/l, SiO₂=80 mg/l. 4 Marks L3 CO2 PO1 PO2

(OR)

4. a) What is the principle of reverse osmosis? What is the main advantage of reverse osmosis over ion-exchange process? 6 Marks L2 CO2 PO1 PO2

- b) Write the defluoridation of water by Nalgonda technique. 6 Marks L1 CO2 PO1 PO2

UNIT-III

5. a) Derive Nernst's equation for single electrode potential and write its applications. 6 Marks L2 CO3 PO1 PO2

- b) Describe the construction and working of Lead Acid battery with necessary reactions. 6 Marks L1 CO3 PO1

(OR)

6. a) Give the mechanism of Electrochemical Corrosion. 6 Marks L1 CO3 PO1

- b) What is Electroplating? Write the mechanism of Electroplating. 6 Marks L2 CO3 PO1

UNIT-IV

7. a) Explain various types of electronic transitions in UV-VIS spectroscopy. 8 Marks L2 CO4 PO1 PO5

- b) Differentiate Auxochrome and Chromophore with examples. 4 Marks L3 CO4 PO1

(OR)

8. Discuss the instrumentation of IR Spectrometer with neat diagram and give its applications. 12 Marks L2 CO4 PO1

UNIT-V

9. a) What are the important characteristics of a good fuel? 4 Marks L1 CO5 PO1

- b) Describe the manufacture of gasoline by Fisher-Tropsch method. 8 Marks L2 CO5 PO1

(OR)

10. a) Define lubricants. Write the classification of lubricants with suitable examples. 6 Marks L1 CO5 PO1 PO2

- b) Explain the following properties of the lubricants: 6 Marks L2 CO5 PO1 PO2
i) Viscosity and Viscosity Index. ii) Flash point and fire point.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-19) Supplementary Examinations May - 2023**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING****[Electrical and Electronics Engineering, 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) Derive the average, RMS value, Form Factor, Peak Factor for a sinusoidal waveform. 6 Marks L2 CO1 PO2
 b) Explain the circuit elements L and C. Derive expressions for energy stored in those elements. 6 Marks L3 CO1 PO2
- (OR)**
2. a) State and explain KVL and KCL with examples 6 Marks L1 CO1 PO1
 b) Define the following: 6 Marks L2 CO1 PO2
 i) Time period. ii) Amplitude.
 iii) Phase difference. iv) Instantaneous value.

UNIT-II

3. a) Write short notes on earthing in electric installations. 6 Marks L1 CO2 PO1
 b) With neat sketch explain the operation of hydro power plant. 6 Marks L1 CO2 PO1
- (OR)**
4. a) Explain the significance of power factor and enumerate the methods of improving it. 6 Marks L2 CO2 PO1
 b) What are different types of circuit breaker? Explain any two of them. 6 Marks L2 CO2 PO2

UNIT-III

5. a) 3- ϕ 4 pole induction motor is supplied from 3 ϕ 50Hz ac supply. Find : 6 Marks L1 CO3 PO1
 i) Synchronous speed.
 ii) Rotor speed when slip is 4%.
 iii) The rotor frequency when runs at 600 r.p.m.
 b) Explain the constructional details and operation of induction motor. 6 Marks L1 CO3 PO5
- (OR)**
6. a) Write short notes on production of rotating magnetic field. 6 Marks L1 CO3 PO1
 b) With neat diagram explain the working of a transformer. 6 Marks L1 CO3 PO1

UNIT-IV

7. a) Draw and explain the circuit diagram of a full wave rectifier using two diodes and also sketch the waveforms. 6 Marks L2 CO4 PO5
 b) What is a Zener diode? Distinguish between Zener breakdown and avalanche breakdown. 6 Marks L2 CO4 PO1

(OR)

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | Explain the input and output characteristics of transistor in CE configuration with neat sketch. | 6 Marks | L2 | CO4 | PO2 |
| | b) | Explain the operation of p-n junction diode in forward and reverse biased condition. | 6 Marks | L1 | CO4 | PO1 |

UNIT-V

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | Explain in detail about DC characteristics of op-amp. | 6 Marks | L1 | CO5 | PO1 |
| | b) | List the six characteristics of an ideal op-amp and explain in detail. Give the practical op-amp equivalent circuit. | 6 Marks | L3 | CO5 | PO4 |

(OR)

- | | | | | | | |
|-----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 10. | a) | With a neat circuit diagram explain the operation of a Op-Amp differentiator and derive an expression for the output of a practical differentiator. | 6 Marks | L2 | CO5 | PO2 |
| | b) | Design a non inverting amplifier that has a voltage gain of 10 using an ideal op amp. The input signal is in the range from -1 V to 1 V. Use 5 % tolerance discrete resistors for the feedback network. | 6 Marks | L3 | CO5 | PO4 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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I B.Tech I Semester (SVEC-19) Supplementary Examinations May - 2023**PROGRAMMING FOR PROBLEM SOLVING****[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. a) Define Algorithm and Explain how can you measure the performance of algorithms. 6 Marks L1 CO1 PO1
b) Explain different operators in Python and how to handle input and output in Python. 6 Marks L1 CO1 PO1

(OR)

2. a) Draw flow chart to print whether the given number is Prime or not. 6 Marks L2 CO1 PO2
b) What is meant by type conversion? Explain different type conversions with the help of a Python script. 6 Marks L1 CO1 PO1

UNIT-II

3. a) Write a Python program for generating first 'n' even and 'n' odd numbers. 6 Marks L2 CO1 PO1
b) Display the following pattern using Python code. 6 Marks L2 CO1 PO2
*
* *
* * *
* * * *
* * * * *

(OR)

4. a) Write a Python script to print word format of the given number. 6 Marks L2 CO1 PO2
b) Write a Python script to display the sum of first 'n' even and odd numbers. 6 Marks L1 CO1 PO1

UNIT-III

5. a) Define Dictionary and write a Python script to illustrate Dictionary operations. 6 Marks L1 CO1 PO2
b) Write a Python program to implement Stack. 6 Marks L1 CO1 PO3

(OR)

6. a) Explain different string operations with the help of a program. 6 Marks L1 CO1 PO2
b) Write the applications of Stacks and Queues. 6 Marks L1 CO1 PO1

UNIT-IV

7. a) Define scope and life time of a variable and Explain different types of arguments with examples. 6 Marks L1 CO2 PO1
b) Write a Python script to read a file and remove the duplicated entries present in that file. 6 Marks L2 CO2 PO2

(OR)

8. a) Develop a Python program to find the maximum and minimum numbers present in a List using recursive function. 6 Marks L3 CO2 PO3
b) Demonstrate the basic file operations with the help of a Python script. 6 Marks L1 CO2 PO2

UNIT-V

- | | | | | | | |
|-------------|----|-------------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | Write a Python program to combine two data frames. | 6 Marks | L3 | CO2 | PO2 |
| | b) | Explain the importance of data representation and visualization in decision making. | 6 Marks | L1 | CO2 | PO3 |
| (OR) | | | | | | |
| 10. | a) | Illustrate the use of loc() and iloc() with an example program. | 6 Marks | L2 | CO2 | PO1 |
| | b) | Load data from csv file to data frame and print head() and tail() of a data frame. | 6 Marks | L3 | CO2 | PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2023

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) Find the force 'P' acting at C in the bar shown in Fig.1. Find the extension of the bar if $E = 2 \times 10^5$ MPa. 7 Marks

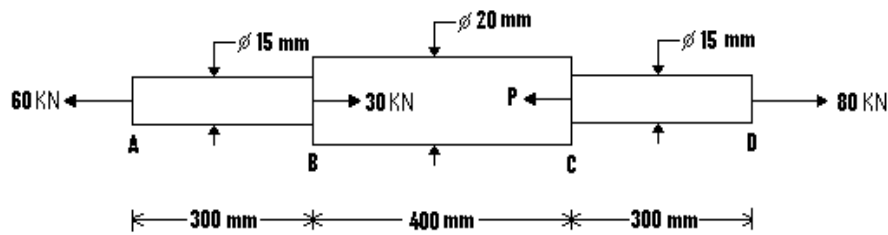


Fig.1.

- b) A bar of 20 mm diameter is tested in tension. It is observed that when a load of 37.7 kN is applied, the extension measured over a gauge length of 200 mm is 0.12 mm and contraction in diameter is 0.0036 mm. Find Poisson's ratio and Young's modulus. 7 Marks

(OR)

- 2 A round copper rod, 560mm long, has a diameter of 30 mm over a length of 200mm, a diameter of 20mm over a length of 200mm and a diameter of 10mm over its remaining length. Determine the stresses in each section and elongation of the rod when it is subjected to a pull of 30 kN. Take $E = 100 \text{ kN/mm}^2$. 14 Marks

UNIT-II

- 3 Draw the SF and BM diagrams for the beam shown in the fig.2. Indicate the position and magnitude of max BM. Is there any point of contra flexure? 14 Marks

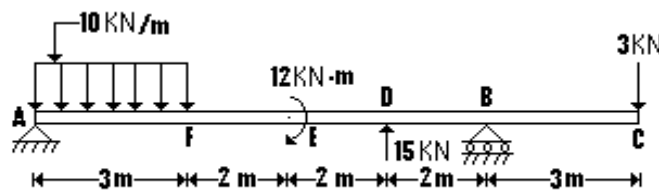


Fig.7.

(OR)

- 4 Draw the Shear force and bending moment diagrams giving the values at salient points for the simply supported beam. 14 Marks

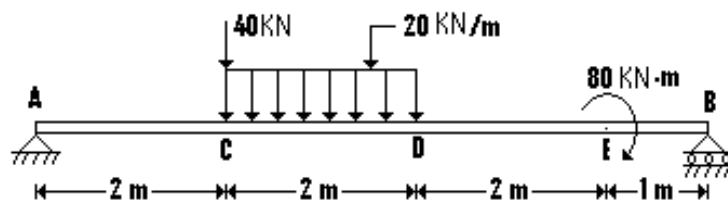


Fig.2

UNIT-III

5 Prove that the maximum shear stress in a circular section of a beam is $\frac{4}{3}$ times the average shear stress. 14 Marks

(OR)

6 Explain what do understand by pure bending. List out all the assumptions in the theory of simple bending. 14 Marks

UNIT-IV

7 A steel shaft ABCD having a total length of 2400mm is contributed by three different sections as follows. The portion AB is hollow having outside and inside diameters 80mm and 50mm respectively, BC is solid and 80mm diameter. CD is also solid and 70mm in 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 0.82×10^5 MPa. 14 Marks

(OR)

8 Define the term pure torsion. Find suitable expression to determine the angle of twist of any cross section of a circular shaft subjected to an external torque. 14 Marks

UNIT-V

9 Prove that in the case of a thin cylindrical shell subjected to an internal fluid pressure, the volumetric strain is equal to twice the circumferential strain plus the longitudinal strain. 14 Marks

(OR)

10 Determine the maximum stress induced in a cylindrical steel strut of length 1.4 m and diameter 40 mm. The strut is hinged at both its ends and subjected to an axial thrust of 30 kN at its ends and a transverse point load of 2 kN at the centre. Take $E = 2.08 \times 10^5$ N/mm². 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC14) Supplementary Examinations May - 2023**FLUID MECHANICS-I
[CIVIL ENGINEERING]**

Time: 3 hours

Max. Marks: 70

**Answer One Question from each Unit
All questions carry equal marks****UNIT-I**

- 1 Differentiate between: 14 Marks
 (i) Liquids and gases and
 (ii) Real fluids and ideal fluids. One litre of crude oil weighs 9.6 N.
 Calculate its specific weight, density and specific gravity.

(OR)

- 2 State and Prove the Pascal's law. Determine the total pressure on a circular plate of diameter 1.5 m which is placed vertically in water in such a way that the centre of the plate is 3 m below the free surface of water. Find the position of centre of pressure also. 14 Marks

UNIT-II

- 3 State Bernoulli's theorem for steady flow of an incompressible fluid. Derive an expression for Bernoulli's equation from the first principle and state the assumptions made for such a derivation. 14 Marks

(OR)

- 4 a) Define path line, streak line and the streamline. For what type of flow these lines are identical? 7 Marks
 b) Define the Equation of Continuity. Derive the Continuity Equation for three dimensional flows from fundamentals by indicating the assumptions made where ever are required. 7 Marks

UNIT-III

- 5 Derive an expression for loss of head due to sudden enlargement and find the head lost due to friction in a pipe of diameter 360 mm and length 60 m through which water is flowing at a velocity of 2.5 m/s using Darcy formula and Chezy's formula for which $C=60$. Assume Kinematic viscosity as 0.01 stoke. 14 Marks

(OR)

- 6 Differentiate between notch and weir and A discharge of 0.06 cumec was measured over right angled notch. While measuring the head over the notch, an error of 1.5 mm was made. Determine the percentage error in the discharge, if coefficient of discharge of notch is 0.6. 14 Marks

UNIT-IV

7 Derive the Hagen-Poiseuille equation for loss of head of a viscous fluid flowing through a circular pipe. 14 Marks

(OR)

8 A laminar flow is taking place in a pipe of diameter 200 mm. The maximum velocity is 1.5 m/s. Find the mean velocity and the radius at which this occurs. Also calculate the velocity at 4cm from the wall of the pipe. 14 Marks

UNIT-V

9 a) Define Reynold's Model Law. 4 Marks

b) A pipe of diameter 1.5 m is required to transport an oil of specific gravity 0.90 and viscosity 3×10^{-2} poise at the rate of 3000 litre/s. Test were conducted on a 15 cm diameter pipe using water at 200 C . Find the velocity and rate of flow in the model. Viscosity of water at 200 C = 0.01 poise. 10 Marks

(OR)

10 a) What is the significance of non- dimensional numbers: Reynolds's number, Froude number and Mach number in the theory of similarity? 7 Marks

b) What is dimensional analysis? How is this analysis related to the theory of similarity? 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC14) Supplementary Examinations May - 2023**LINEAR AND DIGITAL IC APPLICATIONS****[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 the following: 6 Marks
 i) Slew Rate ii) PSRR iii) Thermal drift
 b) Explain about level translator. 8 Marks
- (OR)
- 2 a) List the characteristics of an ideal op-amp. 8 Marks
 b) Give the classification of Integrated Circuits. 6 Marks

UNIT-II

- 3 a) Explain Current to Voltage converter. 7 Marks
 b) Draw and explain the operation of op-amp based non-inverting comparator. 7 Marks
- (OR)
- 4 a) Derive the transfer function and magnitude for a low pass first order filter. 7 Marks
 b) Explain Logarithmic amplifier. Discuss the problems with basic circuit and how they are overcome. 7 Marks

UNIT-III

- 5 a) List out the applications of PLL and explain any two applications. 7 Marks
 b) Explain the operation of 555 based mono stable multivibrator. 7 Marks
- (OR)
- 6 a) Explain the operation of dual slope A/D converter. 7 Marks
 b) Draw and explain VCO working principle and derive a equation for its free running. 7 Marks

UNIT-IV

- 7 a) Draw the CMOS inverter circuit and explain in detail. 7 Marks
 b) Define DC noise margin with reference to TTL gate. 7 Marks
- (OR)
- 8 a) Explain the following terms with reference to CMOS logic: 6 Marks
 i) Logic levels ii) Power supply rails
 b) Briefly explain about CMOS/TTL interfacing. 8 Marks

UNIT-V

- 9 a) Explain the data flow modeling in Verilog. 8 Marks
 b) Write a Verilog program for 4 input priority encoder. 6 Marks
- (OR)
- 10 a) Explain blocking and non-blocking statements with example. 7 Marks
 b) Explain about the various steps involved in HDL based design flow. 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC16) Supplementary Examinations May – 2023**PROBABILITY DISTRIBUTIONS AND STATISTICAL METHODS****[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. a) Define probability mass function and distribution function of a discrete random variable. CO1 7 Marks
- b) A random variable X has the following probability function: CO4 7 Marks

X	0	1	2	3	4	5	6	7	8
P(x)	K/45	K/15	K/9	K/5	2K/45	6K/45	7K/45	8K/45	4K/45

Determine: (i) K (ii) mean (iii) variance and standard deviation.

(OR)

2. a) Define discrete random variable, variance of discrete distribution, the relation between probability density function and cumulative density function of random variable. CO1 7 Marks
- b) For continuous random variable whose p.d.f. is given by $f(x) = 3x^2$ when $0 \leq x \leq 1$. Determine a and b such that CO4 7 Marks
- i) $P(X \leq a) = P(X > a)$; ii) $P(X > b) = 0.05$.

UNIT-II

3. a) Construct a Poisson distribution satisfying the following data and also find the expected frequencies. CO3 7 Marks

x	0	1	2	3	4
f	30	62	46	10	2

- b) Estimate the mean and standard deviation of a normal distribution in which 7% of terms are under 35 and 89% are under 63. CO4 7 Marks

(OR)

4. a) Assume that 50% of all engineering students are good in Mathematics. Determine the probabilities that among 18 engineering students: CO4, CO5 7 Marks
- i) Exactly 10
- ii) At least 10
- iii) At most 8, are good in Mathematics.
- b) If X is a Poisson variate such that $P(X=0) = P(X=2) + 3P(X=4)$. CO4 7 Marks
- Find the (i) mean of X (ii) $P(X < 2)$.

UNIT-III

5. Construct the mean and range charts from the following data and draw the conclusions from results obtained. CO3 14 Marks

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean	12.8	13.3	14.5	13.9	13.2	15.1	12.4	12.5	14.2	13.5
Range	2	3	3.5	2.5	1.5	2.4	2.8	3.4	1.7	2.2

(OR)

6. Price indices of cotton and wool are given below for the 12 months of a year. Write the equations of lines of regression between the indices CO4 14 Marks

X	78	77	85	88	87	82	81	77	76	83	97	93
Y	84	82	82	85	89	90	88	92	83	89	98	99

UNIT-IV

7. a) Explain briefly about (i) Population and Sample (ii) Parameter and Statistic (iii) Sampling distribution of a statistic. CO1 7 Marks
- b) A population consists of 5 observations 2, 3, 6, 8 and 11. Consider all possible samples of size two which can be drawn without replacement from this population. Find (i) the mean and standard deviation of the population (ii) the mean of the sampling distribution of mean. CO2, CO5 7 Marks
- (OR)
8. a) A sample of 400 individuals is found to have a mean height of 67.47 inches. Is it reasonable to regard the sample drawn from the large population with mean height 67.39 inches and standard deviation of 1.3 inches. Justify your answer. CO1, CO4 7 Marks
- b) In a sample of 1000 people in a state, 470 were found to be rice consumers and the rest wheat consumers. Can we conclude that the food items are equally popular? Justify your answer. CO2 7 Marks

UNIT-V

9. The following random samples are measurements of the heat producing capacity (in million of calories per ton) of specimens of coal from two mines. CO4 14 Marks

MINE I	8260	8130	8350	8070	8340	
MINE II	7950	7890	7900	8140	7920	7840

Test 0.02 level of significance; whether it is reasonable to assume that the variances of the two populations sampled are equal.

(OR)

10. a) A random sample of 10 boys had the following IQ's 70, 120, 110, 101, 88, 86, 95, 98, 107, 100 CO4 7 Marks
- i) Check whether these data support the assumption of a population mean IQ of 100
- ii) Find 95% confidence limits of the mean IQ values of samples of 10 boys.
- b) Two independent samples of 7 items respectively had the following values. CO4 7 Marks

Sample I	11	11	13	11	12	15	12	14
Sample II	9	11	10	12	10	9	0	---

Test 0.05 level of significance whether the difference between the means of samples significant.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**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) Define Gamma function and evaluate $\int_0^1 x^m (1-x^n)^p dx$ in terms of Gamma function. CO4 7 Marks

b) Show that $\int_0^1 \frac{x}{\sqrt{1-x^5}} dx = \frac{1}{5} \beta\left(\frac{2}{5}, \frac{1}{2}\right)$. CO4 7 Marks

(OR)

2 a) Show that $\frac{d}{dx}(x^{-n} J_n(x)) = -x^{-n} J_{n+1}(x)$. CO4 7 Marks

b) Evaluate $J_{1/2}(x)$ and $J_{-1/2}(x)$. CO4 7 Marks

UNIT-II

3 a) Define analytic function. If $f(z)$ is an analytic function with constant modulus, show that $f(z)$ is constant. CO1 7 Marks

b) Find the regular function whose imaginary part is $\frac{2 \sin x \sin y}{\cos 2x + \cosh 2y}$. CO4 7 Marks

(OR)

4 a) If the potential function is $\log(x^2 + y^2)$, find the flux function and the complex potential function. CO2 7 Marks

b) Show that $\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right) \log |f(z)| = 0$. CO4 7 Marks

UNIT-III

5 a) Evaluate $\int_{1-i}^{2+3i} (z^2 + z) dz$ along the line joining the points $(1, -1)$ and $(2, 3)$. CO4 7 Marks

b) Construct Taylor's expansion of $f(z) = \frac{2z^3+1}{z^2+z}$ about the point $z = i$. CO3 7 Marks

(OR)

6 a) Evaluate $\int_C \frac{e^z}{(z+1)^2} dz$ by Cauchy's integral formula, where C is $|z-1| = 3$. CO4 7 Marks

b) Construct Laurent's expansion of $f(z) = \frac{7z-2}{(z+1)z(z-2)}$ in the region $1 < |z+1| < 3$. CO3 7 Marks

UNIT-IV

7 a) Define residue and evaluate $\int_C \frac{\sin(\pi z^2) + \cos(\pi z^2)}{(z-2)(z-1)^2} dz$, where 'c' is the circle $|z| = 3$ using residue theorem. CO5 7 Marks

b) Determine the poles and residues of $f(z) = \frac{2z+4}{(z+1)(z^2+1)}$. CO3 7 Marks

(OR)

8 Evaluate $\int_{-\infty}^{\infty} \frac{x^2}{(x^2+1)(x^2+4)} dx$ by complex variable technique. CO5 14 Marks

UNIT-V

- 9 a) Applying the transformation $w = \frac{1}{z}$, find the image of $|z - 2i| = 2$. CO4 7 Marks
- b) Determine the invariant points of the transformation $w = \frac{z-1}{z+1}$. CO1 7 Marks
- (OR)**
- 10 Determine the bilinear transformation which maps the points $z = 1, i, -1$ onto the points $w = i, 0, -i$ and hence find the image of $|z| < 1$. CO3 14 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 - 2023

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) | What is hydrostatic law? Differentiate gauge and absolute pressures. | CO1 | 6 Marks |
| | b) | A circular plane plate of diameter 3m lies in water in such a way that the plane makes an angle of 30° with the free water surface. Determine the total pressure and center of pressure when the upper edge is 2m below the free water surface. | CO2 | 8 Marks |

(OR)

- | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|
| 2. | 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 0.009mm . | CO1 | 14 Marks |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|

UNIT-II

- | | | | | |
|----|----|----------------------------------------------------------------------------------------|-----|---------|
| 3. | a) | Explain the classification of fluid flows. | CO1 | 7 Marks |
| | b) | Derive the continuity equation in differential form for three dimensional fluid flows. | CO2 | 7 Marks |

(OR)

- | | | | |
|----|------------------------------------------------------|-----|----------|
| 4. | Derive the discharge equation of a triangular notch. | CO1 | 14 Marks |
|----|------------------------------------------------------|-----|----------|

UNIT-III

- | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------|-----|---------|
| 5. | a) | Describe Buckingham's theorem? Why this theorem is considered superior to Rayleigh's method for dimensional analysis. | CO4 | 7 Marks |
| | b) | What are the different laws on which models are designed for dynamic similarity? Where are they used? | CO4 | 7 Marks |

(OR)

- | | | | |
|----|-------------------------------------------------------------------------|-----|----------|
| 6. | Derive an expression for loss of energy due to friction in a pipe flow. | CO2 | 14 Marks |
|----|-------------------------------------------------------------------------|-----|----------|

UNIT-IV

- | | | | |
|----|-------------------------------------------------------|-----|----------|
| 7. | Derive the dynamic equation of gradually varied flow. | CO1 | 14 Marks |
|----|-------------------------------------------------------|-----|----------|
- (OR)
- | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|
| 8. | Derive an expression to determine the velocity of flow using Chezy's formula. Calculate the dimensions of the rectangular cross section of an open channel which requires minimum area to convey 10 cumec. The slope being 1 in 1500. Take Manning's $N = 0.013$. | CO2 | 14 Marks |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|

UNIT-V

- | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|
| 9. | Show that the efficiency of a free jet striking normally as series of flat plates mounted on the periphery of a wheel never exceeds 50%. | CO3 | 14 Marks |
|----|------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|
- (OR)
- | | | | |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|
| 10. | Derive an expression for the work done by the impeller of a centrifugal pump on liquid per second per unit weight of liquid. Explain briefly manometric and volumetric efficiencies of a centrifugal pump. | CO1 | 14 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 - 2023

MECHANICS OF SOLIDS

[CIVIL ENGINEERING]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

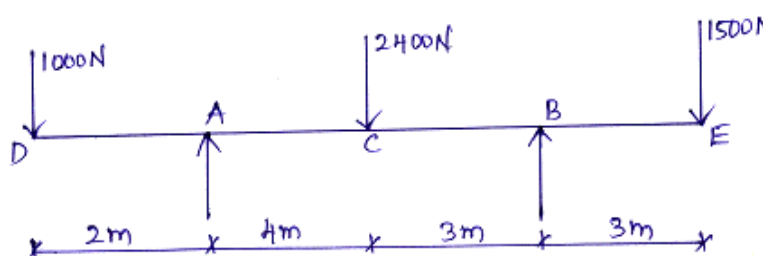
1. A steel wire 2 m long and 3 mm in diameter is extended by 0.75 mm when a weight 'W' is suspended from the wire. If the same weight is suspended from a brass wire, 2.5 m long and 2 mm in diameter, it is elongated by 4.64 mm. Determine the modulus of elasticity of brass if that of steel be 2.0×10^5 N/mm². CO1 14 Marks

(OR)

2. A bar of 25mm diameter is tested in tension. It is observed that when a load of 60 KN is applied, the extension measured over a gauge length of 200 mm is 0.12 mm and contraction in diameter is 0.0045 mm. Determine the:
- CO1 14 Marks
- i) Poisson's ratio ii) Young's Modulus
iii) Shear Modulus iv) Bulk Modulus.

UNIT-II

3. Determine the maximum shear force and bending moment of a Cantilever beam shown in the figure and draw SFD and BMD. CO2 14 Marks



(OR)

4. A beam AB 5m long is simply supported at A and B. It is loaded with point loads of 20kN, 30kN and 20kN at distances of 1m, 3m and 4m respectively from the support A and a uniformly distributed load at the rate of 20kN/m over length of 2m, the beginning of the U.D.L. being at a distance of 2m from A. Draw the bending moment and shear force diagrams. CO2 14 Marks

UNIT-III

5. A T-section has a flange width of 200 mm and overall depth of 150 mm and thickness 20mm. If it is subjected to a shear force of 120kN at a section, Find the maximum intensity of stress and also draw the shear stress distribution diagram. CO1 14 Marks

(OR)

6. What are the assumptions in the theory of pure bending and derive $M/I = \sigma/Y = E/R$. CO2 14 Marks

UNIT-IV

7. A hollow shaft and a solid shaft construction of the same material have the same length and the same outside radius. The inside radius of the hollow shaft is 0.6 times of the outside radius. Both the shafts are subjected to the same torque. CO1 14 Marks
- (i) What is the ratio of maximum shear stress in the hollow shaft to that of solid shaft?
- (ii) What is the ratio of angle of twist in the hollow shaft to that of solid shaft?
- (OR)
8. a) Derive an equation for the deflection of a closely coiled helical spring? CO3 6 Marks
- b) Find the maximum permissible axial load for a closely coiled helical spring made out of 10mm square rod with 16 coils of 12cm mean diameter if the maximum shear stress is limited to 300N/mm², calculate also the deflection under load if $N=0.84 \times 10^5 \text{N/mm}^2$. CO4 8 Marks

UNIT-V

9. An external pressure of 10MPa to a thick cylinder of internal diameter 150mm and external diameter 300mm. if the maximum hoop stress permitted on the inside wall is 35MPa. Calculate CO3 14 Marks
- i) The maximum internal pressure that can be applied.
- ii) The change in outside diameter if cylinder has the closed ends.
- Take $E= 210\text{GPa}$, $\mu=0.3$
- (OR)
10. A thin cylindrical shell 3 m long which is closed at the ends has an internal diameter of 1 m and a wall thickness of 15 mm. Calculate the circumferential and longitudinal stresses induced and also changes in the dimensions of the shell, if it is subjected to an internal pressure of 1.5 N/mm². Take $E=2 \times 10^5 \text{ N/mm}^2$ and $\mu=0.25$. CO3 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**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. Obtain an expression in vector form. CO1 7 Marks
 b) Point charges of 50nC each are located at A(1, 0, 0), B(-1, 0, 0), C(0,1,0), CO4 7 Marks
 and D(0,-1, 0) in free space. Find the total force on the charge at A.
 (OR)
2. a) Explain Electric field Intensity, Electric Flux Density and the relation CO1 7 Marks
 between them.
 b) Calculate the work done in moving a 4C charge from B (1, 0, 0) to A(0, 2, CO3 7 Marks
 0) along the path $y=2-2x, z=0$ in the field $E=:$
 i) $5 a_x$ V/m; ii) $5x a_x$ V/m.

UNIT-II

3. Define a boundary condition and mention its application. Obtain the CO4 14 Marks
 boundary conditions for tangential and normal components between two
 perfect dielectric materials.
 (OR)
4. Obtain an expression for the field and potential due to a small electric dipole CO1 14 Marks
 oriented along z-axis.

UNIT-III

5. a) Define magnetic field intensity and magnetic flux density. Give the relation CO2 7 Marks
 between them.
 b) Mention the significance of permeability. CO2 7 Marks
 (OR)
6. a) Obtain Maxwell's fourth equation in point and integral form. CO2 7 Marks
 b) A current sheet $\vec{K} = 9\hat{a}_x$ A/m lies in $z = 10$ m plane and current filament is CO4 7 Marks
 located at $y = 0, z = 8$ m. Determine I in current filament if $\vec{H} = 0$ at P (5, 0,
 2) m.

UNIT-IV

7. a) Derive the expression for energy stored in static magnetic field. CO1 7 Marks
 b) A point charge of 10 C moves with a uniform velocity of $2\mathbf{a}_x - 4\mathbf{a}_z$ m/s in an CO3 7 Marks
 EM field having $E = \mathbf{a}_x - 3\mathbf{a}_y + 8\mathbf{a}_z$ V/m and $B = 0.3\mathbf{a}_x + 0.1\mathbf{a}_y$ Wb/m². Find the total
 force on the charge.
 (OR)
8. a) Obtain an expression for force between two differential current elements CO2 7 Marks
 carrying currents I_1 and I_2 .
 b) A rectangular coil carrying a current of 5A is placed in the magnetic field CO3 7 Marks
 $\vec{B} = 0.3(\vec{a}_x + \vec{a}_y)T$. The coil is lying in the y-z plane and has dimensions 0.8m
 x 0.4m. Find the torque developed by the coil.

UNIT-V

9. a) Derive an expression Displacement current density J_d , and also give the physical interpretation of Maxwell's Equations. CO2 7 Marks
b) Derive boundary conditions between two perfect dielectrics in a magnetic field. CO5 7 Marks
- (OR)
10. a) State and explain Faradays laws of electromagnetic induction. CO4 7 Marks
b) Explain inconsistency of Ampere's law. CO4 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**SIGNALS, SYSTEMS AND NETWORKS****[ELECTRICAL AND ELECTRONICS ENGINEERING]**

Time: 3 hours

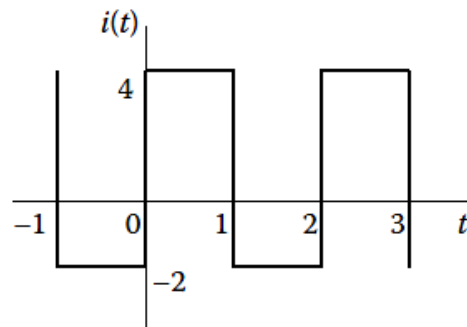
Max. Marks: 70

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

1. a) Show that whether $x(t) = Ae^{-\alpha t} u(t)$, $\alpha > 0$ is an energy signal or not. CO2 7 Marks
 b) Find the convolution of the following signals CO2 7 Marks
 $x(t) = e^{-2t} u(t)$ and $h(t) = u(t + 2)$.
 (OR)
2. Determine whether the signal $x(t) = \cos\left(\frac{\pi}{8}t\right) \sin\left(\frac{\pi}{4}t\right)$ is periodic or not. If CO4 14 Marks
 periodic find the fundamental frequency.

UNIT-II

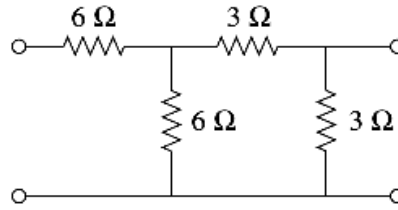
3. Define Laplace transform of a time function $x(t) u(t)$. Determine Laplace CO1 14 Marks
 transforms for
 i) $\delta(t)$ (the impulse function)
 ii) $u(t)$ (the unit step function)
 (OR)
4. a) Enumerate the properties of Fourier transforms. CO1 6 Marks
 b) The periodic current waveform shown in Figure is applied across a CO4 8 Marks
 2 k Ω resistor. Find the percentage of the total average power dissipation
 caused by the DC component.

**UNIT-III**

5. Explain the transient properties of a capacitor for DC and AC excitations. CO1 14 Marks
 (OR)
6. a) A DC series RLC circuit consists of $R=20 \Omega$, $L=0.05 \text{ H}$ and $C=20 \mu\text{F}$ with CO4 7 Marks
 a 100V constant source when the switch is closed at $t=0$. Find the current
 transient.
 b) In a series RL circuit, the application of a DC voltage results in a current CO4 7 Marks
 of 0.741 times the final steady state value of current after 1 sec. However,
 after the current has reached its final value, the source is short circuited.
 What would be the value of current after one second?

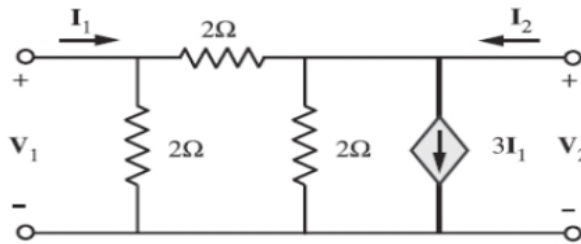
UNIT-IV

7. Calculate the Y parameters for the two port network shown below. CO4 14 Marks



(OR)

8. a) Y-parameters for a two port network are given as $Y_{11}=0.75\Omega$, $Y_{12}=Y_{21}=-0.25\Omega$, $Y_{22}=0.8\Omega$. Design an equivalent π -network. CO3 7 Marks
- b) Determine the admittance parameters for the network shown in Figure. CO4 7 Marks
Investigate the network for symmetry and reciprocity.



UNIT-V

9. State the significance of propagation constant in filter design and explain the design procedure for low pass T-section filter. CO2 14 Marks

(OR)

10. a) Explain in detail constant K- Low pass filter and constant K- High pass filter. CO2 7 Marks
- b) Design a m- derived LPF with a cut off frequency of 2K Hz and frequency of attenuation 2100Hz. Give design impedance is 400 ohms. CO3 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**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 steel rod 20 mm in diameter passes centrally through a steel tube of 25 mm internal diameter and 30 mm external diameter. The tube is 800 mm long and is closed by rigid washers of negligible thickness which are fastened by nuts threaded on the rod. The nuts are tightened until the compressive load on the tube is 20 kN. Calculate the stresses in the tube and the rod. Find the increase in these stresses when one nut is tightened by one quarter of turn relative to other. There are 4 threads per 10 mm. $E=200$ GPa. CO5 14 Marks

(OR)

2. A rectangular block 350mm long, 100mm wide and 80mm thick is subjected to axial load as follows. 50kN tensile in the direction of length, 100kN compression in the direction of thickness and 60kN tensile in the direction of breadth. Determine the change in volume, Bulk modulus, modulus of rigidity. CO2 14 Marks
Take $E=2 \times 10^5$ N/mm² and Poisson's ratio 0.25.

UNIT-II

3. Calculate the reactions for the beam shown in fig 1. Construct the bending moment and shear force diagrams. Determine the location of the maximum bending moment and mark it clearly on the bending moment diagram. CO2 14 Marks

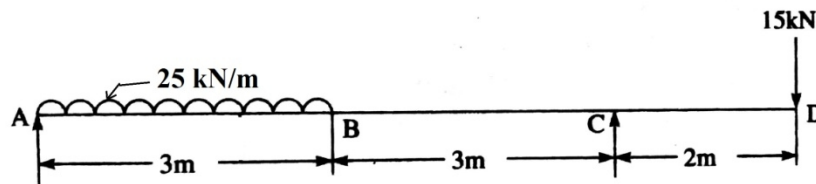


Fig.1

(OR)

4. a) Discuss in brief about sagging and hogging bending moments. CO1 4 Marks
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. CO6 10 Marks

UNIT-III

5. a) Find the width and depth of the strongest beam that can be cut of a cylindrical log of wood whose diameter is 600mm. CO3 5 Marks
b) A water main of 1200 mm internal diameter and 12 mm thick is running full. If the stress is not to exceed 56 N/mm², find the greatest span which the pipe may be freely supported. Steel and water weigh 76800 N/m³ and 10000 N/m³ respectively. CO3 9 Marks

(OR)

6. A hollow shaft with inner diameter to outer diameter ratio of **0.78** is to transmit **20 KW** at a speed of **200 RPM**. Assume the allowable shear stress for the shaft material as **42 MPa** and the limiting angle of twist in **1.8 m** length of shaft as **2°**. Determine the inner and outer diameters of the shaft. **G = 84GPa**. Also compare the percentage saving of material with solid shaft. CO3 14 Marks

UNIT-IV

7. a) Briefly explain the construction of Mohr's circle for plane stress. CO6 6 Marks
b) A cantilever of length 2 m carries a uniformly varying load of 25 kN/m at the free end to 75 kN/m at the fixed end. If $E = 1 \times 10^5 \text{ N/mm}^2$ and $I = 1 \times 10^8 \text{ mm}^4$, determine the slope and deflection of the cantilever at the free end. CO3 8 Marks

(OR)

8. A beam of length 6m is simply supported at its ends and carries two point loads of 48kN at a distance of 1 m and 3 m respectively from left end support. Find the deflection under each load, the maximum deflection and the point at which it occurs. CO5 14 Marks

Take $E=2 \times 10^5 \text{ MPa}$ and $I=85 \times 10^6 \text{ mm}^4$.

UNIT-V

9. a) Derive the expressions for the hoop stress and longitudinal stress in case of thin cylindrical pressure vessel subjected to fluid pressure 'p'. CO1 6 Marks
b) A cylindrical thin drum 80 cm in diameter and 3 m long has a shell thickness of 10 mm. If the drum is subjected to an internal pressure of 2.5 N/mm^2 , determine
i) Change in diameter,
ii) Change in length, and
iii) Change in volume. CO4 8 Marks

(OR)

10. a) Distinguish between thin and thick cylindrical pressure vessels? Also give the expressions for the stresses induced in them due to fluid pressure. CO1 6 Marks
b) A cylinder of a hydraulic ram is 20 cm internal diameter. Determine the thickness required to withstand an internal pressure of 45 MPa, if the maximum tensile stress and shear stress are limited to 95 MPa and 80 MPa respectively. CO5 8 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**ELECTRONIC CIRCUIT ANALYSIS AND 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) Compare Direct and Capacitive coupling of multiple stages of amplifiers. CO2 7 Marks
 b) Draw the single stage CE amplifier and explain the function of each component in it. CO1 7 Marks

(OR)

- 2 a) Apply cascading concept to get large voltage gain. CO6 7 Marks
 b) Derive expressions for current gain, voltage gain, input resistance and output resistance of Darlington amplifier. CO3 7 Marks

UNIT-II

- 3 Derive the expressions of Gain Bandwidth product for voltage and current. CO3 14 Marks

(OR)

- 4 a) Prove that
 i) $h_{fe} = g_m r_{b'e}$ ii) $h_{ie} = r_{bb'} + r_{b'e}$ CO3 7 Marks
 b) Write short notes on multistage frequency effect. CO1 7 Marks

UNIT-III

- 5 Apply current series feedback concept in a CE amplifier to form Trans-conductance Amplifier CO6 14 Marks

(OR)

- 6 a) A crystal oscillator has the following parameters. CO4 7 Marks
 $L = 0.33H$, $C_1 = 0.065pF$, $C_h = 1.0pF$ and $R = 5.5K\Omega$. Find the series resonant frequency and Q-factor of the crystal.
 b) Select a RC phase shift oscillator to get low frequency sign wave and derive the expression for the frequency of oscillations. CO5 7 Marks

UNIT-IV

- 7 a) Classify the power amplifiers based on their operating point, distortion, conduction angle and maximum power efficiency. CO4 7 Marks
 b) Compare small signal voltage amplifiers to power amplifiers CO2 7 Marks

(OR)

- 8 a) Explain the operation of a class-B complementary symmetry power amplifier and deduce the expression for maximum efficiency. CO1 7 Marks
 b) What is heat sink? What is its function? Explain. CO1 7 Marks

UNIT-V

- 9 a) What is stagger tuning? Suggest possible applications. CO1 7 Marks
 b) Explain the effect of cascading single tuned amplifiers on Bandwidth. CO2 7 Marks

(OR)

- 10 Draw the equivalent circuit of capacitance coupled single tuned amplifier and derive the equation for voltage gain. CO1 14 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 - 2023

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) List the following properties of systems CO1 7 Marks
 i) Stability; ii) Linearity; iii) causality.
 b) Sketch $r(t)+r(t-1)+r(t-2)+r(t-3)$. CO2 7 Marks

(OR)

2. Consider a discrete – time system with input $x(n)$ and output $y(n)$ related CO1 14 Marks

$$\text{by } y(n) = \sum_{k=n-n_0}^{n+n_0} x(k) \text{ Where } n_0 \text{ is a finite positive integer.}$$

- i) Is this system Linear?
 ii) Is this system time-invariant?
 iii) If $x(n)$ is known to be bounded by a finite integer B_x [i.e; $|x(n)| < B_x$], it can be shown that $y(n)$ is bounded by a finite number 'C' we conclude that the given system is stable. Express 'C' in terms of B_x and n_0 .

UNIT-II

3. Suppose we are given the following information about a signal $x(t)$: CO5 14 Marks
 i) $x(t)$ is real

ii) $x(t)$ is periodic with period $T=6$ and has Fourier coefficients X_n

iii) $x_n=0$ for $n = 0$ and $n > 2$;

iv) $x(t)=-x(t-3)$;

v) $\frac{1}{6} \int_{-3}^3 |x(t)|^2 dT = \frac{1}{2}$ (vi) X_1 is a positive real number.

Show that $x(t)=A \cos (Bt + c)$, and determine the values of the constants A,B and C

(OR)

4. a) Find the Fourier Transform of the signal CO4 7 Marks
 $x(t) = x^1(t) * x^2(t)$ where, $x^1(t) = e^{-2t} u(t)$ and $x^2(t) = u(t)$.
 b) State and prove any three properties of Fourier Series. CO1 7 Marks

UNIT-III

5. a) If a function $x(t)$ has a power spectral density $S(W)$.find the power spectral density of
- i) Integral $x(t)$.
 - ii) Derivative of $x(t)$.
 - iii) Bring out the relation between them.
- b) State the properties of auto correlation function. CO1 6 Marks
- (OR)
6. a) Examine how autocorrelation and average power are related for a signal $x(t)$. CO2 6 Marks
- b) Define the terms related to discrete LTI systems CO1 8 Marks
- i) Inverse system;
 - ii) deconvolution.

UNIT-IV

7. a) Determine the inverse Laplace transform of $X(s) = \frac{2}{s(s+1)(s+2)^2}$. CO4 7 Marks
- b) Determine the inverse Laplace transform of $X(s) = \frac{1}{(s+2)(s^2+1)}$. CO4 7 Marks
- (OR)
8. Check whether the following LTI system is Causal (or) Anti causal using ROC Properties of Laplace Transform for CO5 14 Marks
- i) $H(S) = \frac{1}{S^2 + 5S + 6} \text{R}\{S\} > -2$
 - ii) $H(S) = \frac{1}{S^2 + 5S + 6} \text{R}\{S\} < -3$
 - iii) $H(S) = (e^{-s}) / S+1$ for $\text{R}\{S\} > -1$.

UNIT-V

9. a) The final value of a system whose input $x(t) = (2 + e^{-3t})u(t)$ is obviously $x(\infty) = 2$.show that the final value can be found with final value theorem CO5 8 Marks
- b) Obtain the relationship among the Fourier Transform, Laplace Transform and Z-Transform. CO2 6 Marks
- (OR)
10. a) Explain the following sampling techniques CO1 7 Marks
- i) Natural sampling;
 - ii) Flat top sampling.
- b) Explain why over sampling is restored to in certain applications. How does it help? CO2 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**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. Explain the properties of EX-OR gate. CO1 14 Marks
(OR)
2. Reduce the following Boolean expression CO5 14 Marks
i) $F = AB + \overline{AC} + \overline{ABC}(AB + C)$
ii) $F = (AB + C + D)(\overline{C} + D)(\overline{C} + D + E)$

UNIT-II

3. a) Simplify the following function using K-map method. CO5 7 Marks
 $F(A, B, C, D) = \Sigma m(0, 1, 2, 3, 4, 10, 11, 12) + d(0, 3, 6, 10)$
b) Minimize the following expression using K-map and realize using NOR gates. $F = \prod M(1, 2, 3, 8, 9, 10, 11, 15)$ CO3 7 Marks
(OR)
4. Minimize using K-maps and realize using NAND gates. CO5 14 Marks
 $F(A, B, C, D, E) = \Pi(6, 9, 11, 13, 14, 17, 20, 25, 28, 29, 30)$

UNIT-III

5. a) Design suitable multiplex for the following function $F = (A \oplus B \oplus)$. CO3 7 Marks
b) Draw and explain decimal adder. CO6 7 Marks
(OR)
6. Construct a full adder using a suitable multiplexer. CO3 14 Marks

UNIT-IV

7. a) Give the transition table for SR, JK, D and T flip flops. Convert an SR flip flop into D flip flop. CO2 7 Marks
b) Draw the logic diagram of a SR latch using NOR gates. Explain its Operation using excitation table. CO2 7 Marks
(OR)
8. Convert SR Flip-Flop to D Flip-Flop. CO2 14 Marks

UNIT-V

9. a) Define the following terms: CO1 7 Marks
i) PROM; ii) PLA; iii) PAL.
b) Design PAL for the Boolean function CO3 7 Marks
 $F1(X, Y, Z) = X'Y'Z + XZ' + YZ'$, $F2(X, Y, Z) = X'Y' + XY$, $F3(X, Y, Z) = YZ'$.
(OR)
10. Implement the following Boolean functions using PLA CO1 14 Marks
 $W(A, B, C, D) = \Sigma m(0, 2, 6, 7, 8, 9, 12, 13)$,
 $X(A, B, C, D) = \Sigma m(0, 2, 6, 7, 8, 9, 12, 13, 14)$.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**ANALOG ELECTRONIC 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) Discuss CE short circuit current gain with relevant equations. CO3 8 Marks
 b) Define f_{β} , f_T and β_{ac} and state the relation between f_{β} and f_T . CO1 6 Marks

(OR)

2. a) What is an effect of bypass and coupling capacitor in BJT amplifier? CO1 7 Marks
 b) Derive the expressions of Gain Bandwidth product for voltage and current. CO3 7 Marks

UNIT-II

3. Implement a voltage series feedback circuit and calculate its input and output resistance CO6 14 Marks

(OR)

4. a) Write the construction and working of Wein's bridge oscillator and derive the expression of frequency. CO1 7 Marks
 b) A tuned collector oscillator has a fixed inductance of $100\mu\text{H}$ and has to be tunable over the frequency band of 500KHz to 1,500KHz. Find the range of variable capacitor to be used. CO4 7 Marks

UNIT-III

5. a) A class - B push pull power amplifier drives a load of 16Ω connected to the secondary of an ideal transformer. If the number of turns on the primary is 200 and that on the secondary is 50, calculate the maximum power output, dc power input, efficiency and maximum power dissipated per transistor if the supply voltage is 25Volts. CO4 8 Marks
 b) What are the drawbacks of transformer coupled power amplifiers? CO1 6 Marks

(OR)

6. a) A push pull amplifier utilizes a transformer whose primary has a total of 160 turns and whose secondary has 40 turns. It must be capable of delivering 40W to an 8Ω load under maximum power conditions CO4 7 Marks
 b) What is cross over distortion? How can it be eliminated in case of a transformer coupled class- B push pull power amplifier? Explain with a neat circuit diagram. CO1 7 Marks

UNIT-IV

7. a) Draw the circuit diagram for a negative and positive voltage clamping circuits. Sketch the input and output waveforms and explain the operation. CO2 8 Marks

b) State and prove the Clamping circuit theorem. CO1 6 Marks

(OR)

8. a) Apply appropriate technique on a simple RC Circuit to convert square Signal to Spikes. CO5 7 Marks

b) Discuss in detail about Diode Comparator with neat sketches. CO1 7 Marks

UNIT-V

9. a) Draw the circuit diagram of collector-coupled monostable multivibrator and derive an expression for the gate width. CO1 6 Marks

b) Determine the values of capacitors to be used in an astable multivibrator to provide a train of pulse width $2\mu\text{s}$ with a repetitive rate of 100KHz, if $R_1 = R_2 = 20\text{K}\Omega$ CO2 8 Marks

(OR)

10. a) With neat circuit diagram, Explain the working of the emitter - coupled binary. CO1 7 Marks

b) Design an Astable multivibrator to generate a square wave of 1KHz frequency with a duty cycle of 25%. CO4 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**OPERATING SYSTEMS****[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 process states with state transition diagram. CO1 7 Marks
 b) With a neat sketch explain about Process Control Block (PCB). CO1 7 Marks
 (OR)
2. a) List out various functions of Operating Systems. CO1 7 Marks
 b) Analyze the role of schedulers in the process selection. CO2 7 Marks

UNIT-II

3. a) Illustrate Peterson's solution to critical section problem. CO2 7 Marks
 b) Describe the mutual exclusion implementation with **TestAndSet()**. CO2 7 Marks
 (OR)
4. Illustrate the purpose of Banker's algorithm with appropriate example. CO3 14 Marks

UNIT-III

5. a) Distinguish between page table and inverted page table with appropriate examples. CO2 7 Marks
 b) Explain the benefits of a virtual memory system. CO2 7 Marks
 (OR)
6. a) Given memory partitions of 100K, 500K, 200K, 300K and 600K. CO2 7 Marks
 Apply first fit, best fit and worst fit to place 212K, 417K, 112K, 426K.
 b) Illustrate about translation *lookaside* buffer (TLB) in detail. CO2 7 Marks

UNIT-IV

7. a) Develop a technique for managing the free space. CO1 7 Marks
 b) How do you transfer a page memory to contiguous disk space? CO1 7 Marks
 Explain.
 (OR)
8. a) Explain the concept of Swap-Space Management. CO3 6 Marks
 b) Explain Discuss in detail about disk scheduling algorithms with CO1 8 Marks
 examples.

UNIT-V

9. Discuss in detail about the protection and security of an operating system. CO5 14 Marks
 (OR)
10. Describe various block and character devices in detail. CO5 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

II B.Tech I Semester (SVEC16) Supplementary Examinations May - 2023**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) Describe the characteristics of unix programs. | CO1 | 4 Marks |
| | b) List out the programming languages available for linux system. | CO1 | 10 Marks |
| | (OR) | | |
| 2. | Describe the list of the programming languages available for Linux system. | CO1 | 14 Marks |

UNIT-II

- | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|
| 3. | Write shell script on prime number and Fibonacci series by using control structures | CO1 | 14 Marks |
| | (OR) | | |
| 4. | a) Summarize the functionality of different Control structures with examples. | CO1 | 7 Marks |
| | b) Write Shell Script to find out biggest number from given three numbers. Numbers are supplied as command line argument. Print error if sufficient arguments are not supplied. | CO3 | 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) Explain the following system calls for managing files.
i) lseek; ii) fstat,stat and lstat; iii) dup and dup2. | CO1 | 10 Marks |
| | b) Design a shell script to list all of the directory files in a directory. | CO4 | 4 Marks |

UNIT-IV

- | | | | |
|----|---------------------------------------------------------------------------|-----|---------|
| 7. | a) What is a signal? Why we need them? Explain signal function in detail. | CO1 | 8 Marks |
| | b) Write about alarm and pause functions? | CO2 | 6 Marks |
| | (OR) | | |
| 8. | a) Define process. Describe the structure of process. | CO1 | 7 Marks |
| | b) Discuss the need for process table. | 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) Specify the address format of sockets. | CO1 | 2 Marks |
| | b) Examine the process of naming socket, creating socket queue and accepting connections | CO2 | 12 Marks |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023

NUMERICAL METHODS, PROBABILITY AND STATISTICS

[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. a) Use the method of false position, to find the fourth root of 32 correct to three decimal places. 6 Marks L3 CO1 PO1
 b) Using Newton’s iterative method, find the real root of $x \sin x + \cos x = 0$ which is near $x = \pi$ correct to 3 decimals. 6 Marks L3 CO1 PO2

(OR)

2. a) Find $y(55)$ given that $y(50) = 205$, $y(60) = 225$, $y(70) = 248$ and $y(80) = 274$. Use Newton’s forward difference formula. 6 Marks L3 CO1 PO2
 b) Using Lagrange’s interpolation formula to find the value of y when $x = 10$ if the following values of x and y are given. 6 Marks L1 CO1 PO1

x :	5	6	9	11
y :	12	13	14	16

UNIT-II

3. a) Find the value of $\cos 1.747$, using the values given in the table below. 6 Marks L1 CO1 PO2

x :	1.70	1.74	1.78	1.82	1.86
sin x:	0.9916	0.9857	0.9781	0.9691	0.9584

- b) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using Simpson’s 3/8 rule. 6 Marks L3 CO1 PO1

(OR)

4. a) Using Taylor’s series method, Compute the solution $\frac{dy}{dx} x + y$, $y(0) = 1$ at the point $x = 0.2$ correct to three decimal places. 6 Marks L3 CO1 PO1
 b) Apply Runge – Kutta method of fourth order to find an approximate value y when $x = 0.2$, given that $10 \frac{dy}{dx} = x^2 + y^2$, $y(0) = 1$ taking $h = 0.1$ 6 Marks L3 CO1 PO1

UNIT-III

5. a) The Probability density function of a variate X is 6 Marks L1 CO2 PO1

X :	0	1	2	3	4	5	6
P(X):	K	3k	5k	7k	9k	11k	13k

- i) Find $P(x < 4)$
 ii) $P(x \geq 5)$
 iii) $P(x \leq x \leq 6)$
 iv) What will be the minimum value of ‘k’ so that $P(X \leq 2) > 3$

- b) A function is defined as follows $f(x) = \begin{cases} 0, & x < 2 \\ \frac{1}{18}(2x+3), & 2 \leq x \leq 4 \\ 0, & x > 4 \end{cases}$ 6 Marks L1 CO2 PO1

Show that it is a density function. Find the Probability that a variate having this density will fall in the interval $2 \leq x \leq 3$.

(OR)

6. a) A coin is tossed until a head appears .what is the expectation of the number of tosses required? 6 Marks L1 CO2 PO2
 b) Show that i) $V(X + k) = V(X)$ ii) $V(kX) = k^2V(X)$ where X is a continuous random variable and k is a constant. 6 Marks L1 CO2 PO1

UNIT-IV

7. a) The Probability that a pen manufactured by a company will be defective is 0.1. If 12 such pens are manufactured , find the Probability that
 i) exactly two will be defective
 ii) at least two will be defective
 iii) None will be defective
 b) If a random variable has a Poisson distribution such that $P(1) = P(2)$, Find i) Mean of the distribution ii) $P(4)$. 6 Marks L1 CO2 PO1

(OR)

8. a) In normal distribution , 31% of the items are under 45 and 8% are over 64.Find the mean and Standard deviation of the distribution. 6 Marks L1 CO2 PO2
 b) A random variable X has a uniform distribution over $(-3, 3)$, Find 'K' for which $P(X > K) = \frac{1}{3}$. Also evaluate $P(X < 2)$ and $P[|X - 2| < 2]$. 6 Marks L1 CO2 PO4

UNIT-V

9. a) A coin was tossed 400 times and the head turned up 216 times. Test the hypothesis that the coin is unbiased at 5% level of significance. 6 Marks L4 CO2 PO4
 b) In two large populations there are 30% and 25% respectively of fair haired people. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations? 6 Marks L4 CO2 PO4

(OR)

- 10 a) A random sample of size 25 from a normal population has the mean $\bar{x} = 47.5$ and s.d s = 8.4. Does this information refute the claim that mean of the population $\mu = 42.1$. 6 Marks L3 CO2 PO4
 b) A die was thrown 60 times and the following frequency distribution was observed :

Faces :	1	2	3	4	5	6
f_0 :	15	6	4	7	11	17

Test whether die is unbiased.



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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 – 2023**SPECIAL FUNCTIONS AND COMPLEX ANALYSIS****[Electrical and Electronics Engineering, 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) Define Beta and gamma functions and express the following integral in terms of gamma function $\int_0^{\pi/2} \sqrt{\tan \theta} \, d\theta$. 6 Marks L2 CO1 PO1
- b) 1. Compute $\Gamma(0.5)$, $\Gamma(4.5)$ and $\Gamma(-3.5)$. 6 Marks L2 CO1 PO1
- (OR)**
2. a) Express the following integral in terms of gamma function $\int_0^{\infty} \frac{x^a}{a^x} dx$. 6 Marks L2 CO1 PO1
- b) Evaluate $\int_0^{\infty} e^{-ax} x^6 dx$ using gamma function. 6 Marks L2 CO1 PO1
- 2.

UNIT-II

3. a) Express $J_5(x)$ in terms of $J_0(x)$ and $J_1(x)$. 6 Marks L2 CO1 PO1
- b) Define Legendre polynomial $P_n(x)$ and show that $P_n(-x) = (-1)^n P_n(x)$. 6 Marks L2 CO1 PO2
- (OR)**
4. a) 1. Establish the relation $J_{-1/2}(x) = J_{1/2}(x) \cot x$. 6 Marks L2 CO1 PO1
- b) Show that $\int_{-1}^1 P_n(x) P_m(x) dx = 0$ ($m \neq n$) 6 Marks L2 CO1 PO1

UNIT-III

5. a) Determine a, b, c and d so that the function $f(z) = (x^2 + axy + by^2) + i(cx^2 + dxy + y^2)$ is analytic. 6 Marks L2 CO2 PO2
- b) Determine the critical points of the transformation $w = z + \frac{1}{z}$ ($z \neq 0$). 6 Marks L3 CO2 PO1
- (OR)**
6. a) Find the velocity potential ϕ , in a two dimensional fluid flow, the stream function $\Psi = -y/(x^2 + y^2)$ is given. 6 Marks L2 CO2 PO1
- b) x) Find the bilinear transformation that maps $z_1 = -1, z_2 = i, z_3 = 1$ onto $w_1 = 0, w_2 = i, w_3 = \infty$ respectively. Also determine the fixed points of the transformation. 6 Marks L3 CO2 PO1
- XI)

UNIT-IV

7. a) Estimate the values of $f(2)$ and $f(3)$, if $f(a) = \oint_C \frac{2z^2 - z - 2}{z - a} dz$ 6 Marks L3 CO2 PO1
 where C is the circle $|z| = 2.5$.

b) Obtain Taylor series expansion of $f(z) = \frac{z}{z+2}$ about $z=1$. 6 Marks L2 CO2 PO2

(OR)

8. a) Evaluate using Cauchy's integral formula $\oint_C \frac{\sin \pi z^2 + \cos \pi z^2}{z^2 - 3z + 2} dz$ where C is the circle with centre at origin and radius is 3. 6 Marks L3 CO2 PO1

b) Find the Laurent series expansion of $\frac{z^2 + 1}{z^2 - 5z + 6}$ about $z=0$ in the annulus $2 < |z| < 3$. 6 Marks L2 CO2 PO2

UNIT-V

9. a) Evaluate $\oint_C \tan z dz$ where C is the circle $|z| = 2$. 6 Marks L2 CO2 PO2

b) Evaluate $\int_0^\infty \frac{\sin mx}{x} dx$, when $m > 0$. 6 Marks L3 CO2 PO1

(OR)

10 a) 2. Apply the calculus of residues. evaluate 6 Marks L3 CO2 PO1

$$\int_0^{2\pi} \frac{d\theta}{(a + b \cos \theta)} \quad (a > b > 0).$$

b) Apply residue theorem, find $\oint_C \frac{3z + 2}{z(z-1)(z-2)} dz$, where C is the circle $|z| = 1.5$. 6 Marks L3 CO2 PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023

SURVEYING
[Civil Engineering]

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Discuss the different sources of errors in chain surveying and their elimination. 5 Marks L2 CO1 PO1
- b) In chaining an area containing a pond, two points C and D were selected on either sides of chain station A such that A, C and D points lie on a line. The point B which is on the other side of pond is on the chain line AB. If the distances AC, AD, BC and BD are 35m, 45m, 100m, and 95m respectively, determine the length of chain line AB and the angles which the inclined line CD makes with the chain line AB. 7 Marks L3 CO1 PO2

(OR)

2. a) Write short notes on: 5 Marks L2 CO1 PO1
- i) Whole circle bearing system .
 - ii) Dip of magnetic needle.
 - iii) Magnetic declination.
 - iv) Fore and back bearings.
- b) The following bearings are observed while traversing with a compass and tape. Check bearings for local attraction. Correct the bearings by the method of included angles. 7 Marks L3 CO1 PO2

Line	FB	BB
AB	195°30'	17°0'
BC	73°30'	250°30'
CD	36°15'	214°30'
DE	266°45'	84°45'
EA	234°15'	57°0'

UNIT-II

3. a) Describe briefly the use of various accessories of a plane table. 6 Marks L2 CO1 PO1
- b) Explain briefly the following: 6 Marks L2 CO2 PO1
- i) Fly leveling
 - ii) Check leveling
 - iii) Reciprocal leveling
- (OR)**
4. a) The following staff readings were taken with a level: 0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030, 3.76 Bench a mark was taken at 1st reading is + 132.135 and the instrument were shifted after 2nd, 4th and 8th readings. Enter the readings in level book form and Find the RL's at different points and apply the check. 7 Marks L4 CO2 PO2
- b) Explain the uses of contour maps? 5 Marks L2 CO2 PO1

UNIT-III

5. a) What are the temporary adjustments of a theodolite? Explain clearly. 6 Marks L2 CO3 PO1
- b) What is gales traverse table? What are the steps adopted for complete traverse computations in Gales traverse table. 6 Marks L2 CO3 PO1

(OR)

6. a) What is tangential method of tachometry? What are its advantage and disadvantages over the stadia method? 5 Marks L2 CO3 PO1
- b) A tachometer is setup at an intermediate point on a traverse course PQ and the following observations are made on a staff held vertical. 7 Marks L4 CO3 PO2

Staff station	Vertical angle	Staff intercept	Axial hair readings
P	+ 9°30'	2.250	2.105
Q	+ 6°00'	2.055	1.975

The constants are 100 and 0. Compute the length PQ and the reduced level of Q. Reduce level of P = 350.50 m.

UNIT-IV

7. a) The following perpendicular offsets were taken at 10 m intervals from a chain line to an irregular boundary line: 3.10, 4.20, 5.35, 6.45, 7.15, 8.25, 7.95 and 5.20 m Find the area by i) Trapezoidal rule ii) Simpson's rule 6 Marks L4 CO4 PO2
- b) The areas enclosed by the contours in a lake are as follows: 6 Marks L4 CO4 PO2
Contour (m) : 270 275 280 285 290
Area (m²) : 2050 8400 16300 24600 31500
Calculate the volume of water between the contour 270 m and 290 m by
i) Trapezoidal formula ii) Prismoidal formula

(OR)

8. a) Write about the elements of a circular curve with a sketch. 6 Marks L2 CO5 PO2
- b) A simple circular curve is of 330 m radius. Calculate he offsets from the tangent to locate point on the curve at 15 m intervals for a distance of 60 m from tangent points. Give the radial as well as perpendicular offsets. 6 Marks L6 CO5 PO3

UNIT-V

9. a) What are the modern surveying electronic equipment and briefly explain each equipment? 6 Marks L2 CO6 PO1 PO12
- b) Discuss the applications of total station? 6Marks L3 CO6 PO1 PO12

(OR)

- 10 a) Explain the working principle and applications of drone surveying? 6 Marks L3 CO6 PO1 PO12
- b) Write a note on interior drone surveying and exterior surveying. 6 Marks L2 CO6 PO1 PO12



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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 – 2023

ELECTRICAL MACHINES-I

[Electrical and Electronics Engineering]

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) | State the methods of excitation of DC generator. | 6 Marks | L3 | CO1 | PO1 |
| | b) | An 8 pole dc generator has 500 armature conductors and a useful flux of 0.05wb per pole. What will be the emf generated if its lap connected and runs at 1200rpm? What must be the speed at which it is to be driven produce the same emf, if it is wave-wound? | 6 Marks | L2 | CO1 | PO4 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) | Derive the condition for maximum efficiency for a DC generator. | 6 Marks | L3 | CO1 | PO1 |
| | b) | Calculate overall efficiency of a 250V, 100kW dc shunt generator at full load if the resistances of the armature and shunt field are 0.006 and 25Ω respectively. The core, friction and windage losses together are 3.2kW. | 6 Marks | L2 | CO1 | PO2 |

UNIT-II

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | State the possible causes of failure of excitation and remedial measures of self excited generator. | 6 Marks | L1 | CO2 | PO1 |
| | b) | A 4 pole lap wound generator having 480 armature conductors supplies a current of 150A. If the brushes are given an actual lead of 10°, Calculate demagnetizing amp turns/pole and cross magnetizing amp turns/pole. | 6 Marks | L2 | CO2 | PO7 |

(OR)

- | | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Draw and explain the load characteristics of dc shunt generator. Why shunt generator load characteristics turn back when over loaded? | 6 Marks | L2 | CO2 | PO5 |
| | b) | A 250kW, 400, 6-pole pole dc shunt generator has 720 lap wound conductors. It is given a brush lead of 2.5 angular degrees (mech) from the geometrical neutral axis. Calculate demagnetizing and cross magnetizing amp turns. Neglect shunt filed current. | 6 Marks | L3 | CO2 | PO2 |

UNIT-III

- | | | | | | | |
|----|----|-------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) | What is back e.m.f? Explain the significance of back e.m.f. | 4 Marks | L1 | CO3 | PO1 |
| | b) | With neat sketch, explain the function of 3 point starter. | 8 Marks | L2 | CO3 | PO6 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) | Derive the torque equation of DC motor. | 4 Marks | L3 | CO3 | PO1 |
| | b) | Explain in detail the various methods of speed control in dc series motor. | 8 Marks | L2 | CO3 | PO7 |

UNIT-IV

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Discuss about the effects of variation of frequency and supply voltage on iron losses. | 8 Marks | L1 | CO4 | PO1 |
| | b) | An 11kV/400V distribution transformer takes no load primary current of 1 amp at a power factor of 0.24 lagging. Find -
i) Core loss current ii) Magnetizing current iii) Iron loss | 4 Marks | L2 | CO4 | PO2 |

(OR)

8. a) Prove that the amount of copper saved in auto transformer is $(1-k)$ times that of ordinary transformer. 8 Marks L2 CO4 PO2
b) A 1 kVA, 220/110V, 400Hz transformer is desired to be used at a frequency of 60Hz. What will be the kVA rating of the transformer at reduced frequency? 4 Marks L3 CO4 PO4

UNIT-V

9. a) State the advantages of three phase transformer. 2 Marks L1 CO4 PO1
b) Describe in brief Scott connection of two single- phase transformers for conversion of a balanced 3-phase to a balanced 2-phase supply. Draw circuit diagram and phasor diagram. 10 Marks L3 CO4 PO6

(OR)

- 10 a) State the merits of open $-\Delta$ connection. 2 Marks L1 CO4 PO1
b) Explain the delta/delta, star/star, delta/star and star/delta connections of 3 single phase transformer bank. What are their distinguishing features? State their applications. 10 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-19) Supplementary Examinations May – 2023

ENGINEERING THERMODYNAMICS

[Mechanical Engineering]

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) Define control volume and control surface. How does control volume differ from an open system? | 6 Marks | L1 | CO1 | PO1 |
| | b) An automobile vehicle of 1500 kg mass is running at a speed of 60 km/hr. The brakes are applied and the vehicle is brought to rest. Calculate the rise in the temperature of the brakes if their mass is 15 kg. Take specific heat of the brake material is 0.46 kJ/kg K. | 6 Marks | L4 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Derive an expression for work done for polytropic process. | 6 Marks | L3 | CO1 | PO1 |
| | b) 0.3 kg of nitrogen gas at 100 kPa and 40°C is contained in a cylinder. The piston is moved compressing nitrogen until the pressure becomes 1 MPa and temperature becomes 160°C. The work done during the process is 30 kJ. Calculate the heat transferred from the nitrogen to the surroundings. C_v for nitrogen = 0.75 kJ/kg K. | 6 Marks | L4 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Explain Perpetual Motion Machine of second kind. | 5 Marks | L2 | CO1 | PO1 |
| | b) A Carnot engine operates between two reservoirs whose difference in temperature is 200°C. If the work output of the engine is 0.5 times the heat rejected, make calculations for the temperature of source and sink and thermal efficiency of the engine. | 7 Marks | L3 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Show that COP of a heat pump is greater than COP of a refrigerator by unity. | 4 Marks | L2 | CO1 | PO2 |
| | b) A reversible heat engine operates between two reservoirs at temperatures 700°C and 50°C. The engine drives a reversible refrigerator which operates between reservoirs at temperatures of 50°C and -25°C. The heat transfer to the engine is 2500 kJ and the network output of the combined engine refrigerator plant is 400 kJ. i) Determine the heat transfer to the refrigerant and the net heat transfer to the reservoir at 50 °C . | 8 Marks | L5 | CO1 | PO2 |

UNIT-III

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Describe the process of formation of steam and give its graphical representation. | 6 Marks | L2 | CO2 | PO1 |
| | b) If certain amount of steam is produced at 8 bar pressure and 0.8 dryness fractions. Calculate external work done during evaporation and internal heat of steam. | 6 Marks | L5 | CO2 | PO2 |

(OR)

6. a) A gas obeys $p(v - b) = RT$, where b is positive constant. Find the expression for the Joule-Thomson coefficient of this gas. Could this gas be cooled effectively by throttling? 5 Marks L2 CO3 PO2
- b) Prove that the change in entropy is given by 7 Marks L3 CO3 PO2
- $$ds = \frac{C_v}{T} \left[\frac{KT}{\beta} dp + \frac{C_p}{\beta v} \right] dv.$$

UNIT-IV

7. a) What is compressibility factor? What does it signify? What is its value for an ideal gas at critical point? 6 Marks L2 CO3 PO1
- b) Steel flask of 0.04 m^3 capacity is to be used to store nitrogen at 120 bar, 20°C . The flask is to be protected against excessive pressure by a fusible plug which will melt and allow the gas to escape if the temperature rises too high. i) How many kg of nitrogen will the flask hold at the designed conditions? ii) At what temperature must the fusible plug melt in order to limit the pressure of a full flask to a maximum of 150 bar?

(OR)

8. a) What is the difference between an ideal and a perfect gas? What are semi-perfect or permanent gases? 4 Marks L2 CO3 PO1
- b) The percentage composition of sample of liquid fuel by weight is, $C = 84.8\%$, and $H_2 = 15.2\%$. Calculate- 8 Marks L4 CO3 PO3
- i) the weight of air needed for the combustion of 1 kg of fuel;
- ii) the volumetric composition of the products of combustion if 15% excess air is supplied.

UNIT-V

9. a) Derive an expression for thermal efficiency of an Otto cycle. 6 Marks L3 CO4 PO2
- b) The mean effective pressure of a Diesel cycle is 7.5 bar and compression ratio is 12.5. Find the percentage cut-off of the cycle if its initial pressure is 1 bar. 6 Marks L4 CO4 PO3

(OR)

- 10 a) Explain Ericsson cycle with P-V and T-S diagram. 6 Marks L2 CO4 PO1
- b) Air enters the compressor of a gas turbine operating on Brayton cycle at 101.325 kPa , 27°C . The pressure ratio in the cycle is 6. Calculate the maximum temperature in the cycle and the cycle efficiency. Assume Turbine work is 2.5 times compressor work. Take $\gamma = 1.4$. 6 Marks L4 CO4 PO3



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**KINEMATICS OF MACHINERY****[Mechanical Engineering]**

Time: 3 hours

Max. Marks: 60

**Answer One Question from each Unit
All questions carry equal marks****UNIT-I**

- | | | | | | |
|----|--------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) Differentiate and give examples for closed and open pairs. | 6 Marks | L2 | CO1 | PO1 |
| | b) Explain Kutzbach criterion for degree of freedom of plane mechanisms. | 6 Marks | L2 | CO1 | PO1 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------|----------|----|-----|-----|
| 2. | Sketch and explain any two inversions of a double slider crank chain. | 12 Marks | L2 | CO1 | PO1 |
|----|-----------------------------------------------------------------------|----------|----|-----|-----|

UNIT-II

- | | | | | | |
|----|-------------------------------------------------------------------------------------------|----------|----|-----|-------------|
| 3. | Sketch and explain peaucellier mechanism. Prove that it generates a straight-line motion. | 12 Marks | L2 | CO2 | PO1,
PO2 |
|----|-------------------------------------------------------------------------------------------|----------|----|-----|-------------|

(OR)

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|---------------------|
| 4. | Two shafts are connected by a Hooke's joint. The driving shaft revolves uniformly at 450 r.p.m. If the total permissible variation in speed of the driven shaft is not to exceed $\pm 4\%$ of the mean speed, find the greatest permissible angle between the centre lines of the shafts. Also determine the maximum and minimum speeds of the driven shaft. | 12 Marks | L3 | CO3 | PO1,
PO2,
PO3 |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|---------------------|

UNIT-III

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|---------------------|
| 5. | A pair of involute spur gears with 16° pressure angle and pitch of module 6 mm is in mesh. The number of teeth in pinion is 16 and its rotational speed is 240 r.p.m. The gear ratio is 1.75. In order to avoid the interference, Determine
i) Addendum on pinion and gear
ii) Length of path of contact
iii) Maximum velocity of sliding on either side of pitch point. | 12 Marks | L4 | CO4 | PO1,
PO2,
PO3 |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|---------------------|

(OR)

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|---------------------|
| 6. | An epicyclic gear consists of a pinion, a wheel of 32 teeth and an annulus with 80 internal teeth concentric with the wheel. The pinion gear meshes with the wheel and the annulus. The arm that carries the axis of the pinion rotates at 150 r.p.m.
i) If the annulus is fixed, find the speed of the wheel
ii) If wheel is fixed, find the speed of the annulus. | 12 Marks | L4 | CO4 | PO1,
PO2,
PO3 |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|---------------------|

UNIT-IV

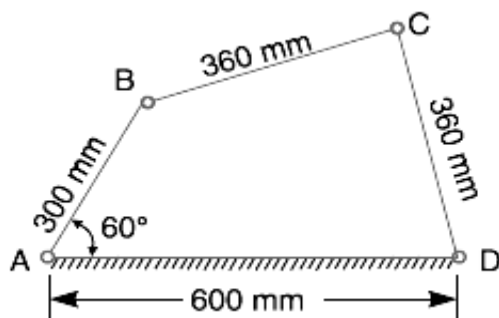
7. A cam operating a roller follower with radius of 15 mm has the following data. 12 Marks L4 CO5 PO1, PO2, PO3
 Follower moves outwards through 40 mm during 90° of cam rotation.
 Follower dwells for the next 45° .
 Follower returns of its original position during next 90° .
 Follower dwells for the rest of the rotation.
 The displacement of the follower is to take place with simple harmonic motion during the outward and the return strokes. The least radius of the cam is 50 mm. Draw the profile of the cam when the axis of the follower is offset 25 mm towards right from the cam axis, if the cam rotates at 250 r.p.m.

(OR)

8. A cam operating a knife - edged follower has the following data 12 Marks L4 CO5 PO1, PO2, PO3
 Follower moves outwards through 40mm during 60° of cam rotation.
 Follower dwells for the next 45° .
 Follower returns of its original position during next 90° .
 Follower dwells for the rest of the rotation.
 The displacement of the follower is to take place with cycloidal motion during the outward and uniform acceleration and deceleration motion during the return strokes. The least radius of the cam is 50 mm. Draw the profile of the cam when the axis of the follower is along the cam axis. If the cam rotates at 300 r.p.m., determine maximum velocity and acceleration of the follower during the outward stroke and the return stroke.

UNIT-V

9. In a pin jointed four bar mechanism as shown in figure, 12 Marks L4 CO6 PO1, PO2, PO3
 AB=300mm, BC=CD=360mm and AD= 600mm. the angle BAD = 60° . The crank AB rotates uniformly at 100rpm. Locate all the instantaneous centres and find the angular velocity of the links BC and CD and velocity of joint C.



(OR)

10. ABCD is a four bar chain with link AD is fixed. The lengths of the links are AB = 60mm, BC = 175mm, CD = 110mm, and AD = 200mm. the crank AB rotates at 10rad/sec clockwise. Draw the acceleration diagram when angle BAD is 60° and B and C lie on the same side of AD. Determine angular acceleration of links BC and CD.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**STRENGTH OF MATERIALS****[Mechanical Engineering]**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) What is composite bar? How will you find the stresses and load carried by each members of a composite bar? | 4 Marks | L1 | CO1 | PO1 |
| | b) Derive the relation between bulk modulus and Young's modulus in terms of Poisson's ratio. | 8 Marks | L3 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Define strain energy theory. State the formula for strain energy and deflection due to bending. | 4 Marks | L1 | CO1 | PO1 |
| | b) An axial pull of 60 kN is applied on a steel bar of diameter 15mm and length 3 m. Calculate the change in length, diameter and volume of the bar if the Poisson's ratio is 0.25. Also find the work done in stretching the bar. Take $E = 2 \times 10^5 \text{ N/mm}^2$. | 8 Marks | L3 | CO1 | PO3 |

UNIT-II

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Define beam. Name its various types. Name types of loading on the beam. | 4 Marks | L1 | CO2 | PO1 |
| | b) A 4 meter long cantilever beam carries a gradually varied load, zero intensity at the free end to 1000 N/m at the fixed end. Draw the shear force and bending moment diagram for the beam. | 8 Marks | L2 | CO2 | PO3 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 4. | A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. The beam carries a uniformly distributed load of 1500 N/m over the entire length. Draw S.F. and B.M. diagram and find the point of contra flexure, if any. | 12 Marks | L3 | CO2 | PO3 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

UNIT-III

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | A 4m long beam with rectangular section of 10cm width and 20cm depth is simply supported at the ends. If it is loaded with a uniformly distributed load of 4kN/m throughout the span and a concentrated load of 2KN placed at a distance of 1.5m from one end, determine the maximum bending stress in the beam. | 12 Marks | L3 | CO3 | PO4 |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 6. | State the assumptions in the theory of simple bending. Also derive the bending equation from first principles. | 12 Marks | L3 | CO3 | PO4 |
|----|----------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

UNIT-IV

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Prove that in torsion, a hollow shaft with inner diameter same as of a solid shaft of same material, length and weight is stronger. The inner diameter of hollow shaft be taken the same as that of the solid shaft. | 8 Marks | L3 | CO4 | PO3 |
| | b) State the assumptions involved in deriving the torsion equation. | 4 Marks | L1 | CO4 | PO1 |

(OR)

- | | | | | | |
|----|--------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) Drive an expression for shear stress produced in a circular shaft subjected to torsion. | 8 Marks | L3 | CO4 | PO2 |
| | b) Write short notes on Mohr's circle of stress. | 4 Marks | L2 | CO4 | PO1 |

UNIT-V

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | The mid span deflection of a simply supported beam (span = 5m) loaded with a concentrated load 20kN at the centre, is 2.5 mm. Determine the maximum deflection if the concentrated load is replaced by a UDL of intensity 4 kN/m acting over the whole span of the beam. | 12 Marks | L3 | CO5 | PO3 |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 10 | a) A uniformly distributed load w/unit length is acting at whole span of a simply supported beam. The length of the beam is L. Derive the formulae to find maximum slope and deflection by double integration method. | 6 Marks | L2 | CO5 | PO2 |
| | b) A cantilever beam of length 3 m carries a uniformly distributed load over the entire length. If the slope at the free end is 0.0177 rad. Find the deflection at the free end. | 6 Marks | L2 | CO5 | PO3 |



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**COMPUTER GRAPHICS****[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) | Compute the intermediate points using the DDA algorithm when the end points of the line are given as (1,1) and (8,7). | 6Marks | L3 | CO2 | PO2 |
| | b) | Design a circle radius $r = 8$, demonstrate the mid-point circle algorithm by determining positions along the circle octant in the first quadrant. | 6 Marks | L2 | CO2 | PO3 |

(OR)

- | | | | | | | |
|----|----|-----------------------------------------------|---------|----|-----|-----|
| 2. | a) | Explain in detail Random Scan display system. | 6 Marks | L1 | CO1 | PO2 |
| | b) | Explain the working of CRT. | 6 Marks | L1 | CO1 | PO2 |

UNIT-II

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | Explain the steps involved in Boundary-fill algorithm for 4 regions with pseudo code. | 6 Marks | L1 | CO2 | PO1 |
| | b) | Consider a triangle whose vertices are (2 2), (4 2) and (4 4). Find the concatenated transformation matrix and the transformed vertices for rotation of 90 about the origin followed by reflection through the line $y = -x$. Discuss the sequence of transformations. | 6 Marks | L3 | CO2 | PO2 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Explain 2D basic transformations with respect to arbitrary point and write their homogeneous matrix representations. | 6 Marks | L1 | CO3 | PO1 |
| | b) | Find the final Reflection matrix about the line $Y = mX + C$ in XY Plane. | 6 Marks | L3 | CO3 | PO2 |

UNIT-III

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) | Illustrate Sutherland – Hodgeman Polygon clipping algorithm with suitable example. | 6 Marks | L2 | CO3 | PO2 |
| | b) | Explain about two-dimensional viewing functions. Give an example which uses two-dimensional viewing functions. | 6 Marks | L1 | CO3 | PO1 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) | Explain the procedure to derive Window – to- viewport coordinate transformation. | 6 Marks | L1 | CO3 | PO2 |
| | b) | Explain Bezier curves and surfaces. | 6 Marks | L1 | CO3 | PO1 |

UNIT-IV

- | | | | | | | |
|----|----|-----------------------------------------------|---------|----|-----|-----|
| 7. | a) | Explain all 3D Transformations with examples. | 8 Marks | L1 | CO3 | PO1 |
| | b) | Discuss clipping. | 4 Marks | L1 | CO3 | PO1 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | Derive the Projection matrices for Parallel Projection. | 6 Marks | L2 | CO4 | PO2 |
| | b) | Explain 3D viewing Pipeline. | 6 Marks | L1 | CO3 | PO1 |

UNIT-V

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | Explain in detail Diffuse Reflection Illumination model with suitable equations. | 6 Marks | L2 | CO4 | PO2 |
| | b) | Explain the following visible surface detection methods
i) Back face detection ii) Depth –Buffer method | 6 Marks | L1 | CO4 | PO1 |

(OR)

- | | | | | | | |
|-----|----|------------------------------------------------------------------|---------|----|-----|-----|
| 10. | a) | Explain in detail Ambient light. | 6 Marks | L1 | CO4 | PO1 |
| | b) | Explain the classification of Visible surface detection methods. | 6 Marks | L2 | CO4 | PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

III B.Tech I Semester (SVEC14) Supplementary Examinations May - 2023**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 The crank and connecting rod of a steam engine are 0.3m and 1.5m in length. The crank rotates at 180 r.p.m. clockwise. Determine the velocity and acceleration of piston when the crank is at 40° from the inner dead centre position. Also determine the position of the crank for zero acceleration of the piston. 14 Marks

(OR)

- 2 A petrol engine with a speed of 3000 r.p.m. has a stroke of 8.75cm. The weight of the connecting rod is 1.75kgf. The length of connecting rod from centre to centre is 17.5cm. The centre of gravity from big end centre is 5.75cm. The radius of gyration about an axis through the center of gravity and perpendicular to the connecting rod is 7.5cm. Find the inertia force of the connecting rod and its direction with the centre line of the connecting rod when the crank makes an angle of 40° with I.D.C. Also find inertia torque on the crank shaft. 14 Marks

UNIT-II

- 3 a) Explain the effect of Gyroscopic couple on a Naval ship during pitching. 7 Marks
b) Explain the effect of Gyroscopic couple on a Aero plane. 7 Marks

(OR)

- 4 a) Write expression for gyroscopic couple. 7 Marks
b) Each paddle wheel of a steamer has a mass of 1600kg and a radius of gyration of 1.2m. The steamer turns to port in a circle of 160m radius at 24km/hr. The speed of the paddle is 90 r.p.m. Find the magnitude and effect of the gyroscopic couple acting on the steamer. 7 Marks

UNIT-III

- 5 1. A cone clutch with one cone angle 20° is to transmit 7.5kw at 750 r.p.m. The normal intensity of pressure between the contact faces is not to exceed 0.12N/mm^2 . The coefficient of friction is 0.2. If face width is 1/5th of mean diameter, find;
i) The main dimensions of the clutch.
ii) Axial force required while running. 14 Marks

(OR)

- 6 A multi-plate clutch has three pairs of contact surfaces. The outer and inner radii of the contact surfaces are 150mm and 80 mm respectively. The maximum axial spring force is limited to 3KN and the co-efficient of friction is 0.3. Assuming uniform wear find the power transmitted by the clutch at 1500 r.p.m. 14 Marks

UNIT-IV

- 7 Four masses M_1 , M_2 , M_3 and M_4 are 200kg, 300kg, 240kg and 260kg respectively. The corresponding radii of rotation are 0.2m, 0.15m, 0.25m and 0.3m respectively and the angle between successive masses are 45° , 75° and 135° . Find the position and magnitude of balance mass required if its radius of rotation is 0.25m. 14 Marks

(OR)

- 8 In a porter governor the upper and lower arms are each 200mm long and are each inclined at 30° to the vertical when the sleeve is in its lowest position. The points of suspensions are each 36mm from the axis of the spindle. The mass of each rotating ball is 3kg and the central load on the sleeve is 20kg. If the lift of sleeve is 36mm, find the range of speed of the governor. 14 Marks

UNIT-V

- 9 a) Explain vibration isolation and transmissibility. 6 Marks
b) Derive the expression for the vibration transmissibility. 8 Marks

(OR)

- 10 a) Explain whirling speed of shaft. 6 Marks
b) Derive the expression for critical speed of shaft with a single disc considering damping. 8 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**SOIL MECHANICS****[Civil Engineering]**

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

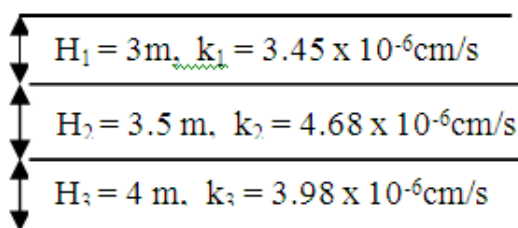
- 1 a) Explain in brief about regional soil deposits of India. CO1 6 Marks
 b) A sample of sand found to have a water content of 20% and bulk unit weight of 19.3 kN/m^3 . Laboratory tests on the sand sample indicated the void ratios in the loosest and densest possible states as 0.90 and 0.50, respectively. Calculate the relative density and the degree of saturation of the sample. (Take $G_s = 2.65$). CO2 8 Marks

(OR)

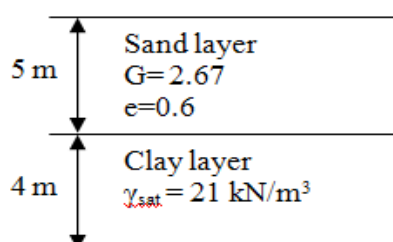
- 2 a) Define the following terms CO2 6 Marks
 i) Shrinkage limit ii) Sensitivity
 iii) Liquidity Index iv) Thixotropy
 b) From the sieve analysis, the soil retained on 4.75 mm sieve is 58% and soil passed through 75- μ sieve is 10 %. Classify the soil as per IS soil classification system, if the soil sample is having liquid limit of 48 % and plastic limit of 33%. The coefficient of uniformity is 5.42 and coefficient of curvature is 3.21. CO1 8 Marks

UNIT-II

- 3 a) Derive an equation for calculating coefficient of permeability using variable head permeability test with a neat sketch. CO2 6 Marks
 b) Calculate the coefficient of permeability of a stratified soil (as shown in figure) in both vertical and horizontal. CO3 8 Marks

**(OR)**

- 4 a) Define discharge velocity and seepage velocity and derive a relationship between these two velocities. CO2 6 Marks
 b) For the subsoil conditions shown in figure, plot total, neutral and effective stress distribution up to the bottom of the clay layer, when water table is 2 m below ground surface (take $S=50\%$ above W.T) and water table is at the ground surface. CO3 8 Marks



UNIT-III

- 5 a) What are the assumptions and limitation of Boussinesq's theory? Give an equation for calculating stress under a rectangular loaded area. CO2 6 Marks
- b) A statue of weight 25000 kN is erected on a circular base. Determine the induced stress at a depth of 5 m from ground surface directly below the statue and at a radius of 2m from the central line. CO3 8 Marks

(OR)

- 6 a) Explain about Newmark's influence chart using a neat sketch. CO8 8 Marks
- b) Explain about the following field compaction methods CO2 6 Marks
- i) Tampers; ii) Pneumatic rollers; iii) Vibrators

UNIT-IV

- 7 a) Explain about immediate, primary and secondary consolidations. Mention the type of soil in which they occur. CO2 6 Marks
- b) A 3 m thick clay layer beneath a structure is overlain by a permeable stratum and underlain by an impervious rock. The coefficient of consolidation found to be $0.0035 \text{ cm}^2/\text{sec}$. The final expected settlement for clay layer is 10 cm: CO3 8 Marks
- i) How much time it will take for 50% of total settlement to take.
- ii) Determine the time required for a settlement of 3.5 cm to occur.

(OR)

- 8 a) Define the following terms: CO2 8 Marks
- i) Coefficient of compression ii) Coefficient of volume change
- iii) Over consolidation ratio iv) Compression Index
- b) Discuss how coefficient of consolidation is determined by logarithm of time method with a neat sketch. CO4 6 Marks

UNIT-V

- 9 a) Explain about direct shear test with a neat sketch. CO4 7 Marks
- b) Discuss the factors affecting the shear strength of cohesive soil. CO2 7 Marks

(OR)

- 10 a) Discuss about Mohr's Coulomb failure criterion with a neat sketch. CO2 6 Marks
- b) The results of a series of CU tests on undisturbed samples of over consolidated clay were: CO2 8 Marks

Cell Pressure (kN/m ²)	Deviator pressure (kN/m ²)	Pore-water pressure (kN/m ²)
100	320	-55
200	410	-25
400	630	30

Determine the shear strength parameters in terms of effective stresses.

Note-Provide normal graph sheet



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023

CONTROL SYSTEMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering]

Time: 3 hours

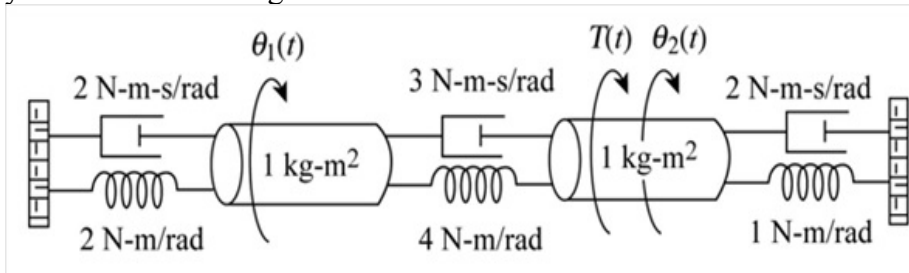
Max. Marks: 70

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

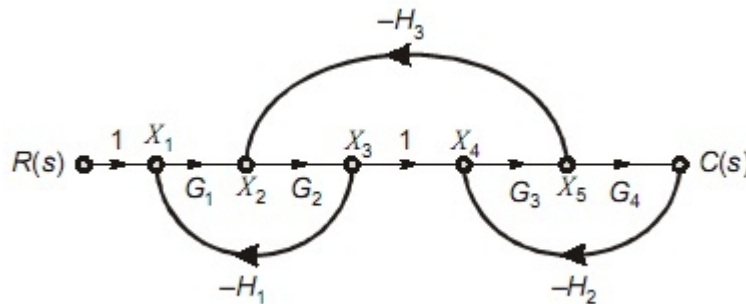
- 1 a) Determine the Transfer function $\frac{\theta_2(s)}{T(s)}$ for the following mechanical system as shown in figure CO4 7 Marks



- b) Derive the Transfer function for Armature controlled DC servo motor? And explain the importance of Back EMF? CO4 7 Marks

(OR)

- 2 a) Determine the Transfer function for the signal Flow graph as shown in figure CO4 7 Marks



- b) Derive the Transfer function for AC Servo motor. CO1 7 Marks

UNIT-II

- 3 a) Calculate the following parameters for the unity feedback system with open loop transfer function $G(s) = \frac{100}{s(s+10)}$ CO2 8 Marks

- i) Rise time
- ii) Peak Time
- iii) Settling Time
- iv) Peak Over shoot

Steady state error due to unit Ramp Input

- b) Calculate the range of gain K for the system to be stable whose characteristic equation is $S^4 + S^3 + 3KS^2 + (K + 2)S + 4 = 0$. CO2 6 Marks

(OR)

- 4 a) Sketch the Root locus for the system having open loop transfer function CO2 10 Marks

$$G(s) = \frac{K(S+5)}{S(S+4)}$$

- b) Explain the importance of relative stability in root locus. CO2 4 Marks

UNIT-III

- 5 a) Determine the stability of the system having open loop transfer function CO2 10 Marks

$$G(s) = \frac{(S+100)}{S(S+10)(S+0.1)}$$
 using Bode plot.

- b) Elaborate the importance of compensators in improving stability. CO2 4 Marks

(OR)

- 6 a) Determine Gain Margin from polar plot for the transfer function CO2 6 Marks

$$G(s) = \frac{4}{(S-4)}$$

- b) Analyse the closed loop system stability with Nyquist plot having open CO2 8 Marks

$$\text{loop system transfer function } G(s) = \frac{40}{S(s+4)(S-4)}$$

UNIT-IV

- 7 a) Explain the importance of compensators in improving the performance of CO1 7 Marks
system with an example.

- b) Analyze the characteristics of Lead- Lag compensator. CO2 7 Marks

(OR)

- 8 a) Obtain the state space model for the Transfer function CO2 7 Marks

$$\frac{Y(s)}{U(s)} = \frac{S+4}{s^3 + 6s^2 + 3s + 4}$$

- b) Consider the system described by $\dot{X} = \begin{bmatrix} 0 & 1 \\ -3 & -1 \end{bmatrix} X + \begin{pmatrix} 0 \\ 1 \end{pmatrix} U, Y = [1 \ 0] X$. CO2 7 Marks

Obtain the State Transition matrix.

UNIT-V

- 9 a) Obtain the Zero Input Response of the system $\dot{X} = \begin{bmatrix} 0 & 1 \\ -3 & -1 \end{bmatrix} X + \begin{pmatrix} 0 \\ 1 \end{pmatrix} U$, CO2 7 Marks

$$Y = [1 \ 0]X \text{ excited through its initial conditions } X(0) = \begin{pmatrix} -1 \\ 1 \end{pmatrix}$$

- b) Obtain the Zero state Response of the system CO2 7 Marks

$$\dot{X} = \begin{bmatrix} 0 & 1 \\ -3 & -1 \end{bmatrix} X + \begin{pmatrix} 0 \\ 1 \end{pmatrix} U, Y = [1 \ 0]X \text{ excited through unit impulse input.}$$

(OR)

- 10 a) Obtain the total response for the state space model CO2 7 Marks

$$\dot{X} = \begin{bmatrix} -1 & 0 \\ 0 & -2 \end{bmatrix} X + \frac{1}{2} U \text{ \& } Y = [2 \ 3]X \text{ having } X(0) = \begin{pmatrix} 0 \\ 0.5 \end{pmatrix} \text{ excited with unit}$$

step input.

- b) Check the controllability & Observability for the system CO2 7 Marks

$$\dot{X} = \begin{bmatrix} -1 & 0 \\ 0 & -2 \end{bmatrix} X + \frac{1}{2} U \text{ \& } Y = [2 \ 3]X$$



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**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 modified Rankine cycle with the help of P-V and T-S diagrams. CO2 7 Marks
 b) A steam power plant operates on a theoretical reheat cycle. Steam in a boiler at 150 bar, 550 °C expands through high pressure turbine. It is reheated at a constant pressure of 40 bar to 550 °C and expands through the low pressure turbine to a condenser pressure of 0.1 bar. Find
 i) Cycle efficiency and ii) steam rate in kg/kWh.

(OR)

- 2 a) How do you classify steam boilers? CO1 5 Marks
 b) Explain working of Babcock and Wilcox boiler with a neat sketch. What are the advantages of high pressure boilers? CO1 9 Marks

UNIT-II

- 3 a) How do you classify draught systems? CO1 5 Marks
 b) A boiler is equipped with 24 m height chimney. The ambient temperature is 25 °C. The temperature of the flue gases passing through the chimney is 300 °C. If the air flow through the combustion chamber is 20 kg/kg of fuel burned, find
 i) Theoretical draught in cm of water and
 ii) the velocity of the flue gases passing through the chimney if 50% of the theoretical draught is lost in friction at grate and passage.

(OR)

- 4 a) Explain Induced draught system and its advantages. CO1 7 Marks
 b) How much air used per kg of coal burnt in a boiler having chimney of 32.3 m height to create a draught of 21 mm of water column when the temperature of flue gases in the chimney is 450 °C and the temperature of boiler house is 30 °C. CO4 7 Marks

UNIT-III

- 5 a) Derive the expressions for the velocity and flow through the in terms of initial pressure, initial specific volume, cross-sectional area, final pressure and index n of frictionless adiabatic expansion. CO1 7 Marks
 b) Steam expands from 3 bar to 1 bar in a nozzle. Initial velocity is 90 m/s and initial temperature is 150 °C. The nozzle efficiency is 95%. Find the exit velocity. CO5 7 Marks

(OR)

- 6 a) Explain velocity compounded steam turbine with neat sketches. CO1 7 Marks
 b) In a simple impulse turbine, the nozzles are inclined at 17° to the direction of motion of the moving blades. The steam leaves the nozzles at 375 m/s. The blade speed is 165 m/s. Find suitable inlet and outlet angles for the blades in order that the axial thrust is zero. The relative velocity of steam as it flows over the blades is reduced by 15% due to friction. Determine also the power developed for a flow rate of 10 kg/s. CO3 7 Marks

UNIT-IV

- 7 a) Derive the condition for maximum efficiency of a Reaction turbine. CO2 7 Marks
b) The outlet angle of the blade of Parson's turbine is 20° and the axial velocity of flow of steam is 0.5 times the mean blade velocity. If the diameter of the ring is 1.25 m and the rotational speed is 3000 rpm. Determine
i) inlet angles of blades,
ii) Power developed if dry saturated steam at 5 bar passes through the blade whose height may be assumed as 6 cm. Neglect the effect of blade thickness.
- (OR)
- 8 a) What are the sources of air in the condensers? CO3 7 Marks
b) Explain working of Low level counter flow jet condenser. CO1 7 Marks

UNIT-V

- 9 a) What are the advantages of Gas turbines over I.C. Engines? CO1 7 Marks
b) The air enters the compressor of an open cycle constant pressure gas turbine at a pressure of 1 bar and temperature of 20°C . The pressure of the air after compression is 4 bar. The isentropic efficiencies of compressor and turbine are 80% and 85% respectively. The air-fuel ratio used is 90:1. If flow rate of air is 3 kg/s, find
i) Power developed and ii) Thermal efficiency of the cycle.
Assume $\gamma=1.4$ for air and gases, calorific value of fuel = 41800 kJ/kg and $C_p=1.0$ kJ/kg-K.
- (OR)
- 10 a) Distinguish between rocket propulsion and turbojet propulsion engines. CO1 7 Marks
b) Explain working of Turbo-prop with a neat sketch. CO1 7 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023

OBJECT ORIENTED ANALYSIS AND DESIGN

[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) Discuss Rules and common mechanisms in UML. | CO1 | 7 Marks |
| | b) Briefly describe the diagrams in the UML. | CO1 | 7 Marks |

(OR)

- | | | | |
|---|-------------------------------------------------|-----|---------|
| 2 | a) Describe the behavioral things in the model. | CO2 | 7 Marks |
| | b) Describe the structural things in the model. | CO2 | 7 Marks |

UNIT-II

- | | | | |
|---|------------------------------------------------------------------|-----|---------|
| 3 | a) Draw and explain class diagram for “withdraw money from ATM”. | CO4 | 7 Marks |
| | b) What is classifier? Explain different classifiers in detail. | CO3 | 7 Marks |

(OR)

- | | | | |
|---|--------------------------------------------------------|-----|---------|
| 4 | a) Write about modeling techniques for class diagram. | CO4 | 7 Marks |
| | b) Categorized the owned elements and object diagrams. | CO3 | 7 Marks |

UNIT-III

- | | | | |
|---|---------------------------------------------------------------------------------------------------------------|-----|---------|
| 5 | a) What is use case diagram? Explain the architecture of “Railway Reservation System” using use case diagram. | CO4 | 7 Marks |
| | b) Write common modeling techniques for class and object diagrams. | CO4 | 7 Marks |

(OR)

- | | | | |
|---|---------------------------------------------------------------------------------|-----|---------|
| 6 | a) Enumerate the steps to model a work flow with reference to activity diagram. | CO5 | 7 Marks |
| | b) Explain terms and concepts of interaction diagram. | CO5 | 7 Marks |

UNIT-IV

- | | | | |
|---|-------------------------------------------------------------|-----|---------|
| 7 | a) Draw state chart diagram for “Movie Ticket Reservation”. | CO6 | 7 Marks |
| | b) What is an event? Explain event with an example. | CO1 | 7 Marks |

(OR)

- | | | | |
|---|--------------------------------------------------------|-----|---------|
| 8 | a) Write about terms and concepts of deployment. | CO3 | 7 Marks |
| | b) Explain in detail about modeling a time constraint. | CO2 | 7 Marks |

UNIT-V

- | | | | |
|---|-------------------------------------------------------------------------------------------------|-----|---------|
| 9 | a) Draw and explain sequence and collaboration diagrams for on line course registration System. | CO5 | 7 Marks |
| | b) Design a model for online movie ticket reservation by component diagram | CO6 | 7 Marks |

(OR)

- | | | | |
|----|--------------------------------------------------------------------------|-----|---------|
| 10 | a) Using an artifact diagram explain the unified hospital management. | CO6 | 7 Marks |
| | b) Design a model peer to peer communication through deployment diagram. | CO6 | 7 Marks |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**WEB TECHNOLOGIES**
[Information Technology]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks**UNIT-I**

- 1 a) Discuss the structure of HTML5 document. CO1 7 Marks
 b) Explain the importance of hyperlinks, meta elements, and lists in website development. CO1 7 Marks

(OR)

- 2 a) Briefly explain HTML5 Audio and Video tags with suitable example. CO1 7 Marks
 b) Discuss the tags:
 (i) CANVAS (ii) SPAN (iii) DIV and (iv) IFRAME CO1 7 Marks

UNIT-II

- 3 a) Discuss the various CSS Selectors. CO2 7 Marks
 b) Explain the background, border, and text properties. CO1 7 Marks

(OR)

- 4 a) Differentiate static and dynamic web pages. Explain JavaScript string object methods. CO1, CO2 7 Marks
 b) Discuss dynamic styles and dynamic positions with suitable example. CO1, CO2 7 Marks

UNIT-III

- 5 a) What is the need of JQuery? How to access HTML elements using JQuery? CO5 7 Marks
 b) What is AJAX? Write a simple AJAX application to display Google like suggestions. CO5 7 Marks

(OR)

- 6 a) Discuss the Bootstrap Grid system with suitable example. CO5 7 Marks
 b) How to construct data entry forms using bootstrap. CO5 7 Marks

UNIT-IV

- 7 a) Discuss Object Cloning in PHP. CO1 7 Marks
 b) Explain Object Oriented PHP. CO1 7 Marks

(OR)

- 8 a) Explain PHP arrays and functions. CO1 7 Marks
 b) Write a PHP script to sort given list of numbers. CO4 7 Marks

UNIT-V

- 9 a) Develop a login web page and validate the login details using PHP. CO3 7 Marks
 b) Develop a simple PHP application which reads the student information from the database and display the same in HTML table. CO3 7 Marks

(OR)

- 10 a) Design how to interact MySQL using PHP with example. CO1, CO6 7 Marks
 b) Differentiate MySQLi and PHP Data Objects (PDO). CO1, CO6 7 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**OBJECT ORIENTED PROGRAMMING**
[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 different features of Java programming. CO1 8 Marks
 b) Write a Java program to find the largest of three numbers using command line arguments. CO1 6 Marks

(OR)

- 2 a) Discuss the concept of method overloading in Java. Give an example. CO1, CO2 6 Marks
 b) Write a Java program for sorting strings using String class. CO3 8 Marks

UNIT-II

- 3 a) Discuss the usage of **super** keyword. Illustrate with examples. CO1 8 Marks
 b) What is an abstract class? Write a Java program to demonstrate abstract classes. CO1, CO2 6 Marks

(OR)

- 4 a) Define a package. How to create packages in java? Give an example. CO1 6 Marks
 b) Write a Java program to implement multiple inheritances. CO1, CO3 8 Marks

UNIT-III

- 5 a) What is an exception? Explain in detail the exception handling mechanism supported by Java. CO1 8 Marks
 b) How to create our own exception classes in Java? Give an example. CO1 6 Marks

(OR)

- 6 a) Discuss the life cycle of a thread in Java. CO2 8 Marks
 b) Write a Java program using the concept of multithreading. CO2 6 Marks

UNIT-IV

- 7 a) How to create an **ArrayList** in java? Write a Java program to perform insertion and deletion operations on **ArrayList**. CO5 8 Marks
 b) Explain life cycle of an applet using Applet class. CO4 6 Marks

(OR)

- 8 a) Discuss the different Layout managers in Java. Give example. CO5 8 Marks
 b) Write a Java program to accept the details of employee from the user and display it on the next frame using AWT. CO6 6 Marks

UNIT-V

- 9 a) Discuss in detail the event handling mechanisms supported by Java. CO4 8 Marks
 b) Write a Java program for handling mouse events. CO4 6 Marks

(OR)

- 10 a) Discuss the life cycle methods of servlet. CO5 6 Marks
 b) Write a Java program to handle action event and window event. CO4 8 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**SYSTEMS SOFTWARE**
[Computer Science and Systems Engineering]**Max. Marks: 70****Time: 3 hours****Answer One Question from each Unit**
All questions carry equal marks**UNIT-I**

- 1 a) List and Explain the System calls present in UNIX. CO1 7 Marks
 b) What are the various general purpose utilities? Explain with suitable example. CO1 7 Marks

(OR)

- 2 a) Analyze with an example the parent child relationship present in UNIX. CO1 8 Marks
 b) Explain the following commands with examples. CO1 6 Marks
 i) diff ii) gzip iii) gunzip
 iv) tar v) zip vi) unzip

UNIT-II

- 3 Discuss the need of System Administration and explain the Kernel data Structure. CO2 14 Marks

(OR)

- 4 a) What are the data structures does the kernel maintain in memory that contain information about an open file? Justify your answer. CO2 7 Marks
 b) Explain the following UNIX commands CO1 7 Marks
 i) Wc ii) od iii) cmp
 iv) comm. v) cp vi) file.

UNIT-III

- 5 a) Expose the Saving context of process in Unix. CO3 7 Marks
 b) Explain the sleep commands with suitable example. CO3 7 Marks

(OR)

- 6 a) Describe Inter Process Communication with an example. CO2 7 Marks
 b) Construct a C program to implement the Dup Commands. CO2 7 Marks

UNIT-IV

- 7 a) Analyze need of invoking other programs with suitable examples. CO4 7 Marks
 b) Devise a program that changes its root to a particular directory. CO1 7 Marks

(OR)

- 8 a) How to create special files? Explain with suitable program. CO2 7 Marks
 b) Analyze the Pipes present in Unix with suitable program. CO2 7 Marks

UNIT-V

- 9 a) Explain the following network commands. CO5 7 Marks
 i) ifconfig ii) ping iii) traceroute
 iv) netstat v) nslookup

- b) Explain the concept of File transfer protocol. CO5 7 Marks

(OR)

- 10 a) What is the need of fsck command Explore with an example? CO5 7 Marks
 b) Explain the standard file systems in UNIXs. CO5 7 Marks



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023

DIGITAL SIGNAL PROCESSING [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) Check whether the given systems are time variant or time invariant, Casual or not, memory less or not. CO1 8 Marks
 i) $y(n) = x(n) + x(n-1)$; ii) $y(n) = x(-n + 2)$.
- b) Find the response of the system described by the difference equation: CO2 6 Marks
 $y(n) + 2y(n-1) + y(n-2) = x(n) + x(n-1)$ for the input $x(n) = \left(\frac{1}{2}\right)^n u(n)$,
 with initial conditions $y(-1) = y(-2) = 1$.
- (OR)**
- 2 a) State and prove the conditions for causality and stability of an LTI system. CO1 8 Marks
 b) Discuss the relation between Z-Transform and DTFT. CO1 6 Marks

UNIT-II

- 3 a) Sketch the radix DIF FFT structure when $N=16$. CO1 7 Marks
 b) State and prove following properties of DFT CO1 7 Marks
 i) Circular shifting ii) Time reversal; iii) complex conjugate
 iv) linearity v) Circular convolution
- (OR)**
- 4 a) Find the circular convolution of two finite duration sequences. CO1 6 Marks
 $x_1(n) = \{1, -1, -2, 3, -1\}$, $x_2(n) = \{1, 2, 3\}$
 b) Explain about decimation in time FFT algorithm. CO1 8 Marks

UNIT-III

- 5 a) The normalized transfer function of analog filter is given by $H(s_n) = 1/s_n^2 + 1.4142s_n + 1$. Convert the analog filter to digital filter with a cutoff frequency of 0.4π , using bilinear transformation. CO3 7 Marks
 b) Derive the relation between analog and digital frequency in bilinear transformation. CO2 7 Marks
- (OR)**
- 6 a) Compute the poles of an analog Butterworth filter transfer function that satisfies the constraints and determine $H(s)$ and hence obtain $H(z)$ using bilinear transformation. Assume $T=1$ sec. CO3 7 Marks
 $0.707 \leq |H(j\Omega)| \leq 1 \quad 0 \leq \Omega \leq 2$
 $|H(j\Omega)| \leq 0.1 \quad \Omega \geq 4$
 b) Compare Bilinear Transformation and Impulse Invariant method. CO1 7 Marks

UNIT-IV

- 7 a) Using a rectangular window design an LPF with pass band gain of unity, cut-off frequency of 1000 Hz, and working at a sampling frequency of 5KHz. Take the length of the impulse response as 7. CO3 7 Marks
- b) The desired frequency response of a HPF is given below. Design a linear phase FIR filter using Hamming window for M=7 and $\omega_c=2$ rad / sample. CO3 7 Marks

$$H_d(e^{j\omega}) = \begin{cases} e^{-j3\omega} & \text{for } \omega_c \leq |\omega| \leq \pi \\ 0 & \text{for } \omega \leq \omega_c \end{cases}$$

(OR)

- 8 a) Design an ideal LPF with desired frequency response CO3 7 Marks
- $$H_d(e^{j\omega}) = \begin{cases} 1 & -\pi/L \leq \omega \leq \pi/2 \\ 0 & \pi/L < \omega \leq \pi \end{cases}$$

Using the window having minimum stop-band attenuation $A_{\text{os}} = -75\text{dB}$ (or) M=7.

- b) Compare different windowing techniques. (CO4) CO4 7 Marks

UNIT-V

- 9 a) Explain about MAC. CO1 7 Marks
- b) Explain about VLIW. CO1 7 Marks

(OR)

- 10 Explain the architecture of TMS 320CX6 with neat block diagram. CO1 14 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**IMAGE PROCESSING**
[Information Technology]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks**UNIT-I**

- 1 In detail explain the fundamental steps involved in digital image processing systems. CO1 14 Marks

(OR)

- 2 Explain in detail the different separable transforms. CO2 14 Marks

UNIT-II

- 3 a) Discuss how image sharpening is achieved in frequency domain. CO2 6 Marks
b) Differentiate the filtering process between spatial domain and frequency domain. CO1 8 Marks

(OR)

- 4 a) Define Histogram. Describe the Histogram processing for effective enhancement of images. CO2 4 Marks
b) Outline the basic steps for filtering in the frequency domain with the help of block diagram. CO3 4 Marks
c) Illustrate how power-law transformation is more versatile than the log transformation. CO4 6 Marks

UNIT-III

- 5 a) Explain how inverse filtering is used for restoration on images. CO2 8 Marks
b) Differentiate lossy compression over error-free approaches. CO2 6 Marks

(OR)

- 6 a) Discuss the concept of minimum mean square error (Wiener) filtering and how is it different from inverse filtering. CO3 7 Marks
b) Outline the image compression models with the help of block diagram. CO3 7 Marks

UNIT-IV

- 7 a) List out different lossy compression techniques. Explain in detail. CO2 8 Marks
b) Explain in detail the concept of coding redundancy. CO3 6 Marks

(OR)

- 8 a) Differentiate lossy compression over error-free approaches. CO3 8 Marks
b) Discuss the fundamental coding theorems. CO4 6 Marks

UNIT-V

- 9 a) Define image segmentation. Write a short note on image segmentation. CO2 7 Marks
b) Write a short note on adaptive thresholding in the image segmentation. CO3 7 Marks

(OR)

- 10 a) Classify the detection of discontinuities and explain each detection in detail. CO5 7 Marks
b) Differentiate region-based segmentation from edge-based segmentation in detail. CO3 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**INDIAN HISTORY****[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. | ‘Archaeology is the backbone of history’ - Comment.
(OR) | 12 Marks | L1 | CO1 | PO1 |
| 2. | Highlight the socio-political conditions of the Sangam period with special mention of three literary assemblies. | 12 Marks | L2 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|----|------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Bring out the salient features of Harappa Civilization.
(OR) | 12 Marks | L1 | CO1 | PO1 |
| 4. | Write a brief note on the origin and expansion of the Mauryan empire. | 12 Marks | L2 | CO2 | PO2 |

UNIT-III

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | Critically examine the nature of political organization in early medieval of North India in the classic period.
(OR) | 12 Marks | L2 | CO2 | PO1 |
| 6. | Enumerate the position of women in the Sultanate period. | 12 Marks | L2 | CO2 | PO6 |

UNIT-IV

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Analyze the main characteristics of the popular movements in the second half of the nineteenth century.
(OR) | 12 Marks | L2 | CO2 | PO2 |
| 8. | Discuss the role of literature in promoting national consciousness in 19th-century India. | 12 Marks | L1 | CO1 | PO1 |

UNIT-V

- | | | | | | |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | Trace the growth of modernization and globalization in India.
(OR) | 12 Marks | L2 | CO2 | PO2 |
| 10. | Communalism is one of the most serious problems that India faced after independence. Critically examine the factors responsible and suggest ways to deal with it. | 12 Marks | L1 | CO1 | PO6 |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**DESIGN AND ANALYSIS OF ALGORITHMS**

[Information Technology]

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

- | | | | | | | |
|----|----|---------------------------------------------------------|---------|----|-----|-----|
| 1. | a) | Explain the properties of an algorithm with an example. | 6 Marks | L2 | CO1 | PO1 |
| | b) | Derive the time complexity of Matrix multiplication. | 6 Marks | L3 | CO1 | PO1 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------|---------|----|-----|-----|
| 2. | a) | Differentiate Amortized analysis and Aggregate analysis. | 6 Marks | L2 | CO1 | PO1 |
| | b) | Discuss recursion tree method with an example. | 6 Marks | L1 | CO1 | PO1 |

UNIT-II

- | | | | | | | |
|----|----|--------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | Explain Union and Find algorithms with suitable examples. | 6 Marks | L2 | CO2 | PO2 |
| | b) | Write the General method of Divide – And – Conquer approach. | 6 Marks | L2 | CO2 | PO2 |

(OR)

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Explain Disjoint set operations with examples. | 6 Marks | L1 | CO2 | PO4 |
| | b) | Write an algorithm for finding the maximum and minimum element from the given list. | 6 Marks | L6 | CO2 | PO3 |

UNIT-III

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | Draw an Optimal Binary Search Tree for n=4 identifiers (a1,a2,a3,a4) = (do,if,read,while) P(1:4)=(3,3,1,1) and Q(0:4)=(2,3,1,1,1). | 12 Marks | L2 | CO3 | PO2 |
|----|-------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) | Explain how Matrix – chain Multiplication problem can be solved using dynamic programming with suitable example. | 6 Marks | L1 | CO3 | PO4 |
| | b) | Explain the methodology of Dynamic programming. List the applications of Dynamic programming. | 6 Marks | L2 | CO3 | PO2 |

UNIT-IV

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Write a Greedy algorithm for sequencing unit time jobs with deadlines and profits. | 6 Marks | L2 | CO3 | PO2 |
| | b) | Discuss the 4 – queen’s problem. Draw the portion of the state space tree for n = 4 queens using backtracking algorithm. | 6 Marks | L6 | CO3 | PO3 |

(OR)

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|----|----|------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | State the Greedy Knapsack? Find an optimal solution to the Knapsack instance n=3, m=20, (P1, P2, P3) = (25, 24, 15) and (W1, W2, W3) = (18, 15, 10). | 6 Marks | L6 | CO3 | PO3 |
| | 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. | 6 Marks | L1 | CO3 | PO4 |

UNIT-V

- | | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | Explain FIFO Branch and Bound solution. | 6 Marks | L2 | CO4 | PO2 |
| | b) | Distinguish between Backtracking and Branch–and–Bound techniques. | 6 Marks | L6 | CO4 | PO3 |

(OR)

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|----|----|--------------------------------------------------------------------------|---------|----|-----|-----|
| 10 | a) | What is LC – Search? Discuss LC – Search algorithm. | 6 Marks | L1 | CO4 | PO4 |
| | b) | Solve the Travelling Salesman problem using Branch–and–Bound algorithms. | 6 Marks | L3 | CO4 | PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**DIGITAL COMMUNICATIONS****[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) | Derive the expression for quantization noise power in PCM. | 6 Marks | L3 | CO1 | PO2 |
| | b) | A signal $m(t)$ of bandwidth $B = 4\text{KHz}$ is transmitted using a binary companded PCM with $\mu = 100$. Compare the case of $L=64$ with case of $L=256$ from the point of view of the transmission bandwidth and the output SNR. | 6 Marks | L3 | CO1 | PO2 |

(OR)

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) | Draw the block diagram of Differential Pulse Code Modulation and explain its operation, advantages and disadvantages. | 6 Marks | L3 | CO1 | PO5 |
| | b) | Derive the expression for output signal to noise ratio in delta modulation. | 6 Marks | L3 | CO1 | PO2 |

UNIT-II

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | Draw the block diagram of baseband binary PAM system and explain. | 6 Marks | L3 | CO2 | PO5 |
| | b) | Obtain the Nyquist criterion for distortion less baseband binary transmission. | 6 Marks | L1 | CO2 | PO1 |

(OR)

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|----|----|-----------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Discuss in detail about ideal Nyquist channel. | 6 Marks | L2 | CO2 | PO1 |
| | b) | With the help of a precoder explain duobinary signaling scheme. | 6 Marks | L2 | CO2 | PO1 |

UNIT-III

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) | Derive the expression for Probability of error of Binary Phase Shift Keying. | 6 Marks | L3 | CO2 | PO2 |
| | b) | Find the transmitted sequence for this input binary sequence $\{b\} = \{-1, 1, 1, -1, 1, -1, -1, 1\}$ and sketch the transmitted waveforms for Quadrature PSK. | 6 Marks | L3 | CO2 | PO2 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) | What is Differential PSK. Explain the generation and detection of DPSK with a neat block diagram. | 6 Marks | L2 | CO2 | PO1 |
| | b) | Compare Amplitude Shift Keying, Frequency Shift Keying and Phase shift Keying. | 6 Marks | L3 | CO2 | PO4 |

UNIT-IV

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Derive an expression for Mutual information of a channel, $I(X;Y)$ in terms of $H(X)$, $H(Y)$ and $H(X,Y)$. | 6 Marks | L3 | CO3 | PO2 |
| | b) | Calculate efficiency for the following message ensemble using Huffman coding. | 6 Marks | L3 | CO3 | PO3 |

$$\{X\} = [X_1, X_2, X_3, X_4, X_5, X_6, X_7].$$

$$\{P\} = [0.4, 0.2, 0.12, 0.08, 0.08, 0.08, 0.04].$$
(OR)

8. a) Explain the tradeoff between signal to noise ratio and bandwidth. 6 Marks L2 CO3 PO1
 b) An analog signal is bandlimited to B Hz and sampled at Nyquist rate which is having four quantization levels where q_1 and q_2 have probability $1/8$, q_3 and q_4 have probability $3/8$. Find the rate of information. 6 Marks L3 CO3 PO2

UNIT-V

9. a) The parity check matrix of a particular (7,4) linear block code is given by 6 Marks L3 CO4 PO2

$$H = \begin{bmatrix} 1110100 \\ 1101000 \\ 1100001 \end{bmatrix}$$

Find:

- i) Generator Matrix.
 ii) Code words for any two message sequences.
- b) Explain the decoding of systematic cyclic codes with an example. 6 Marks L2 CO4 PO1

(OR)

- 10 a) What are convolutional codes? How are they different from linear block code? 6 Marks L2 CO4 PO1
 b) A convolutional encoder has the following generator sequence 6 Marks L3 CO4 PO3

$$g^{(1)} = (1,0,1)$$

$$g^{(2)} = (1,1,0)$$

$$g^{(3)} = (1,1,1)$$

- i) Draw the encoder block diagram.
 ii) Construct the state table and state diagram for the encoder.
 iii) Find the output of the message sequence 10111.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**MICROPROCESSORS AND INTERFACING****[Computer Science and Engineering]****Time: 3 hours****Max. Marks: 60****Answer One Question from each Unit
All questions carry equal marks****UNIT-I**

- | | | | | | | |
|-------------|----|-------------------------------------------------------|---------|----|-----|-----|
| 1. | a) | Draw and explain 8086 Internal Architecture. | 6 Marks | L1 | CO1 | PO1 |
| | b) | Explain about Evolution of Microprocessor. | 6 Marks | L2 | CO1 | PO2 |
| (OR) | | | | | | |
| 2. | a) | Explain about Various Addressing modes. | 6 Marks | L2 | CO1 | PO2 |
| | b) | Draw and Explain Timing Diagram of 8086 Minimum Mode. | 6 Marks | L1 | CO1 | PO1 |

UNIT-II

- | | | | | | | |
|-------------|----|----------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | Explain about Different Data Transfer Instructions. | 6 Marks | L2 | CO2 | PO2 |
| | b) | Explain about Different Branch Instructions. | 6 Marks | L2 | CO2 | PO2 |
| (OR) | | | | | | |
| 4. | a) | Define Procedure. Explain about Re entrant and Recursive Procedures. | 6 Marks | L2 | CO2 | PO2 |
| | b) | Explain about Hard Ware and Software Interrupts. | 6 Marks | L2 | CO2 | PO2 |

UNIT-III

- | | | | | | | |
|-------------|----------------------------|------------------------------------------|---------|-----|-----|-----|
| 5. | Draw and Explain 8255 PIO. | 12 Marks | L1 | CO3 | PO1 | |
| (OR) | | | | | | |
| 6. | a) | Draw and Explain ADC. | 6 Marks | L2 | CO3 | PO2 |
| | b) | Explain about Stepper motor Interfacing. | 6 Marks | L1 | CO3 | PO1 |

UNIT-IV

- | | | | | | | |
|-------------|-----------------------------|---------------------------------------------|---------|-----|-----|-----|
| 7. | Draw and Explain 8259A PIC. | 12 Marks | L2 | CO3 | PO2 | |
| (OR) | | | | | | |
| 8. | a) | Explain about 8251 USART. | 6 Marks | L1 | CO4 | PO1 |
| | b) | Explain about DMA transfers and Operations. | 6 Marks | L1 | CO4 | PO1 |

UNIT-V

- | | | | | | | |
|-------------|----------------------------------------|------------------------------------------------------|---------|-----|-----|-----|
| 9. | Draw and Explain 8051 Microcontroller. | 12 Marks | L2 | CO4 | PO2 | |
| (OR) | | | | | | |
| 10 | a) | Explain Memory Organization of 8051 Microcontroller. | 6 Marks | L1 | CO4 | PO1 |
| . | b) | Explain about Interrupts in 8051 Microcontroller. | 6 Marks | L1 | CO4 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**WEB TECHNOLOGIES****[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) Create a simple HTML page which demonstrates the use of various types of lists. Try adding a definition list which uses an unordered list to define term. | 6 Marks | L6 | CO1 | PO1 |
| | b) Explain the following HTML tags with example:
i) <pre> ii) <canvas> iii) iv) <div> | 6 Marks | L2 | CO1 | PO1 |
| | (OR) | | | | |
| 2. | a) Create an offline web application using HTML5. | 6 Marks | L6 | CO1 | PO1 |
| | b) Explain cross document messaging with example. | 6 Marks | L2 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Explain the following terms related to CSS with examples.
i) Font-size ii) Font-weight iii) Text-decoration
iv) Text-transform v) Padding vi) Border style. | 6 Marks | L2 | CO2 | PO2 |
| | b) Write a script that finds the smallest of several non-negative integers. Assume that the first value reads specify the number of values to be input from the user. | 6 Marks | L5 | CO2 | PO2 |
| | (OR) | | | | |
| 4. | a) Explain the following built-in objects of Javascript
i) window ii) document | 6 Marks | L2 | CO2 | PO2 |
| | b) Explain about AJAX and what are the advantages of AJAX?
Create a simple application using AJAX. | 6 Marks | L1 | CO2 | PO2 |

UNIT-III

- | | | | | | |
|----|------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Create a more dynamic and flexible layouts by combined bootstrap grid system classes. | 6 Marks | L6 | CO2 | PO3 |
| | b) Develop a predefined alert messages web page using bootstrap. | 6 Marks | L3 | CO2 | PO3 |
| | (OR) | | | | |
| 6. | a) Create badges as numerical indicators of how many items are associated with a link. | 6 Marks | L6 | CO3 | PO3 |
| | b) Create navigation bar with dropdown menu for the button. | 6 Marks | L6 | CO3 | PO3 |

UNIT-IV

- | | | | | | |
|----|-----------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Write a PHP script to validate the user data with regular expressions. | 6 Marks | L5 | CO4 | PO4 |
| | b) Explain about different kinds of arrays in PHP with examples. | 6 Marks | L2 | CO4 | PO4 |
| | (OR) | | | | |
| 8. | a) Explain the string processing functions available in PHP with examples. | 6 Marks | L1 | CO4 | PO4 |
| | b) Explain about object-oriented programming features in PHP with examples. | 6 Marks | L1 | CO4 | PO5 |

UNIT-V

- | | | | | | | |
|-------------|----|--------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | What is prepared statement? Explain in detail with the suitable example. | 6 Marks | L1 | CO5 | PO5 |
| | b) | Explain the different authentication methodologies used in PHP. | 6 Marks | L2 | CO5 | PO6 |
| (OR) | | | | | | |
| 10 | a) | Create a web page to perform form data validation in PHP. | 6 Marks | L6 | CO6 | PO6 |
| . | b) | Design a web page to store the form data in the database using PHP. | 6 Marks | L5 | CO6 | PO6 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**MOBILE COMPUTING
[Information Technology]**

Time: 3 hours

Max. Marks: 60

**Answer One Question from each Unit
All questions carry equal marks****UNIT-I**

- | | | | | | |
|----|----------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) List the limitations of mobile computing. | 6 Marks | L1 | CO1 | PO1 |
| | b) Show the various subsystems and units in GSM System Architecture. | 6 Marks | L2 | CO1 | PO1 |

(OR)

- | | | | | | |
|----|--------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Explain with neat diagram, Mobile computing Architecture. | 6 Marks | L2 | CO1 | PO1 |
| | b) Explain in detail about GSM security features. | 6 Marks | L2 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|----|-------------------------------------------------|---------|----|-----|-----|
| 3. | a) Describe FHSS frequency hopping technique. | 6 Marks | L4 | CO2 | PO2 |
| | b) Compare the features of HSPA and LTE Pre 4G. | 6 Marks | L4 | CO2 | PO2 |

(OR)

- | | | | | | |
|----|----------------------------------------------------|---------|----|-----|-----|
| 4. | a) List the properties of WCDMA. | 6 Marks | L1 | CO2 | PO1 |
| | b) Explain Requirements and design of 4G networks. | 6 Marks | L4 | CO2 | PO5 |

UNIT-III

- | | | | | | |
|----|---------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Explain the DHCP Protocol. How does a DHCP server bind a mobile node with an IP address? | 6 Marks | L3 | CO3 | PO2 |
| | b) Explain the protocols used for discovering an agent by mobile node. | 6 Marks | L3 | CO3 | PO2 |

(OR)

- | | | | | | |
|----|------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Explain the mechanism for IP packet delivery using Mobile IP. | 6 Marks | L3 | CO3 | PO1 |
| | b) List the difference between COA and co-located COA. | 6 Marks | L4 | CO3 | PO1 |

UNIT-IV

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|----|-------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) How does selective transmission improve transmission efficiency? | 6 Marks | L2 | CO3 | PO1 |
| | b) Explain Mobile TCP. How does a supervisory host send TCP packets to mobile node and to a fixed TCP connection? | 6 Marks | L3 | CO3 | PO2 |

(OR)

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) Describe slow start of congestion control. How can fast recovery take place in congestion avoidance phase? | 6 Marks | L4 | CO3 | PO2 |
| | b) Differentiate Indirect TCP and Traditional TCP with relevant examples. | 6 Marks | L2 | CO3 | PO1 |

UNIT-V

- | | | | | | |
|----|------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) Explain in detail about WLAN configuration. | 6 Marks | L2 | CO4 | PO1 |
| | b) Discuss security features in Bluetooth enabled devices. | 6 Marks | L4 | CO4 | PO1 |

(OR)

- | | | | | | |
|-----|-------------------------------------------------------|---------|----|-----|-----|
| 10. | a) Write short notes on WML. | 6 Marks | L2 | CO4 | PO1 |
| | b) Explain the Physical and networking layers of WAP. | 6 Marks | L4 | CO4 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**COMPUTER NETWORKS**
[Electronics and Instrumentation Engineering]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks**UNIT-I**

1. List out the layers of OSI Model in a hierarchical order and explain the functionality of each layer. CO1 14 Marks
- (OR)
2. a) Explain the concept of packet switching. CO2 7 Marks
b) Draw the block diagram of ADSL modem and DSLAM. Summarize the characteristics of various DSL families. CO2 7 Marks

UNIT-II

3. Explain the concept of persistence in CSMA with neat flow diagrams. CO2 14 Marks
- (OR)
4. a) List out the functionalities of DLL and explain the line discipline with neat flow diagrams. CO2 7 Marks
b) Calculate the CRC for $P(x) = x^5 + x^3 + x + 1$ and $G(x) = x^3 + 1$. CO3 7 Marks

UNIT-III

5. List out the things to be followed to compute the shortest path by using link state routing and explain in detail with the help of link state packets. CO2 14 Marks
- (OR)
6. a) Draw the header format of IPv4 and explain each field. CO3 7 Marks
b) Explain the concept of distance vector in detail. CO3 7 Marks

UNIT-IV

7. Explain the header format of TCP and explain each field in detail. CO2 14 Marks
- (OR)
8. a) How the connection in TCP can be terminated. Explain in detail with the help of flow diagrams. CO3 8 Marks
b) Explain the impact of additive increase on congestion avoidance in TCP. CO3 6 Marks

UNIT-V

9. Explain the architecture of WWW in detail. CO2 14 Marks
- (OR)
10. a) Briefly explain the principles of application layer protocols. CO3 7 Marks
b) Explain in detail about HTTP. CO3 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**SOFTWARE TESTING**
[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) | State the myths and facts about software testing. | CO1 | 7 Marks |
| | b) | Explore on software testing methodology in detail. | CO2 | 7 Marks |

(OR)

- | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------|-----|---------|
| 2. | a) | Explain in detail the relationship between software test life cycle and software development life cycle. | CO1 | 7 Marks |
| | b) | Differentiate between effective and exhaustive software testing. | CO2 | 7 Marks |

UNIT-II

- | | | | | |
|----|----|---------------------------------------------------------|-----|---------|
| 3. | a) | What is the need of white box testing? Discuss briefly. | CO2 | 7 Marks |
| | b) | Explain data flow testing in detail. | CO1 | 7 Marks |

(OR)

- | | | | | |
|----|--|--------------------------------------------------------------------------------------------------------------------------|-----|----------|
| 4. | | Write a program prime numbers up to a given number. Draw the control flow graph and calculate the cyclomatic complexity. | CO4 | 14 Marks |
|----|--|--------------------------------------------------------------------------------------------------------------------------|-----|----------|

UNIT-III

- | | | | | |
|----|----|----------------------------------------------------------------------------------------|-----|---------|
| 5. | a) | Describe the procedure for converting state graphs and state tables into test cases. | CO2 | 7 Marks |
| | b) | How do you represent Graph matrices for testing process? Device the same with example. | CO2 | 7 Marks |

(OR)

- | | | | | |
|----|----|---------------------------------------------------------------------------------|-----|---------|
| 6. | a) | What are the principles of state testing? Discuss advantages and disadvantages. | CO1 | 7 Marks |
| | b) | What is Cause Effect Graph? Write steps for drawing cause effect graph. | CO3 | 7 Marks |

UNIT-IV

- | | | | | |
|----|----|------------------------------------------------------------|-----|---------|
| 7. | a) | Explain in detail about software quality metrics. | CO5 | 7 Marks |
| | b) | Discuss on how to minimize the test suit and its benefits. | CO2 | 7 Marks |

(OR)

- | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------|-----|---------|
| 8. | a) | Define a test case, test case design, test suite and explain how a test case designed for an travelling salesman problem. | CO1 | 7 Marks |
| | b) | Explain about the categorization of testing tools and guidelines of automated testing. | CO1 | 7 Marks |

UNIT-V

- | | | | | |
|----|----|-------------------------------------------------------------------|-----|---------|
| 9. | a) | Differentiate between progressive and regressive testing process. | CO2 | 7 Marks |
| | b) | List various regression testing techniques. | CO5 | 7 Marks |

(OR)

- | | | | | |
|-----|----|--------------------------------------------------------------------|-----|---------|
| 10. | a) | Define regression. Device the template for regression testability. | CO1 | 7 Marks |
| | b) | List various types of testing tools with examples. | CO6 | 7Marks |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**OPERATIONS RESEARCH****[Mechanical Engineering]**

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. A firm manufactures headache pills in two sizes 'A' and 'B'. Size A contains 2 grains of aspirin, 5 grains of bicarbonate and 1 grain of codeine. Size B contains 1 grain of aspirin, 8 grains of bicarbonate and 6 grains of codeine. It is found by users that it requires at least 12 grains of aspirin, 74 grains of bicarbonate and 24 grains of codeine for providing immediate effect. Determine the least number of pills a patient should take to get immediate relief. CO1 14 Marks

(OR)

2. a) Illustrate how do you convert inequality constraints as equality constraints? CO2 4 Marks
- b) Solve the following linear programming problem by Two-Phase method CO2 10 Marks

$$\text{Max } Z = 4x_1 + 5x_2 - 3x_3 + 50$$

$$\text{Subject to } x_1 + x_2 + x_3 = 10$$

$$x_1 - x_2 \geq 1$$

$$2x_1 + 3x_2 + x_3 \leq 40 \quad \text{and} \quad x_1, x_2, x_3 \geq 0.$$

UNIT-II

3. a) How do you convert unbalanced transportation problem to balanced transportation problem? CO1 4 Marks
- b) A department of a company has five employees with five jobs to be performed. The time (in hours) that each man takes to perform each job is given in the following matrix. CO3 10 Marks

		Employees				
		I	II	III	IV	V
Jobs	A	10	5	13	15	16
	B	3	9	18	13	6
	C	10	7	2	2	2
	D	7	11	9	7	12
	E	7	9	10	4	12

How should the jobs be allocated, one per employee, so as to minimize the total man hours?

(OR)

4. A firm having two factories is to ship its products from the factories to three retail stores. The number of units available at factories X and Y are 200 and 300 respectively, while those demanded at retail stores A, B, C are 100, 150, 250 respectively. Rather than shipping the products directly from factories to retail stores, it is asked to investigate the possibility of trans-shipment. The transportation cost (in rupees) per unit is given in the following table. Find the optimal shipping schedule. CO4 14 Marks

		Factory Retail Store			
		X	YA	B	C
Factory	X	0	87	8	9
	Y	6	05	4	3
Retail Store	A	7	20	5	1
	B	1	51	0	4
	C	8	97	8	0

UNIT-III

5. a) Explain the difference between pure strategy and mixed strategy. What is two-person zero-sum game? CO6 4 Marks
- b) Solve the following game using dominance principle. CO6 10 Marks

$$\begin{pmatrix} 2 & -2 & 4 & 1 \\ 6 & 1 & 12 & 3 \\ -3 & 2 & 0 & 6 \\ 2 & -3 & 7 & 1 \end{pmatrix}$$

(OR)

6. The maintenance cost and resale value per year of a machine whose purchase price is Rs. 7000 is given below. CO6 14 Marks

Year	1	2	3	4	5	6	7	8
Maintenance cost	900	1200	1600	2100	2800	3700	4700	5900
Resale Value	4000	000	1200	600	500	400	400	400

When should the machine be replaced?

UNIT-IV

7. Consider a project having the following precedence relations and estimated duration.

Activity	A	B	C	D	E	F	G	H	I	J	K	L	M
Predecessors	-	A	B	C	A	E	E	E	H,L	K	D,F,G	J	H,L
Duration(min)	14	4	2	1	2	3	2	4	3	12	4	2	2

- i) Draw the project network diagram. CO5 4 Marks
- ii) Find the minimum duration of the project and critical path. CO5 10 Marks

(OR)

8. Consider the data of the project CO5 14 Marks

Activity	1-2	1-3	1-4	2-3	2-4	3-5	4-5
Normal Time (days)	5	13	7	6	5	12	9
Normal Cost (Rs.)	400	700	600	900	1000	800	1500
Crash Time (days)	4	9	4	4	3	11	6
Crash Cost (Rs.)	460	900	810	1130	1180	865	1800

If an indirect cost per week is Rs.160/-, find the optimal crashed project completion time.

UNIT-V

9. a) What is traffic intensity? If traffic intensity is 0.30, what is the percentage of time a system remains idle? CO3 4 Marks
- b) A super market has two sales girls at the sales counters. If the service time for each customer is exponential with a mean of 4 minutes, and if the people arrive in a Poisson fashion at the rate of 10 per hour, then calculate the CO3 10 Marks
- i) probability that a customer has to wait for being served
 - ii) expected percentage of idle time for each sales girl
 - iii) if a customer has to wait, what is the expected length of his waiting time?

(OR)

10. A bakery keeps stock of a popular brand of cake. Previous experience shows the daily demand pattern for the item with associated probabilities, as given below CO5 14 Marks
- | | | | | | | |
|------------------------|------|------|------|------|------|------|
| Daily demand (number): | 0 | 10 | 20 | 30 | 40 | 50 |
| Probability : | 0.01 | 0.20 | 0.15 | 0.50 | 0.12 | 0.02 |
- Use the following sequence of random numbers to simulate the demand for next 10 days.
- Random numbers: 25, 39, 65, 76, 12, 5, 73, 89, 19, 49.
- Also estimate the daily average demand for the cakes on the basis of the simulated data.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**CRYOGENICS**
[Mechanical Engineering]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks**UNIT-I**

1. Discuss the advantages of multi-stage refrigeration systems compared to single stage system. CO1 14 Marks

(OR)

2. Discuss how a cascade system can be used for the liquefaction of industrial gasses. CO2 14 Marks

UNIT-II

3. Discuss the various properties of following cryogenic fluids:
i) Oxygen; ii) Argon; iii) Methane. CO3 14 Marks

(OR)

4. Define the term “cryogenics” and explain super fluidity with the help of neat diagrams. CO3 14 Marks

UNIT-III

5. Explain the Joule-Thompson coefficient. What do you mean by inversion temperature? Mention the inversion temperatures of few cryogenic fluids. CO2 14 Marks

(OR)

6. With the help of a neat sketch and T-S diagram explain Linde system for the liquefaction of air and write the expression for liquid yield and work requirement for unit mass of air compressed. CO2 14 Marks

UNIT-IV

7. Discuss the mechanical properties of materials at cryogenic temperatures. CO4 14 Marks

(OR)

8. Write short notes on the following applications of cryogenic systems.
i) Cryosurgery; ii) Space technology. CO4 14 Marks

UNIT-V

9. Explain any four types of insulations that can be used in cryonic engineering. CO5 14 Marks

(OR)

10. Explain cryogenic fluid storage vessels with neat sketches. CO5 14 Marks



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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 - 2023

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) Outline the advantages and need for cellular mobile telephone systems. | CO1 | 7 Marks |
| | b) Summarize the planning of cellular systems. | CO1 | 7 Marks |
| (OR) | | | |
| 2. | a) Obtain the normal channel co-interference on the forward channel of a cellular system by considering only first tier of co-channel cells. | CO2 | 7 Marks |
| | b) Illustrate the need of frequency reuse and cell splitting. | CO4 | 7 Marks |

UNIT-II

- | | | | |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----|---------|
| 3. | a) Illustrate the measurement of real time co-channel interference. | CO2 | 7 Marks |
| | b) Illustrate the benefit of umbrella pattern. | CO1 | 7 Marks |
| (OR) | | | |
| 4. | a) Differentiate between next channel interference and neighbouring channel interference. | CO1 | 7 Marks |
| | b) Obtain the worst channel co-interference on the forward channel of a cellular system by considering only first tier of co-channel cells. | CO4 | 7 Marks |

UNIT-III

- | | | | |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------|
| 5. | a) Illustrate the effect of human made structures on propagation. | CO1 | 7 Marks |
| | b) Give the concept of foliage loss in brief. | CO1 | 7 Marks |
| (OR) | | | |
| 6. | a) Obtain the path loss model from a point to point prediction model. | CO4 | 7 Marks |
| | b) In a mobile radio environment, the average cell-site antenna height is about 60m, the mobile antenna height is about 2m, and communication path length is 4km and height of mountain on which base station is erected $H=120m$, compare i) Ground incident angle and ii) Reflection point obtained from accurate and approximate methods. | CO3 | 7 Marks |

UNIT-IV

- | | | | |
|-------------|----------------------------------------------------------------------------------------------------|-----|---------|
| 7. | a) Differentiate between fixed and non fixed channel assignment strategies. | CO4 | 7 Marks |
| | b) Compare and contrast the access and paging channels. | CO4 | 7 Marks |
| (OR) | | | |
| 8. | a) Illustrate the value of implementing handoff strategy and mention different handoff advantages. | CO5 | 7 Marks |
| | b) Give the calculation of dropped call rate based on different factors. | CO4 | 7 Marks |

UNIT-V

- | | | | |
|-------------|-------------------------------------------------------------------|-----|---------|
| 9. | a) With neat sketch, explain the NA- TDMA system architecture. | CO1 | 7 Marks |
| | b) Illustrate the output power limits and control of CDMA. | CO6 | 7 Marks |
| (OR) | | | |
| 10. | a) Give the advantages of W- CDMA. | CO1 | 7 Marks |
| | b) Outline the limitations of 3G and advantages of 4G technology. | CO1 | 7 Marks |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**EMBEDDED SYSTEMS****[Electrical and Electronics Engineering, Electronics and Communication 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. With a neat sketch explain the essential components of a microcontroller and differentiate the Harvard and Von Neumann architectures. CO1 14 Marks

(OR)

2. Illustrate the Pin out of MSP430 Microcontroller and memory map of the MSP430 Microcontroller. CO2 14 Marks

UNIT-II

3. a) Explain the Indexed mode and Indirect Auto Increment Register mode with examples. CO5 7 Marks

- b) Write a brief note on shift and rotate instructions of MSP430 instruction set. CO5 7 Marks

(OR)

4. a) Write a brief note on Flow control instructions of MSP430 instruction set. CO5 7 Marks

- b) Write an assembly program to transfer ten bytes of data from one memory location to another memory location. CO5 7 Marks

UNIT-III

5. a) Write a program for recording the state of a push button. CO5 7 Marks

- b) Write a brief note on Power-on Reset (POR) and Power-up Clear (PUC). CO5 7 Marks

(OR)

6. With a neat sketch explain the clock module of the MSP430 microcontroller. CO3 14 Marks

UNIT-IV

7. a) Write a program to toggle LEDs using interrupts generated by timer_A in up mode. CO4 7 Marks

- b) Write a brief note on use of Watchdog timer in embedded system development. CO4 7 Marks

(OR)

8. a) Write a short note on low-power modes of operation of MSP430 microcontroller. CO5 7 Marks

- b) Write a short note on Inter-Integrated Circuit Bus. CO5 7 Marks

UNIT-V

9. a) Write a short note on Hierarchical Concurrent Finite-State Machines. CO6 7 Marks

- b) Write a detailed note on IOT communication models. CO6 7 Marks

(OR)

10. a) Write a brief note on VLIW architecture. CO6 7 Marks

- b) List the security issues and challenges in IOT device development. CO6 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**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) Compare the advantages and disadvantages of different frequency bands used in satellite communication considering the effects of propagation media. CO1 10 Marks
- b) Justify why uplink frequency is higher than downlink frequency. CO1 4 Marks

(OR)

2. a) Design satellite transponder and discuss the types of transponders in satellites with neat sketch. CO3 10 Marks
- b) Mention various types of satellite orbits, Discuss their merits and demerits. CO1 4 Marks

UNIT-II

3. a) A satellite is in an elliptical orbit with a perigee of 1000 km and an apogee of 4000 km. Find the period of the orbit and eccentricity of the orbit, assuming the mean earth radius as 6378.14 km. CO4 7 Marks
- b) Discuss about various satellite services. CO1 7 Marks

(OR)

4. a) In a satellite link, the propagation loss is 200 dB. Margins and losses account for another 3 dB. The receiver [G/T] is 11dB and the [EIRP] is 45dB W. Calculate the received [C/N] for a system band width of 36MHz. CO3 6 Marks
- b) Explain in brief telemetry, tracking and command of the satellite system. CO1 8 Marks

UNIT-III

5. a) Design general link equation. Find out an expression for C/N and G/T ratios. Explain the importance of these ratios on satellite link design. CO3 8 Marks
- b) State the type of satellite antenna normally used to produce a wide beam of radiation pattern providing global coverage. How are spot beams provided? CO1 6 Marks

(OR)

6. a) Analyze the orbital effects in the communication system performance. CO2 6 Marks
- b) A geostationary satellite carries a transponder with a 20W transmitter at 4 GHz. The transmitter is operated at an output power of 10 W and drives an antenna with a gain of 30 dB. An earth station is at the center of the coverage zone of the satellite at a range of 38,500 Km. Find:
i) The flux density at the earth station in dBW/m².
ii) The power received by an antenna with a gain of 39 dB in dBW.
iii) The EIRP of the transponder in dBW. CO4 8 Marks

UNIT-IV

7. a) Compare the various NGSO constellation designs used in satellite communications. CO2 8 Marks
b) Write relation between noise figure and system noise temperature? CO1 6 Marks
- (OR)**
8. a) Define satellite stabilization? Explain the importance of stabilization. CO1 8 Marks
Make a comparative study between spin stabilization and three axes body stabilization.
b) Explain in detail about launches and launch vehicles. CO1 6 Marks

UNIT-V

9. a) Neatly describe the structure of Navigation message in GPS signals. CO1 7 Marks
b) Describe the various sources of errors of a GPS signal. CO5 7 Marks
- (OR)**
10. a) What is error control coding? Briefly describe about CO1 8 Marks
i) Convolution codes, ii) Turbo codes.
b) With mathematical expressions enlighten the positioning principle in a GPS receiver. CO5 6 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-16) Supplementary Examinations May - 2023**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) Summarize the need for low power VLSI chip in real time. CO6 7 Marks
 b) What is meant by short circuit power? Explain the short circuit current of an Inverter. CO3 7 Marks

(OR)

2. a) Briefly explain the basic principles of low power design. CO1 7 Marks
 b) What is Pseudo NMOS? Design and explain a Pseudo NMOS 3-input NAND gate. CO3 7 Marks

UNIT-II

3. a) Explain the advantages and limitations of SPICE power analysis method. CO2 7 Marks
 b) Interpret the data correlation analysis in evaluating the performance of DSP systems. CO5 7 Marks

(OR)

4. a) Derive an expression for number of samples 'N' required for stopping criteria in Monte Carlo simulation. CO5 7 Marks
 b) Discuss some fundamentals of Random signal analysis. CO1 7 Marks

UNIT-III

5. a) Design a Self gating flip-flop and compare its performance with Regular flip-flop. CO5 7 Marks
 b) What is Network Restructuring? Explain with an example. CO1 7 Marks

(OR)

6. a) Illustrate Bus Invert encoding to achieve low power consumption with relevant equations. CO5 7 Marks
 b) Explain hardware architecture of State Machine Encoding with transition analysis. CO3 7 Marks

UNIT-IV

7. a) What is Floating node? Explain about CMOS floating node. CO3 6 Marks
 b) Draw the various circuit implementations of Bus Driver and Receiver and explain them. CO4 8 Marks

(OR)

8. a) Analyze the design of 4T and 6T SRAM memory cells and bring out the differences between them. CO4 8 Marks
 b) Draw and explain the architecture of Braun Array. CO4 6 Marks

UNIT-V

9. a) Discuss the switching activity reduction techniques in CMOS digital systems. CO5 7 Marks
 b) Explain the general framework for updating filter order length and analyze filter responses with increasing filter order. CO3 7 Marks

(OR)

10. a) What is Pass Transistor logic synthesis system? Explain with an example. CO4 6 Marks
 b) Design a Boolean Decision Diagram of $Y = AB+BC+AC$ and draw its Multiplexer implementation. CO5 8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-19) Supplementary Examinations May - 2023

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 Business Economics and explain its significance. 12 Marks L2 CO1 PO1
(OR)
2. What is mean by Law of Demand? Explain exemptions of law of demand and changes in demand with graphs. 12 Marks L2 CO1 PO2

UNIT-II

3. Define "Production Function" and explain the classification of Factors of Production. 12 Marks L2 CO2 PO2
(OR)
4. Contrast between:
i) Opportunity Costs Vs Outlay Costs.
ii) Separable Costs Vs Joint Costs. 12 Marks L4 CO2 PO2

UNIT-III

5. What is monopoly? Describe about types of monopoly. 12 Marks L2 CO3 PO2
(OR)
6. What is perfect competition? Explain about pricing under perfect competition. 12 Marks L2 CO3 PO12

UNIT-IV

7. Define "Accountancy". Discuss about double entry system. 12 Marks L2 CO4 PO1
(OR)
8. Journalize the following transactions in the books of Mr. Mohan. 12 Marks L4 CO4 PO12
Jan. 1 Mr. Mohan commenced a business with Rs. 2,10,000/-
Jan. 4 Goods sold to Manoj Rs.48, 200/-
Jan. 9 Cash withdrawn from bank for office use Rs. 2,500/-
Jan. 10 Bought furniture for Rs. 30,400/-
Jan. 18 Cash received form Rani Rs. 28,200/-
Jan. 21 Rent paid to Anand Rs. 4,400/-
Jan. 24 Cash deposited into Bank Rs. 31,300/-
Jan. 31 Commission paid through cheque Rs. 1,570/-

UNIT-V

9. Sketch a "Balance Sheet". Elucidate various elements of Balance Sheet. 12 Marks L3 CO5 PO10

(OR)

The following Trial Balance is extracted from the books of Mr. Rajesh as on March 31, 2017. Prepare Trading and Profit and Loss account for the year ended 31.3.2017 and a Balance Sheet as on that date:

Drawings	72,000	Capital	3,00,000
Buildings	60,000	12% Bank Loan	60,000
Furniture and fittings	30,000	Sales	4,00,000
Motor Van	1,00,000	Commission	30,000
Interest on Bank loan	3,600	Creditors	60,000
Purchases	2,00,000		
Opening Stock	1,00,000		
Establishment Exp	60,000		
Wages	8,000		
Insurance	4,000		
Debtors	1,32,400		
Cash at Bank	80,000		
	8,30,000		8,30,000

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%.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**DATA WAREHOUSING AND DATA MINING****[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) Compare Operational Database Systems versus Data Warehouses. | 6 Marks | L2 | CO1 | PO1 |
| | b) What are the major issues in Data Mining? Explain briefly. | 6 Marks | L1 | CO1 | PO2 |
| (OR) | | | | | |
| 2. | a) Describe the characteristics of Fact table. | 6 Marks | L1 | CO1 | PO1 |
| | b) Bring out the importance of Indexing of OLAP Data. | 6 Marks | L2 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|-------------|-----------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Write any two data pre-processing methods with appropriate examples. | 6 Marks | L1 | CO2 | PO1 |
| | b) Explain the steps involved in the Data Mining Process. Give the sketch of the KDD process. | 6 Marks | L2 | CO2 | PO2 |
| (OR) | | | | | |
| 4. | a) Explain the need of data reduction with an example. | 6 Marks | L2 | CO2 | PO3 |
| | b) Outline the concept of Data Transformation. | 6 Marks | L2 | CO2 | PO1 |

UNIT-III

- | | | | | | |
|-------------|-----------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) What is Bayes Theorem? Show how it is used for classification? | 6 Marks | L1 | CO3 | PO2 |
| | b) Develop an Apriori algorithm for generating frequent-item set. | 6 Marks | L3 | CO3 | PO1 |
| (OR) | | | | | |
| 6. | a) Explain decision tree induction algorithm for classification. Discuss the usage of information gain in this. | 6 Marks | L2 | CO3 | PO2 |
| | b) Categorize various kinds of association rules with examples. | 6 Marks | L3 | CO3 | PO3 |

UNIT-IV

- | | | | | | |
|-------------|-------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) What are typical requirements of clustering in data mining? Explain. | 6 Marks | L1 | CO4 | PO1 |
| | b) Explain DBSCAN with an example. | 6 Marks | L2 | CO4 | PO2 |
| (OR) | | | | | |
| 8. | a) Discuss the different hierarchical methods in cluster analysis. | 6 Marks | L2 | CO4 | PO1 |
| | b) Explain about Outlier Analysis with an appropriate example. | 6 Marks | L2 | CO4 | PO2 |

UNIT-V

- | | | | | | |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | Analyze and elaborate any 3 current trends in data mining from the following fields.
i) Financial data analysis ii) Science and Engineering
iii) Telecommunication industry iv) Intrusion detection | 12 Marks | L3 | CO5 | PO2 |
| (OR) | | | | | |
| 10. | a) Discuss the four major components to characterize time-series data. | 6 Marks | L2 | CO5 | PO2 |
| | b) Discuss the techniques in multimedia and Web data. | 6 Marks | L2 | CO5 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**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 about Xen Hypervisor. | 6 Marks | L1 | CO1 | PO1 |
| | b) Define Cloud Computing. List and Explain Origins and Influences of Cloud Computing. | 6 Marks | L2 | CO1 | PO1 |

(OR)

- | | | | | | |
|----|---------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Explain about desktop and server editions of VMware. | 6 Marks | L1 | CO1 | PO2 |
| | b) Explain about Virtualization Technologies. | 6 Marks | L1 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Define Composability. List the benefits that PaaS or SaaS service provider's gets from a composable system. | 6 Marks | L2 | CO2 | PO1 |
| | b) Illustrate and Explain the portion of the cloud computing stack that is designated as the server. | 6 Marks | L2 | CO2 | PO1 |

(OR)

- | | | | | | |
|----|------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Explain in detail Cloud Deployment Models. | 6 Marks | L1 | CO2 | PO1 |
| | b) Explain about The Jolicloud Netbook OS and Chromium OS. | 6 Marks | L2 | CO2 | PO1 |

UNIT-III

- | | | | | | |
|----|-----------------------------------------------------------|---------|----|-----|-----|
| 5. | a) List and explain the characteristics of SaaS. | 6 Marks | L1 | CO3 | PO1 |
| | b) Illustrate load testing and the load generation tools. | 6 Marks | L2 | CO3 | PO1 |

(OR)

- | | | | | | |
|----|--------------------------------------------------|---------|----|-----|-----|
| 6. | a) Explain in detail Identity as a Service. | 6 Marks | L1 | CO3 | PO1 |
| | b) Discuss about Compliance as a Service (CaaS). | 6 Marks | L1 | CO3 | PO3 |

UNIT-IV

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | The EccentexAppBasePaaS application delivery platform creates SOA applications that work on several different IaaS vendors. Justify? | 12 Marks | L4 | CO4 | PO4 |
|----|--------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|----|-----------------------------------------------|---------|----|-----|-----|
| 8. | a) Discuss about Wolf Frameworks. | 6 Marks | L4 | CO4 | PO4 |
| | b) Briefly discuss about Google Web Services. | 6 Marks | L2 | CO4 | PO4 |

UNIT-V

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | 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 catalogue web page into S3 bucket. | 12 Marks | L4 | CO5 | PO5 |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | |
|----|--------------------------------------------------------------|---------|----|-----|-----|
| 10 | a) Briefly discuss Amazon Simple DB. | 6 Marks | L3 | CO5 | PO5 |
| | b) Briefly discuss Amazon Relational Database Service (RDS). | 6 Marks | L4 | CO5 | PO5 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023

ESTIMATION AND QUANTITY SURVEYING

[Civil Engineering]

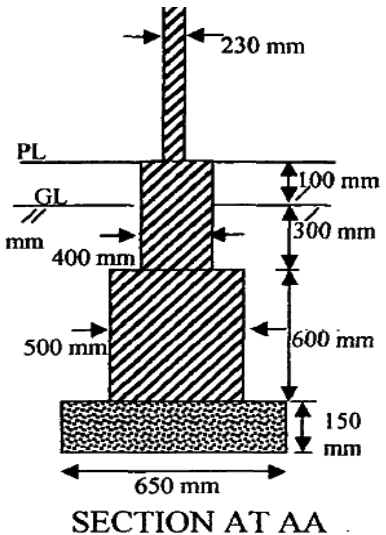
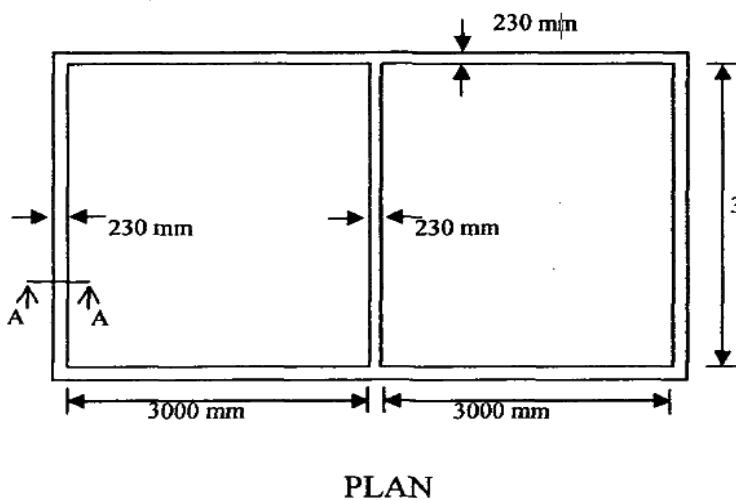
Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|--------------------------|
| 1. | Name the various types of estimations you know and under what circumstances each one of them prepared. | 12 Marks | L1 | CO1 | PO1
PO2 |
| (OR) | | | | | |
| 2. | Estimate the following items for the plan and section given in figure. Use 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 12mm thickness. | 12 Marks | L5 | CO1 | PO1
PO2
PO4
PO5 |



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. | 12 Marks | L5 | CO2 | PO1
PO2
PO5 |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-------------------|

(OR)

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 4. | a) 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. | 6 Marks | L5 | CO2 | PO1
PO2
PO4 |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|

- b) Calculate the quantity of earth work for 350 meter length for a portion of road in a uniform ground the heights of banks at the two ends being 1.1 meter and 1.75 meters. The formation width is 12.0 meters 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 ii) Prismoidal formula.

UNIT-III

5. a) Analyze the necessity of lead statement. Determine the cost of the Plastering with CM (1:4) of 12 mm thickness. 6 Marks L4 CO3 PO1
PO2
PO4
PO5
- b) Determine the cost of the following items of the work as per SSR. 6 Marks L4 CO3 PO1
PO2
PO5
PO8
- i) Brick masonry in super structure with CM (1:6).
ii) Plain cement concrete (1:4:8) for bed concrete.

(OR)

6. a) What is the necessity and importance of the specification related to civil engineering constructions? 6 Marks L4 CO3 PO1
PO2
- b) Discuss about the general specifications for first class buildings. 6 Marks L4 CO3 PO1
PO6

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. 6 Marks L6 CO4 PO1
PO2
PO4
- b) Summarize the contents of contract document. 6 Marks L2 CO4 PO1
PO2
PO4

(OR)

8. a) What is tender? Discuss briefly principles of tendering. 6 Marks L2 CO4 PO1
PO2
- b) Explain the Item rate contract and Lump-sum contract. 6 Marks L2 CO4 PO1
PO3

UNIT-V

9. a) Explain the concept of sinking fund. 6 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. 6 Marks L6 CO5 PO1
PO3
PO4
PO6
PO11

(OR)

10. a) What do you mean by valuation and explain various purposes of valuation? 6 Marks L2 CO5 PO1
PO2
- b) Explain the methods of calculating the depreciation. 6 Marks L2 CO5 PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**GEOSPATIAL TECHNOLOGIES****[Civil Engineering]**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 1. | a) Define aerial photo grammetry and its types. | 6 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. | 6 Marks | L4 | CO1 | PO1
PO2
PO4 |

(OR)

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 2. | a) Explain the Following:
i) Types of aerial photographs
ii) Geometry of aerial photo graphs | 6 Marks | L4 | CO1 | PO1
PO2
PO4 |
| | b) Explain the role of ground controls in aerial photographs. | 6 Marks | L4 | CO1 | PO1
PO2 |

UNIT-II

- | | | | | | |
|----|------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 3. | a) Compare the spectral reflectance characteristics of water and vegetation. | 6 Marks | L4 | CO2 | PO1
PO2
PO7 |
| | b) Define Resolution. Classify the resolutions of the sensors. | 6 Marks | L4 | CO2 | PO1
PO2
PO7 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------|---------|----|-----|------------|
| 4. | a) List the sensor characteristics of LISS and PAN. | 6 Marks | L4 | CO2 | PO1
PO7 |
| | b) Discuss Elements of remote sensing. | 6 Marks | L2 | CO2 | PO1
PO4 |

UNIT-III

- | | | | | | |
|----|------------------------------------------------------|----------|----|-----|------------|
| 5. | Analyze the fundamental operations of GIS in detail. | 12 Marks | L4 | CO3 | PO1
PO2 |
| | (OR) | | | | |
| 6. | Summarize the Various map Projections. | 12 Marks | L4 | CO3 | PO1
PO2 |

UNIT-IV

- | | | | | | |
|----|--------------------------------------------------------------------------------|----------|----|-----|---------------------------------|
| 7. | Evaluate various surface analysis tools and explain the slope analysis in GIS. | 12 Marks | L4 | CO4 | PO1
PO2
PO4
PO6
PO7 |
| | (OR) | | | | |
| 8. | Classify the segments of GPS. Describe them briefly. | 12 Marks | L4 | CO4 | PO1
PO2
PO5
PO6 |

UNIT-V

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------|----------|----|-----|--------------------------|
| 9. | Discuss the role of RS and GIS and give suitable recommendations for sustainable watershed management. | 12 Marks | L4 | CO5 | PO1
PO2
PO4
PO6 |
| | (OR) | | | | |
| 10 | Justify the GIS as a tool for flood and drought impact assessment and monitoring? | 12 Marks | L4 | CO5 | PO1
PO2
PO5
PO6 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**PRESTRESSED CONCRETE****[Civil Engineering]****Time: 3 hours****Max. Marks: 60****Answer One Question from each Unit****All questions carry equal marks****UNIT-I**

- | | | | | | |
|----|----------------------------------------------------------------------------------------|----------|----|-----|-------------------|
| 1. | Explain advantages and disadvantages of prestressed concrete over reinforced concrete. | 12 Marks | L4 | CO1 | PO1
PO2
PO5 |
|----|----------------------------------------------------------------------------------------|----------|----|-----|-------------------|

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------|----------|----|-----|-------------------|
| 2. | Explain the method of Hoyer's long line system of pretensioned. | 12 Marks | L4 | CO1 | PO1
PO2
PO5 |
|----|-----------------------------------------------------------------|----------|----|-----|-------------------|

UNIT-II

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 3. | A rectangular concrete beam 250mm wide and 300mm deep is prestressed by a force of 500 kN at a constant eccentricity of 60mm. The beam supports a concentrated load of 68kN at the centre of a span of 3m. Determine the location of the pressure line at the centre, quarter span and support sections of the beam. Neglect the self weight of beam. | 12 Marks | L4 | CO2 | PO1
PO2 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 4. | A prestressed concrete beam 250mm wide 350mm deep has a span of 10m. The beam is prestressed by steel wires of an area 350mm ² provided at uniform eccentricity of 60mm with an initial prestress of 1200N/mm ² . Determine the percentage loss of stress due to elastic deformation of concrete. Take modular ratio 6. | 12 Marks | L4 | CO2 | PO1
PO2 |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|

UNIT-III

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|--------------------------|
| 5. | A double T-section having a flange 1200mm wide & 150mm thick is prestressed by 4700 mm ² of high tensile steel located at an effective depth of 1600mm. The ribs have a thickness of 150mm each. If the cube strength of concrete is 40N/mm ² and tensile strength of steel is 1600N/mm ² , evaluate the flexural strength of the double T-girder using IS 1343 provisions. | 12 Marks | L6 | CO3 | PO1
PO2
PO3
PO8 |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|--------------------------|

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|--------------------------|
| 6. | A post tensioned bonded prestressed concrete beam of rectangular c/s 400mm and 550mm. Simply supported over a span of 8m is subjected to an all inclusive u.d.l of 18kN/m. The prestressing strand uniformly varying with 150mm eccentricity at the centre consists of 5 nos 5mm dia HTS, with an effective force of 1600mpa. If M40 concrete is used in construction design the shear reinforcement. | 12 Marks | L6 | CO3 | PO1
PO2
PO3
PO8 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|--------------------------|

UNIT-IV

7. A prestressing force of 320kN is transmitted through a distribution plate 120mm wide and 120mm deep, the center of which is located at 100mm from the bottom of an end block having a section 120mm wide and 300mm deep. Evaluate stresses in end block. 12 Marks L6 CO4 PO1 PO2 PO3 PO8

(OR)

8. Explain about bursting tensile forces and also sketch the stress distribution in Anchorage zone. 12 Marks L6 CO4 PO1 PO2 PO3 PO8

UNIT-V

9. A precast pre-tensioned beam of rectangular section has a breadth of 250 mm and a depth of 100 mm. The beam, with an effective span of 4 m, is prestressed by tendons with their centroids coinciding with the bottom kern. The initial force in the tendons is 200 kN. The loss of prestress may be assumed to be 15%. The beam is incorporated in a composite T-beam by casting a top flange of breadth 350 mm and thickness 30 mm. If the composite beam supports a live load of 5.5 kN/m², calculate the resultant stresses developed in the precast and in situ concrete assuming the pre-tensioned beam as unpropped. M40 and M30 concrete are used for pre tensioned and in-situ concrete. 12 Marks L4 CO5 PO1 PO2

(OR)

- 10 Describe the need of composite construction. 12 Marks L6 CO5 PO1 PO2 PO3



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**CIVIL INFRASTRUCTURE FOR SMART CITY DEVELOPMENT****[Civil Engineering]**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit
All questions carry equal marks**UNIT-I**

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------|
| 1. | a) | Describe the important criteria for a smart city and Need for an integrated approach. | 6 Marks | L2 | CO1 | PO1
PO6 |
| | b) | Describe the Role of science, technology and innovation in the implementation of smart infrastructure. | 6 Marks | L2 | CO1 | PO1
PO5
PO6
PO12 |

(OR)

- | | | | | | |
|----|----------------------------------------------------------|----------|----|-----|------------|
| 2. | Describe the elements of smart cities with a flow chart. | 12 Marks | L4 | CO1 | PO1
PO2 |
|----|----------------------------------------------------------|----------|----|-----|------------|

UNIT-II

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------|---------|----|-----|---------------------------|
| 3. | a) | Describe the various concepts of urban planning. | 6 Marks | L4 | CO2 | PO1
PO2 |
| | b) | Discuss the Importance of local area and neighborhood planning in Civil Infrastructure. | 6 Marks | L2 | CO2 | PO1
PO5
PO6
PO12 |

(OR)

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 4. | a) | Discuss the elements of urban design and Indian best practices in urban planning. | 6 Marks | L2 | CO3 | PO1 |
| | b) | Describe the application of Remote Sensing (RS) for land use in agriculture and urban planning. | 6 Marks | L4 | CO3 | PO1
PO5 |

UNIT-III

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 5. | a) | Describe the concept of a smart city is to utilize a limited amount of resources for better facilities. | 6 Marks | L2 | CO3 | PO1
PO6
PO7 |
| | b) | Compare and contrast the 42 smart building features with conventional building. | 6 Marks | L4 | CO3 | PO1
PO2 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------------|---------|----|-----|-------------------|
| 6. | a) | Illustrate the concept of development controls in city planning. | 6 Marks | L2 | CO3 | PO1
PO2
PO6 |
| | b) | Describe the various smart city governance and public institutions. | 6 Marks | L4 | CO3 | PO1
PO6 |

UNIT-IV

- | | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|----------------------------------|
| 7. | a) | Discuss concepts and theories of urban design. | 6 Marks | L4 | CO4 | PO1
PO2 |
| | b) | Describe the Components of ITS for efficient utilization of resources. | 6 Marks | L4 | CO4 | PO1
PO2
PO5
PO7
PO12 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 8. | a) | Describe New trends in urban mobility with the help of sketch. | 6 Marks | L4 | CO4 | PO1
PO2
PO5 |
| | b) | What are the traffic operation policies? Distinguish the advantages and disadvantages of ITS in urban planning transportation system. | 6 Marks | L4 | CO4 | PO1
PO2
PO8 |

UNIT-V

- | | | | | | | |
|-------------|----|-------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 9. | a) | Describe the principle of lighting and styles for illumination. | 6 Marks | L2 | CO5 | PO1
PO5
PO8 |
| | b) | Discuss in detail in urban rain water harvesting. | 6 Marks | L4 | CO5 | PO1
PO2 |
| (OR) | | | | | | |
| 10 | a) | Discuss case study on smart city utilities and services. Comment the pros and cons. | 6 Marks | L2 | CO5 | PO1
PO2
PO5 |
| | b) | Explain the smart city applications of RS and GIS for water utilities. | 6 Marks | L4 | CO5 | PO1
PO5 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**ELECTRIC VEHICLES****[Electrical and Electronics Engineering]****Time: 3 hours****Max. Marks: 60****Answer One Question from each Unit****All questions carry equal marks****UNIT-I**

- | | | | | | |
|-------------|-----------------------------------------------------------------------------------|----------|----|-----|-----|
| 1. | a) List all differences between series and parallel hybrid electric vehicles. | 6 Marks | L1 | CO1 | PO1 |
| | b) Explain about EV and traction motor characteristics. | 6 Marks | L2 | CO1 | PO2 |
| (OR) | | | | | |
| 2. | Explain the Series Configurations of Hybrid Drive Train models with Neat Diagram. | 12 Marks | L2 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|-------------|----------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Illustrate the isolated full bridge converter circuit modes of operation with neat sketches. | 12 Marks | L3 | CO2 | PO2 |
| (OR) | | | | | |
| 4. | a) What are the desirable converter characteristics and of a fly back converter? Explain. | 6 Marks | L1 | CO2 | PO1 |
| | b) Illustrate the operation of LCLC series-parallel resonant converter circuit. | 6 Marks | L3 | CO2 | PO2 |

UNIT-III

- | | | | | | |
|-------------|-------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | Draw and explain the structure, operation and characteristics of Flux-Reversal PM motor drives. | 12 Marks | L2 | CO3 | PO1 |
| (OR) | | | | | |
| 6. | Illustrate the design criteria of stator PM Motor Drives for EVs. | 12 Marks | L3 | CO3 | PO5 |

UNIT-IV

- | | | | | | |
|-------------|----------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | a) Explain the Operation and Principle of Flywheel Based Energy Storage System in Hybrid Electric Vehicles. | 6 Marks | L2 | CO4 | PO2 |
| | b) Explain Mathematical modeling for Lead Acid battery in Energy Storages Systems in Hybrid Electric Vehicles. | 6 Marks | L2 | CO4 | PO5 |
| (OR) | | | | | |
| 8. | Draw the block diagrams and explain the modeling of hybrid fuel cell energy storage systems. | 12 Marks | L1 | CO4 | PO2 |

UNIT-V

- | | | | | | |
|-------------|-------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | Draw Magnetic Planetary Geared EVT system and explain different modes of operation. | 12 Marks | L2 | CO5 | PO6 |
| (OR) | | | | | |
| 10. | Draw and explain possible configurations of magnetic concentric geared EVT system. | 12 Marks | L2 | CO5 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**CRYOGENICS****[Mechanical Engineering]**

Time: 3 hours

Max. Marks: 60

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

- | | | | | | |
|-------------|---------------------------------------------------------------------------------------------------------------|----------|----|-----|-------------------|
| 1. | a) Explain briefly the science of cryogenics. | 6 Marks | L1 | CO1 | PO1
PO2
PO7 |
| | b) Discuss about the limitations of Vapour compression refrigeration system for low temperature applications. | 6 Marks | L2 | CO1 | PO1
PO2
PO7 |
| (OR) | | | | | |
| 2. | Explain Cascade system and its advantages. | 12 Marks | L3 | CO1 | PO1
PO2
PO7 |

UNIT-II

- | | | | | | |
|-------------|------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 3. | a) Discuss about thermal properties related to low temperature applications. | 6 Marks | L2 | CO2 | PO1
PO2
PO7 |
| | b) Write short notes on cryogenic fluids i) Liquid Argon and Liquid Air. | 6 Marks | L3 | CO2 | PO1
PO2
PO7 |
| (OR) | | | | | |
| 4. | a) Explain super fluidity with the help of neat diagrams. | 6 Marks | L2 | CO2 | PO1
PO2
PO7 |
| | b) Elaborate on Gifford McMahon Cryo-refrigerator. | 6 Marks | L2 | CO2 | PO1
PO2
PO7 |

UNIT-III

- | | | | | | |
|-------------|-------------------------------------------------------------------------------|----------|----|-----|-------------------|
| 5. | a) Explain clearly the concept of Adiabatic expansion. | 6 Marks | L2 | CO3 | PO1
PO2
PO7 |
| | b) What are the different Liquefaction systems for Neon, Hydrogen and Helium? | 6 Marks | L2 | CO3 | PO1
PO2
PO7 |
| (OR) | | | | | |
| 6. | Explain the Liquefaction by Clauden system. | 12 Marks | L3 | CO3 | PO1
PO2
PO7 |

UNIT-IV

- | | | | | | |
|-------------|----------------------------------------------------------------|----------|----|-----|-------------------|
| 7. | a) Discuss on the properties of mixtures. | 6 Marks | L3 | CO4 | PO1
PO2
PO7 |
| | b) Illustrate the working principle of gas separation systems. | 6 Marks | L3 | CO4 | PO1
PO2
PO7 |
| (OR) | | | | | |
| 8. | Describe the principles of Gas purification methods. | 12 Marks | L3 | CO4 | PO1
PO2
PO7 |

UNIT-V

- | | | | | | |
|-------------|---------------------------------------------------------|----------|----|-----|-------------------|
| 9. | Discuss on Liquid-shielded and vapour shielded vessels. | 12 Marks | L3 | CO5 | PO1
PO2
PO7 |
| (OR) | | | | | |
| 10 | a) List out different low temperature insulations. | 6 Marks | L1 | CO5 | PO1
PO2
PO7 |
| | b) Discuss the hazards in cryogenic engineering. | 6 Marks | L2 | CO5 | PO1
PO2
PO7 |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**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) Contrast Harvard to Von-Neumann processor/controller architecture. | 6 Marks | L1 | CO1 | PO1 |
| | b) Draw the functional block diagram of MSP430. | 6 Marks | L2 | CO1 | PO1 |
| (OR) | | | | | |
| 2. | Illustrate the concepts of Exceptions- Interrupts and Resets in MSP430. | 12 Marks | L2 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|-------------|----------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | With suitable examples explain the Register Organization & Addressing Modes of MSP430. | 12 Marks | L2 | CO2 | PO2 |
| (OR) | | | | | |
| 4. | Analyze various internal clock sources in basic clock systems. | 12 Marks | L2 | CO2 | PO2 |

UNIT-III

- | | | | | | |
|-------------|-----------------------------------------------------------------|----------|----|-----|-----|
| 5. | a) Compare ADC10to ADC12. | 6 Marks | L3 | CO3 | PO8 |
| | b) Explain the concept Mixed signal systems. | 6 Marks | L3 | CO3 | PO8 |
| (OR) | | | | | |
| 6. | With neat sketch for ADC10 SAADC –Architecture & its operation. | 12 Marks | L3 | CO3 | PO6 |

UNIT-IV

- | | | | | | |
|-------------|--------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Demonstrate usage of Universal Serial Bus Protocol (USB). | 6 Marks | L1 | CO3 | PO8 |
| | b) Sequence the steps necessary for baud rate setting with USCI_A. | 6 Marks | L2 | CO3 | PO4 |
| (OR) | | | | | |
| 8. | a) Analyze the applications of Inter-integrated Circuit Bus (I2C). | 6 Marks | L2 | CO3 | PO8 |
| | b) Paraphrase the usage of USART Module. | 6 Marks | L3 | CO3 | PO4 |

UNIT-V

- | | | | | | |
|-------------|-------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) Compare the System Modeling Data Flow Model. | 6 Marks | L1 | CO4 | PO6 |
| | b) Detail out how Processor Technology accelerated system design. | 6 Marks | L1 | CO4 | PO6 |
| (OR) | | | | | |
| 10 | a) Paraphrase the Implementation of Concurrent Process Model. | 6 Marks | L1 | CO4 | PO1 |
| | b) Write short note on HCFSM and PSM. | 6 Marks | L1 | CO4 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**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) Give the microwave frequency bands and list the applications of Microwaves. 4 Marks L2 CO1 PO1
 b) What is *dominant mode*? Derive the expressions for cut off frequency (f_c) for the dominant mode of rectangular wave-guide. 8 Marks L3 CO1 PO2
- (OR)**
2. a) Calculate the guide wavelength (in cm) at 7 and 12GHz for an air filled waveguide with $a=2.54$ cm , $b=1.5$ cm. 4 Marks L2 CO1 PO1
 b) Explain the significance of TE₁₀ mode of rectangular wave-guide and derive the expressions for the field components of TE₁₀ wave. 8 Marks L3 CO1 PO4

UNIT-II

3. a) Explain in detail about waveguide irises, tuning screws and posts with neat diagram. 4 Marks L2 CO2 PO1
 b) Derive the S-matrix of E plane Tee and write its characteristics. 8 Marks L3 CO2 PO2
- (OR)**
4. a) Derive the s-matrix of Hybrid ring. 8 Marks L3 CO2 PO2
 b) What are the different types of Directional couplers? 4 Marks L2 CO2 PO1

UNIT-III

5. a) Explain the limitations and losses of conventional tubes at microwave frequencies? 4 Marks L2 CO3 PO2
 b) Derive the output power of Two-cavity klystron amplifier. 8 Marks L3 CO3 PO2
- (OR)**
6. a) What is Hartree condition in Magnetron? Derive the equation for Hartree voltage of it. 8 Marks L3 CO3 PO2
 b) What are the different propagation constants TWT? 4 Marks L2 CO3 PO1

UNIT-IV

7. a) Explain various modes of operation in GUNN diode. 4 Marks L2 CO3 PO2
 b) Discuss about construction and operation of TRAPATT diode. 8 Marks L3 CO3 PO2
- (OR)**
8. a) Discuss about construction of BARITT diode. 4 Marks L2 CO3 PO2
 b) Explain the principle of working of IMPATT diode with suitable structure and characteristics. 8 Marks L3 CO3 PO2

UNIT-V

9. a) What is bolometer? How is it used for microwave measurements? 8 Marks L3 CO4 PO6
 b) Draw a neat diagram of a microwave bench setup and explain in detail about all the components. 4 Marks L2 CO4 PO2
- (OR)**
10. a) Explain different methods of measurement of impedance using microwave bench. 8 Marks L3 CO4 PO6
 b) What are the different precautions must be made while measuring parameters at Microwave range? 4 Marks L2 CO4 PO6



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-19) Supplementary Examinations May – 2023**LOW POWER CMOS VLSI DESIGN
[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) Elaborate about upcoming low power approaches. | 6 Marks | L1 | CO1 | PO1 |
| | b) What is the impact of technology scaling on speed? | 6 Marks | L2 | CO1 | PO1 |
| (OR) | | | | | |
| 2. | a) Appraise the sub threshold leakage current of a MOS transistor. | 6 Marks | L2 | CO1 | PO2 |
| | b) Derive an expression for short circuit dissipation and dynamic dissipation of a CMOS inverter. | 6 Marks | L5 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | Compute the transition density and static probability of $Y = A + B + C$ given $P(a) = 0.2$, $P(b) = 0.3$, $P(c) = 0.4$, $D(a) = 1$, $D(b) = 2$, $D(c) = 3$. | 12 Marks | L5 | CO2 | PO3 |
| (OR) | | | | | |
| 4. | a) Illustrate the advantages and disadvantages of SPICE power analysis. | 6 Marks | L2 | CO2 | PO3 |
| | b) From experience, the standard deviation of the power samples measured from a circuit has been observed to have $\pm 20\%$ fluctuation from the mean. How many samples are required so that we are 99% confidence that the error of sample mean is within $\pm 5\%$? | 6 Marks | L5 | CO2 | PO3 |

UNIT-III

- | | | | | | |
|-------------|----------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Design and explain pre computation logic with an example. | 6 Marks | L3 | CO3 | PO3 |
| | b) Justify, in detail about Adjustable Device threshold Voltage with its applications. | 6 Marks | L2 | CO3 | PO3 |
| (OR) | | | | | |
| 6. | a) With examples, explain the basic transformation operators. | 6 Marks | L1 | CO3 | PO4 |
| | b) Draw various logic implementations of signal gating. | 6 Marks | L2 | CO3 | PO4 |

UNIT-IV

- | | | | | | |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Appraise two level clock tree using chip and package co design. Originate its use with respect to two level clock distributions. | 6 Marks | L3 | CO4 | PO8 |
| | b) Illustrate power reduction for clock signals by voltage swing reduction technique. | 6 Marks | L2 | CO4 | PO7 |
| (OR) | | | | | |
| 8. | a) Explain about different distributed buffer schemes used in clock distribution. | 6 Marks | L1 | CO4 | PO8 |
| | b) Elaborate on CMOS floating nodes. | 6 Marks | L1 | CO4 | PO7 |

UNIT-V

- | | | | | | |
|-------------|-------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) Illustrate the Flow Graph Transformation techniques with an example. | 6 Marks | L2 | CO4 | PO8 |
| | b) Find how to reduce glitches in today's technology. | 6 Marks | L3 | CO4 | PO7 |
| (OR) | | | | | |
| 10. | a) Where do we use tri-state keeper circuits? Explain. | 6 Marks | L3 | CO4 | PO8 |
| | b) Explain about pulsed word-line and reduced bit-line swing. | 6 Marks | L4 | CO4 | PO7 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations August – 2023

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 | What is meant by IMR? | 1 Mark | L1 | CO6 |
| 2 | Utility means | 1 Mark | L1 | CO1 |
| 3 | Choice problem is associated with | 1 Mark | L1 | CO1 |
| 4 | Expand CSO. | 1 Mark | L1 | CO2 |
| 5 | NDP stands for..... | 1 Mark | L1 | CO2 |
| 6 | In year the National Income was first estimated in India.
a)1867-68 b)1866-67 c)1868-69 d)1869-70 | 1 Mark | L2 | CO2 |
| 7 | Tea and Coffee are:
a) Substitution b) Complimentary c) Both a & b d) None | 1 Mark | L1 | CO3 |
| 8 | $D_x = f'(Y)$ refers to.
a) Income demand b) Price Demand
c) Cross Demand d) None of the above | 1 Mark | L1 | CO3 |
| 9 | Shoes and socks are example for..... | 1 Mark | L1 | CO3 |
| 10 | The concept of Quasi rent was given by..... | 1 Mark | L1 | CO4 |
| 11 | The Reward for Risk is..... | 1 Mark | L1 | CO4 |
| 12 | Dynamic theory of profit was given by -
A) J B Clark B) J S Mill C) Parito D) Marshall | 1 Mark | L1 | CO4 |
| 13 | Law of diminishing marginal utility was propounded by..... | 1 Mark | L1 | CO4 |
| 14 | Homogeneous goods are feature of | 1 Mark | L1 | CO5 |
| 15 | Interdependence is a feature of | 1 Mark | L1 | CO6 |
| 16 | In which year family planning was enacted in India ? | 1 Mark | L1 | CO6 |
| 17 | Which of the following statements is true about the central bank?
a) It regulates the entire banking system in the country
b) It is under the ownership of the central government of a country
c) It is the apex bank of a country
d) All of the above | 1 Mark | L1 | CO7 |
| 18 | Which of the following statements is true about the central bank?
a) It regulates the entire banking system in the country
b) It is under the ownership of the central government of a country
c) It is the apex bank of a country
d) All of the above | 1 Mark | L1 | CO7 |
| 19 | Which agency regulates the money supply in India?
a) The Government of India b) Commercial banks
c) Reserve Bank of India d) None of the above | 1 Mark | L1 | CO7 |
| 20 | Which of the following is not a union tax?
a) Taxes on railway freights and fares
b) Stamp duties on financial documents
c) Tolls d) a and b only | 1 Mark | L1 | CO8 |

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

		10 x 3 = 30 Marks		
II				
1	How would you explain characteristics of agriculture?	3 Marks	L1	CO1
2	Define and explain the concept of Welfare.	3 Marks	L1	CO1
3	How would you explain GDP Deflator?	3 Marks	L2	CO2
4	What can you say about Real GDP?	3 Marks	L2	CO2
5	Can you explain Shift in Demand with suitable diagram?	3 Marks	L2	CO3
6	How would you use the term price discrimination? Give suitable example.	3 Marks	L3	CO5
7	What changes would you make to control population explosion?	3 Marks	L6	CO6
8	Explain neonatal care.	3 Marks	L1	CO6
9	What could be done to minimize IMR?	3 Marks	L6	CO6
10	How would you define money?	3 Marks	L1	CO7
11	Write about fiduciary money. Given relevant examples.	3 Marks	L3	CO7
12	What is meant by KCC?	3 Marks	L1	CO8



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations August – 2023

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	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 L1 CO2
2	In saltation soil particles of medium size are carried by wind in a series of short bounces.	1 Mark L2 CO2
3	Graded bunds are used for safe disposal of excess runoff in areas with and relatively impervious soil.	1 Mark L1 CO2
4	Expand NWDPRRA	1 Mark L1 CO2
5	..... types of reservoirs are constructed by forming a dam or embankment on the valley or depression of the catchment area.	1 Mark L2 CO4
6	.....erosion is an advance stage of rill erosion as rill erosion is the advanced stage of erosion.	1 Mark L2 CO4
7	Contamination that enters a water way from a single, identifiable source, traced to a specific source is considered as pollution of water.	1 Mark L1 CO4
8	..... can be defined as the collection and storage of creek flow for irrigation use.	1 Mark L3 CO4
9	.....is done in those localities where rocks are readily available adjacent to the sites and water way gradient is very steep.	1 Mark L1 CO4
10	..... is an estimate of the ability of soils to resist erosion based on the physical characteristics of each soil.	1 Mark L1 CO3
11	Expand RUSLE	1 Mark L1 CO3
12	Broken stones or rock pieces are placed on the slopes of embankment particularly the upstream side for protecting the slope against the action of water.....	1 Mark L2 CO3
13	..... is defined as the removal of stream bank soil by water either flowing over the sides of the stream or scouring from there.	1 Mark L5 CO2
14	Soil erosion can broadly categorized into two types .....and.....	1 Mark L1 CO2
15	The type of gullies are formed where both the top soil and sub soil have the same resistance against erosion	1 Mark L2 CO3
16	Discontinuous gullies also called as	1 Mark L1 CO3
17	..... is used If the runoff exceeds the design run off , there is a danger of overtopping of the embankment and failure of the structure.	1 Mark L2 CO3
18	..... reduces the productivity of crop land by removing and washing away of plant nutrients and organic matter.	1 Mark L1 CO1
19	Bench terraces sloping outwards are effective in regions	1 Mark L1 CO2
20	Soil erosion is initiated by detachment of soil particles due to action of	1 Mark L1 CO2

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

		10 x 3 = 30 Marks		
II	1	What are the Factors Affecting Soil Erosion and explain about them?	3 Marks	L4 CO1
	2	Explain mechanics of soil erosion with diagram.	3 Marks	L3 CO1
	3	Define soil conservation and write What is its Importance in agriculture production?	3 Marks	L4 CO2
	4	Explain the development of Gullies.	3 Marks	L4 CO2
	5	Give Classification of Gullies based on size and explain them.	3 Marks	L1 CO2
	6	What are the Principles of Gully Control?	3 Marks	L2 CO2
	7	What is Land Use Capability Classification?	3 Marks	L1 CO3
	8	Definition of Land Evaluation and Difference between Land Evaluation and Land Capability Classification (LCC).	3 Marks	L3 CO3
	9	What is water harvesting and write its Importance?	3 Marks	L2 CO4
	10	What are Short Term Runoff Harvesting Techniques and explain?	3 Marks	L1 CO4
	11	Write any case study related to watershed model.	3 Marks	L2 CO4
	12	What is meant by water pollution and write about different types of water pollution?	3 Marks	L2 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, August – 2023

ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT

[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 Biomedical waste includes both and wastes generated from hospitals 1 Marks L1 CO1
 - 2 are those which are reproducible and are obtained from the biomass of living organisms. 1 Marks L1 CO1
 - 3 Rate at which water and air move from upper to lower soil layers is called 1 Marks L1 CO1
 - 4 India has 12 major rivers with a total catchments area of million hectares 1 Marks L2 CO1
 - 5 The Lion Breeding Programme creates and maintain 1 Marks L3 CO1
 - 6 The basin has the highest hydropower potential and nearly 30% of the country 's production 1 Marks L1 CO2
 - 7 wastes provide an important renewable source of energy 1 Marks L1 CO2
 - 8 is free living which catches and kills another species for food 1 Marks L1 CO2
 - 9 is the basic building block of life molecules 1 Marks L3 CO2
 - 10 though constituting much less of biomass than carbon or oxygen, is an essential constituent of proteins. 1 Marks L1 CO2
 - 11 is considered to be one of the most important of these greenhouse gases, absorbing most of the heat trapped by the atmosphere. 1 Marks L1 CO3
 - 12 1 ppm rise in CO₂ rise would add Gt C into the atmosphere 1 Marks L1 CO3
 - 13 plays an important role in both troposphere and stratosphere. 1 Marks L1 CO3
 - 14 Expand UNFCCC : 1 Marks L2 CO3
 - 15 The presence of excessive acid in rain water is called 1 Marks L2 CO3
 - 16 A large steam-electric power plant requires an enormous amount of 1 Marks L1 CO4
 - 17 The process of increase in the nutrients of waters and resultant spurt in algal productivity is called 1 Marks L1 CO4
 - 18 is the technique reducing metal concentrations by cultivating plants with a high capacity for metal accumulation in shoots 1 Marks L1 CO4
 - 19 Decomposition of organic pollutants by means of rhizosphere microorganisms is called 1 Marks L3 CO4
 - 20 The microorganism which are free - floating are collectively known as the 1 Marks L1 CO4

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

		10 x 3 = 30 Marks		
II				
1	What is the main scope of environmental studies?	3 Marks	L1	CO1
2	What is your opinion on E-Waste?	3 Marks	L2	CO1
3	Explain the process of soil development?	3 Marks	L2	CO1
4	Write about Nomadic Pastoralism?	3 Marks	L3	CO2
5	Write the policies, which can be taken into account for biodiversity conservation?	3 Marks	L2	CO2
6	Write your opinion on chloro-fluoro-carbons.	3 Marks	L1	CO2
7	What are the sources of water pollutants?	3 Marks	L4	CO3
8	How would you explain the effects of eutrophication?	3 Marks	L3	CO3
9	How can you describe Phytoremediation?	3 Marks	L3	CO3
10	What are the control measures for oil pollution?	3 Marks	L2	CO4
11	How would you explain the methods of soil treatment?	3 Marks	L2	CO4
12	Write about the concepts of Organic Farming.	3 Marks	L2	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 August – 2023

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 | Contraction of heart is called | 1 Mark | L1 | CO1 |
| 2 | The union of malphigian tubule with rectal gland of hindgut in reabsorption of water , the condition is called | 1 Mark | L1 | CO1 |
| 3 | Regenerative cells are also called as | 1 Mark | L1 | CO1 |
| 4 | Corpora allata secretes | 1 Mark | L1 | CO1 |
| 5 | Goblet cells help in and | 1 Mark | L1 | CO2 |
| 6 | Blood glucose is also called | 1 Mark | L2 | CO1 |
| 7 | Number of functional spiracles in Holopneustic respiration..... | 1 Mark | L2 | CO2 |
| 8 | The lowest population at which insect will cause economic damage..... | 1 Mark | L3 | CO2 |
| 9 | The resistance controlled by several genes is | 1 Mark | L3 | CO2 |
| 10 | The labium is elongated into button like structure called in chewing and lapping type of mouthparts. | 1 Mark | L3 | CO2 |
| 11 | EIL is below GEP in case of pest | 1 Mark | L2 | CO3 |
| 12 | The green colour symbol is given for toxic insecticides | 1 Mark | L3 | CO3 |
| 13 | Expand DPPQS | 1 Mark | L2 | CO3 |
| 14 | Example for insecticides acting on nervous system..... | 1 Mark | L2 | CO3 |
| 15 | Author of insect pests of crops..... | 1 Mark | L1 | CO3 |
| 16 | is extracted from roots of derris elliptica. | 1 Marks | L1 | CO4 |
| 17 | Insects which are active during dusk are called | 1 Mark | L3 | CO4 |
| 18 | The sperm storage structure in male reproductive system is called as | 1 Mark | L4 | CO4 |
| 19 | Concept of IPM was given by..... | 1 Mark | L4 | CO4 |
| 20 | Name a chemical sprayed against thrips..... | 1 Mark | L3 | CO4 |

PART - B

Answer any Ten Question

All Questions Carry Equal Marks

II

10 X 3 = 30 Marks

- | | | | | |
|---|--------------------------------------------------------------------------------------------------|---------|----|-----|
| 1 | Saltatorial x Scansorial leg, write the difference. | 3 Marks | L4 | CO1 |
| 2 | Mention the different types of legs along with modification and example, draw suitable diagrams. | 3 Marks | L3 | CO1 |
| 3 | Elaborate on types of nervous systems. | 3 Marks | L3 | CO1 |
| 4 | Write about the types of reproduction in insects with examples. | 3 Marks | L2 | CO2 |
| 5 | Elaborate the different formulations of insecticides. | 3 Marks | L3 | CO2 |

6	Write different biotic and abiotic factors that influence the insect growth.	3 Marks	L2	CO2
7	Write about filter chamber.	3 Marks	L1	CO3
8	What is pest surveillance, write a short notes?	3 Marks	L1	CO3
9	Filiform antenna x Moniliform antenna, write the difference.	3 Marks	L2	CO3
10	Types of honey bee legs, explain with relevant diagrams.	3 Marks	L3	CO3
11	Write about siphoning type of mouthparts with relevant diagrams.	3 Marks	L3	CO4
12	Describe the process of blood circulation in insect.	3 Marks	L1	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, August – 2023

FUNDAMENTALS OF PLANT BREEDING 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 | Plant Breeding helps in crop | 1 Marks | L1 | CO1 |
| 2 | The ultimate aim of plant breeding is to improve the of economic produce. | 1 Marks | L1 | CO1 |
| 3 | Breeding for is an important objective of plant breeding for stabilizing crop production across regions and seasons. | 1 Marks | L1 | CO1 |
| 4 | is the process of bringing a wild species under human management/ cultivation. | 1 Marks | L1 | CO1 |
| 5 | is testing newly selected lines/strains/populations for their performance in comparison with the existing best varieties called checks. | 1 Marks | L1 | CO1 |
| 6 | is development of embryo from the embryo sac without pollination. | 1 Marks | L1 | CO2 |
| 7 | is self-pollination. | 1 Marks | L1 | CO2 |
| 8 | | 1 Marks | L1 | CO2 |
| 9 | In, pollen grains are not functional. | 1 Marks | L1 | CO2 |
| 10 | Sunflower is introduced from | 1 Marks | L1 | CO3 |
| 11 | What is the Plant Introduction Agency in India? | 1 Marks | L1 | CO3 |
| 12 | Triticale is an amphidiploid obtained from cross between wheat and rye is a hybrid. | 1 Marks | L1 | CO3 |
| 13 | Expand NBPGR. | 1 Marks | L1 | CO4 |
| 14 | is having one or two susceptible lines in multiline population. | 1 Marks | L1 | CO4 |
| 15 | The term heterosis was first used by in 1914. | 1 Marks | L1 | CO4 |
| 16 | is the sudden heritable change other than the Mendelian segregation and gene recombination in an organism. | 1 Marks | L1 | CO5 |
| 17 | Expand DBT (Department of Biotechnology). | 1 Marks | L1 | CO5 |
| 18 | Expand CDFD. | 1 Marks | L1 | CO5 |
| 19 | Expand CPMB. | 1 Marks | L1 | CO6 |
| 20 | In vitro cultivation of plants is also called | 1 Marks | L1 | CO1 |

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

		10 x 3 = 30 Marks		
II				
1	What do you understand by Plant Breeding? Explain it's nature.	3 Marks	L1	CO1
2	What is the Noblization of Indian Canes? Explain the process.	3 Marks	L1	CO1
3	What is Autogamy? Explain the mechanisms promoting self-pollination.	3 Marks	L1	CO1
4	Explain Male sterility, it's classification with examples.	3 Marks	L1	CO2
5	What is Mass Selection and explain the process with a neat diagram?	3 Marks	L1	CO2
6	What are the objectives of hybridization?	3 Marks	L2	CO3
7	Compare and contrast between pedigree and bulk methods.	3 Marks	L3	CO4
8	How do you understand Heterosis? What are the objectives of heterosis breeding?	3 Marks	L2	CO4
9	Compare and contrast between synthetic and composite varieties.	3 Marks	L3	CO4
10	What is wide and distant hybridization? Give some examples	3 Marks	L2	CO4
11	Is plant tissue culture useful? If yes, list out the applications of plant tissue culture.	3 Marks	L4	CO5
12	What are the 4 distinct stages of micropropagation?	3 Marks	L2	CO6



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations August – 2023

PRODUCTION TECHNOLOGY FOR VEGETABLES, SPICES AND CONDIMENTS –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	Blossom end rot in tomato is caused by the deficiency of	1 Mark L1 CO2
2	Jobner gaint is the mutant variety of.....crop	1 Mark L1 CO2
3	Bitter principle in bitter gourd.....	1 Mark L1 CO3
4	Seed rate of okra ...../ha	1 Mark L2 CO3
5	The branch of horticulture deals with cultivation of vegetables is called	1 Mark L3 CO2
6	The center of origin of tomato is	1 Mark L1 CO1
7	Zinger is commercially propagated by	1 Mark L1 CO4
8	Turmeric becomes ready for harvesting after..... moths from planting.	1 Mark L1 CO4
9	The word 'Olericulture' is derived from	1 Mark L3 CO1
10	Richest source of Beta-carotene is found in	1 Mark L1 CO1
11	Little leaf disease of Brinjal is transmitted by an insect vector.....	1 Mark L1 CO2
12	Fruits of wild forms of bottle gourd are bitter in taste due to	1 Mark L1 CO3
13	Onion skin colour is due to presence of	1 Mark L1 CO4
14	Indian institute of vegetable research is located at	1 Mark L2 CO1
15	The most serious disease of okra is	1 Mark L2 CO2
16	Triple disease resistant variety of watermelon.....	1 Mark L1 CO3
17	Botanical name of coriander.....	1 Mark L1 CO2
18	Pollu beetle is a most destructive pest of	1 Mark L1 CO4
19	'Olericulture' means	1 Mark L3 CO1
20	The pungency in chillies is due to	1 Mark L1 CO2

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II		10 X 3 = 30 Marks
1	Define vegetable and explain nutritive value of vegetables.	3 Marks L1 CO1
2	How can you make a distinction between determinate and indeterminate tomato?	3 Marks L2 CO2
3	How would you explain flower biology and pollination in brinjal?	3 Marks L2 CO2
4	How would you explain sex modification in cucurbits?	3 Marks L3 CO3
5	Define olericulture. Justify about its importance.	3 Marks L2 CO1
6	Write a short note on maturity, harvesting and processing of cardamom.	3 Marks L1 CO4
7	How would you describe about land preparation, sowing and growth regulators used for bitter gourd?	3 Marks L4 CO3

- | | | | | |
|----|-----------------------------------------------------------------------------------------------|---------|----|-----|
| 8 | What can you say about procedure for preparation of land for planting and manuring for clove. | 3 Marks | L3 | CO4 |
| 9 | Enlist the advantages of vegetable production. | 3 Marks | L3 | CO1 |
| 10 | Write a short note on production technology of amaranthus. | 3 Marks | L2 | CO2 |
| 11 | How would you describe about seed treatment, sowing and transplanting for muskmelon? | 3 Marks | L2 | CO3 |
| 12 | How would you explain propagation and method of planting for ginger? | 3 Marks | L2 | CO4 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations August – 2023

STATISTICAL METHODS

[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 Find the mean of the first 10 odd numbers. | 1 Mark L3 CO1 |
| | 2 The mean of 8, 11, 6, 14, x and 13 is 66. Find the value of the observation x | 1 Mark L1 CO1 |
| | 3 Write the formula Range and coefficient of Range Range. | 1 Mark L1 CO1 |
| | 4 What is the formula for Mean deviation for continuous data? | 1 Mark L2 CO2 |
| | 5 Quartile Deviation=..... | 1 Mark L4 CO2 |
| | 6 The second quartile is called..... | 1 Mark L1 CO2 |
| | 7 Write the formula for Bowly’s coefficient of skewness. | 1 Mark L2 CO3 |
| | 8 What is the formula for Quartile deviation for continuous data? | 1 Mark L1 CO3 |
| | 9 Write the formula for mean for continuous data. | 1 Mark L2 CO3 |
| | 10 Write the formula for standard deviation for ungrouped data. | 1 Mark L2 CO4 |
| | 11 The variance of Binomial Distribution | 1 Mark L1 CO1 |
| | 12 The variance of Normal distribution is..... | 1 Mark L1 CO1 |
| | 13 The probability mass function of PD is | 1 Mark L1 CO2 |
| | 14 In large sample test for two sample proportion Z= | 1 Mark L4 CO2 |
| | 15 In large sample test for two sample mean Z= | 1 Mark L4 CO4 |
| | 16 The Z table value of 5% Level of significance is in two tailed test is | 1 Mark L1 CO4 |
| | 17 What is two tailed test? | 1 Mark L2 CO5 |
| | 18 What is Correlation? | 1 Mark L2 CO5 |
| | 19 The regression line of x on y is | 1 Mark L1 CO5 |
| | 20 The formula for grand total in one way ANOVA | 1 Mark L1 CO5 |

PART - B

Answer any Ten Question

All Questions Carry Equal Marks

- | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------|-------|-------|-------|-------|--------------|-------|-------------------|-----------|----|-----|-----|-----|----|----|----|----|--|
| II | | 10 X 3 = 30 Marks | | | | | | | | | | | | | | | | | | |
| | 1 The following data gives the heights of 50 plants in cms. Calculate Mean deviation. : | 3 Marks L3 CO1 | | | | | | | | | | | | | | | | | | |
| | <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Height in cm</td> <td style="padding: 5px;">10-20</td> <td style="padding: 5px;">20-30</td> <td style="padding: 5px;">30-40</td> <td style="padding: 5px;">40-50</td> <td style="padding: 5px;">50-60</td> </tr> <tr> <td style="padding: 5px;">No of plants</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;">14</td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">5</td> </tr> </table> | Height in cm | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | No of plants | 6 | 14 | 15 | 10 | 5 | | | | | | | |
| Height in cm | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | | | | | | | | | | | | | | | |
| No of plants | 6 | 14 | 15 | 10 | 5 | | | | | | | | | | | | | | | |
| | 2 The following frequency distribution is the height of tomato plants in F3 generation calculate the standard deviation. | 3 Marks L1 CO1 | | | | | | | | | | | | | | | | | | |
| | <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Tomato Plant Height (in c.m.) (x)</td> <td style="padding: 5px;">20-30</td> <td style="padding: 5px;">30-40</td> <td style="padding: 5px;">40-50</td> <td style="padding: 5px;">50-60</td> <td style="padding: 5px;">60-70</td> <td style="padding: 5px;">70-80</td> <td style="padding: 5px;">80-90</td> </tr> <tr> <td style="padding: 5px;">No. of plants (f)</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">61</td> <td style="padding: 5px;">132</td> <td style="padding: 5px;">153</td> <td style="padding: 5px;">140</td> <td style="padding: 5px;">51</td> <td style="padding: 5px;">2</td> </tr> </table> | Tomato Plant Height (in c.m.) (x) | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | No. of plants (f) | 3 | 61 | 132 | 153 | 140 | 51 | 2 | | | |
| Tomato Plant Height (in c.m.) (x) | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | | | | | | | | | | | | | |
| No. of plants (f) | 3 | 61 | 132 | 153 | 140 | 51 | 2 | | | | | | | | | | | | | |
| | 3 Find the mode of the following data: | 3 Marks L1 CO1 | | | | | | | | | | | | | | | | | | |
| | <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Class Interval</td> <td style="padding: 5px;">0-10</td> <td style="padding: 5px;">10-20</td> <td style="padding: 5px;">20-30</td> <td style="padding: 5px;">30-40</td> <td style="padding: 5px;">40-50</td> <td style="padding: 5px;">50-60</td> <td style="padding: 5px;">60-70</td> <td style="padding: 5px;">70-80</td> </tr> <tr> <td style="padding: 5px;">Frequency</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">8</td> <td style="padding: 5px;">7</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">28</td> <td style="padding: 5px;">20</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">10</td> </tr> </table> | Class Interval | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | Frequency | 5 | 8 | 7 | 12 | 28 | 20 | 10 | 10 | |
| Class Interval | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | | | | | | | | | | | | |
| Frequency | 5 | 8 | 7 | 12 | 28 | 20 | 10 | 10 | | | | | | | | | | | | |

- 4 In the seed germination test, the proportion of defective seeds is 10%. Find the mean and standard deviation for the distribution of defective seeds in a total of 500 seeds 3 Marks L2 CO2
- 5 Out of 320 families with 5 children each, what percentage would be expected to have, i) 2 boys and 3 girls; ii) at least one boy? Assume equal probability for boys and girls. 3 Marks L4 CO2
- 6 In a distribution exactly normal, 7% of the items are under 35 and 89% are under 63. What are the mean and SD of the distribution? 3 Marks L1 CO2
- 7 In a seedling test of nursery, out of 140 seedlings examined, 20 were found to have some type of abnormalities. Does it conform with the statement that 20% of the seedlings have abnormalities ? 3 Marks L2 CO3
- 8 In a sample of 1000 people in Maharashtra, 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% level of significance ? 3 Marks L1 CO3
- 9 The weights of 10 people of a locality are found to be 70, 67, 62, 68, 61, 68, 70, 64, 64, kilograms. Is it reasonable to believe that the average weights of the people of locality is greater than 64 kg? Test at 5% level of significance. 3 Marks L2 CO4
- 10 Calculate Karl Pearson's Coefficient of correlation the following data: 3 Marks L2 CO4
X : 10 12 16 11 15 14 20 22
Y : 15 18 23 14 20 17 25 28

- 11 The following table gives the yields in pounds per plot, of five varieties of Wheat after being applied to each of 4 plots, completely randomised. 3 Marks L1 CO5

Varieties	Yields(lbs)			
A	8	8	6	10
B	10	12	13	9
C	18	17	13	16
D	12	10	15	11
E	8	11	9	8

Analyse the data and draw your conclusions.

- 12 Four varieties of Roses (A, B, C and D) were cultivated under identical conditions, with 5 replications for each. Analyse the data on the number of Roses per plant for significant difference among the 4 varieties in terms of the number of flowers per plant. 3 Marks L1 CO5

A	B	C	D
87	87	83	96
91	88	84	94
95	84	79	90
89	87	82	88
92	84	86	97



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, August – 2023

FUNDAMENTALS OF PLANT PATHOLOGY

[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 first book on plant pathology, entitled “Diseases of Cultivated Crops, their causes and their control” was written by :-
a) Kuhn b) Tillet c) De Bary d) Micheli 1 Mark L1 CO1
 - 2 The study of cause of a disease is Etiology.
a) True b) False 1 Mark L2 CO1
 - 3 “Khaira disease ” of rice is caused by deficiency of :-
a) Nitrogen b) Zinc c) Potash d) Phosphorus 1 Mark L3 CO1
 - 4 The organisms lacking a well defined nucleus are known as:-
a) Fungi b) Protozoa c) Eukaryotes d) Prokaryotes 1 Mark L1 CO1
 - 5are food absorbing organs of Fungi. 1 Mark L2 CO2
 - 6 Nematodes are . 1 Mark L2 CO2
a) Sac like structures b) Root like structures
c) Thread like structures d) Worm and cylindrical like structure
 - 7 Phytoplasmas and Spiroplasmas are bacteria that having. 1 Mark L1 CO2
a) Rigid cell wall b) Thin cell wall
c) Thick cell wall d) Lack rigid cell wall
 - 8 Most fungal diseases spread out in 1 Mark L3 CO2
a) Dry and Cold weather b) Wet and Cold weather
c) Dry and Hot weather d) Wet and Hot weather
 - 9 Parasitic and non parasitic nematodes are identified on the basis of 1 Mark L1 CO3
a) Alimentary canal b) Reproductive system
c) Stylet d) Tail
 - 10 Virus is a single cell organism. 1 Mark L1 CO3
a) True b) False
 - 11 Tomato leaf curl virus is transmitted by:- 1 Mark L1 CO3
a) Myzus persici b) Bemisia tabaci
c) Thrips tabaci d) Infected plant material
 - 12 Monodelphic means nematode possess..... 1 Mark L2 CO3
 - 13 Disease diagnose is very important for developing effective strategies for. 1 Mark L5 CO4
a) Crop management b) Field management
c) Soil management d) Disease management
 - 14 Aflatoxin is produced by..... fungi. 1 Mark L1 CO4
 - 15 Hypersensitivity is an extreme degree of 1 Mark L2 CO4
a) Susceptibility b) Infection
c) Inoculum d) None of the them

- | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|-----|
| 16 | Single molecules of pathogen and plants that trigger defense mechanisms of host.
a) Elicitors b) Emulsifiers
c) Empirical models d) Enhance | 1 Mark | L1 | CO4 |
| 17 | Adjustment in the date of sowing comes under
method of plant disease management | 1 Mark | L2 | CO5 |
| 18 | is the name of the fungal bio agent which is commonly used for biological control of plant diseases. | 1 Mark | L1 | CO5 |
| 19 | Removal of diseased plants or their affected organs from the field is known as | 1 Mark | L1 | CO5 |
| 20 | Mancozeb is a formulation of
a) mancozeb and zinc b) maneb and zinc ion
c) manganese and zinc d) maneb and manzate | 1 Mark | L1 | CO5 |

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

II

10 x 3 = 30 Marks

- | | | | | |
|----|----------------------------------------------------------------------------------------------|---------|----|-----|
| 1 | What are the factors affecting disease development? | 3 Marks | L3 | CO1 |
| 2 | Differentiate Biotic and Abiotic agents with examples. | 3 Marks | L4 | CO1 |
| 3 | Write about Appressorium. | 3 Marks | L2 | CO2 |
| 4 | Describe the methods of reproduction in Bacteria. | 3 Marks | L5 | CO2 |
| 5 | Write a short note on the characters of Fungi. | 3 Marks | L4 | CO3 |
| 6 | Describe briefly on fungal plant diseases with appropriate examples. | 3 Marks | L2 | CO3 |
| 7 | Define Virus. What are the unique characters of Virus? | 3 Marks | L4 | CO4 |
| 8 | Explain the methods of reproduction in nematodes. | 3 Marks | L3 | CO4 |
| 9 | What is Resistance? Differentiate horizontal and vertical resistance with suitable examples. | 3 Marks | L2 | CO5 |
| 10 | Distinguish pathotoxin and vivotoxin with suitable examples. | 3 Marks | L4 | CO5 |
| 11 | Explain "Prophylactic" and "therapeutic" treatment of plant disease. | 3 Marks | L2 | CO1 |
| 12 | Write a short note on integrated plant disease management. | 3 Marks | L2 | 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 August – 2023

FUNDAMENTALS OF CROP PHYSIOLOGY AND PLANT BIOCHEMISTRY

[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 word Cell is derived from Greek word | 1 Mark | L1 | CO1 |
| 2 | Power house of Cell is..... | 1 Mark | L1 | CO1 |
| 3 | Growing plants in nutrient enriched water without soil is | 1 Mark | L1 | CO1 |
| 4 | Plant cell wall is made up of..... | 1 Mark | L1 | CO1 |
| 5 | C3 cycle is also known as..... | 1 Mark | L1 | CO2 |
| 6 | TCA cycle is also known as..... | 1 Mark | L1 | CO2 |
| 7 | The products of Photosynthesis are..... | 1 Mark | L1 | CO3 |
| 8 | Hormone required for ripening of fruits is..... | 1 Mark | L1 | CO3 |
| 9 | The common cytokinin is..... | 1 Mark | L1 | CO3 |
| 10 | Example for Gibberelins are..... | 1 Mark | L1 | CO3 |
| 11 | Glycogen is a polysaccharide | 1 Mark | L1 | CO4 |
| 12 | Sucrose is also known as | 1 Mark | L1 | CO4 |
| 13 | Linoleic and Linolenic acids are..... | 1 Mark | L1 | CO4 |
| 14 | Adenine and Guanine are | 1 Mark | L1 | CO5 |
| 15 | The non protein organic part of enzyme is called | 1 Mark | L1 | CO5 |
| 16 | RNA can be expanded as | 1 Mark | L1 | CO5 |
| 17 | As Amino acids carry both charges they are called | 1 Mark | L1 | CO5 |
| 18 | The enzyme Aldolase converts Fructose 1,6-bisphosphate to | 1 Mark | L1 | CO6 |
| 19 | Glyoxylate cycle is specific for..... | 1 Mark | L1 | CO6 |
| 20 | The first product in TCA cycle is | 1 Mark | L1 | CO6 |

PART - B

Answer any Ten Question

All Questions Carry Equal Marks

II

10 x 3 = 30 Marks

- | | | | | |
|----|----------------------------------------------------------|---------|----|-----|
| 1 | Explain the role of Endoplasmic reticulum in the cell. | 3 Marks | L2 | CO1 |
| 2 | Summarize role and significance of Micro nutrients. | 3 Marks | L2 | CO1 |
| 3 | Explain different steps in fatty acid oxidation. | 3 Marks | L2 | CO2 |
| 4 | Outline different complexes in Electron transport chain. | 3 Marks | L2 | CO2 |
| 5 | Summarize the Biosynthesis of Auxins. | 3 Marks | L2 | CO3 |
| 6 | Identify the functions of Ethylene. | 3 Marks | L3 | CO3 |
| 7 | Summarize the structure and function of Starch. | 3 Marks | L2 | CO4 |
| 8 | Identify the functions of Phospholipids. | 3 Marks | L3 | CO4 |
| 9 | Illustrate the structure of different types of DNA | 3 Marks | L2 | CO5 |
| 10 | Illustrate the theories of Enzyme action. | 3 Marks | L2 | CO5 |
| 11 | Show Glyoxylic acid pathway. | 3 Marks | L3 | CO6 |
| 12 | Show various steps in fatty acid oxidation. | 3 Marks | L3 | CO6 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) II Semester (MBU-22) Regular Examinations, August – 2023

PROBLEMATIC SOILS AND THEIR MANAGEMENT

[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 Resistance to change in pH of the soil is known as 1 Mark L2 CO1
 - 2 Expand NWDB 1 Mark L1 CO1
 - 3 Most of the crop roots cannot penetrate through soil when penetrometer reading is more than psi. 1 Mark L1 CO1
 - 4 Erosion in which the removal of a fairly uniform layer of surface soil 1 Mark L2 CO1
 - 5 Solonchaks is the Russian name for soils. 1 Mark L2 CO1
 - 6 The laboratory method proposed by is widely used for assessing the gypsum requirement of sodic soils. 1 Mark L1 CO2
 - 7 The quantity of water needed to leach down the salts below the root zone is known as 1 Mark L2 CO2
 - 8 Acid soils can be reclaimed by addition of 1 Mark L1 CO2
 - 9 Calcite chemical formula is 1 Mark L2 CO2
 - 10 The calcium carbonate equivalent (CCE) or neutralizing value (NV) of quick lime is 1 Mark L2 CO2
 - 11 Acquisition of information about an object or phenomenon without making physical contact with the object is called as 1 Mark L2 CO3
 - 12 Accumulation of one type of salt have antagonistic effect on other ions is called 1 Mark L2 CO3
 - 13 Expand ESP 1 Mark L1 CO3
 - 14 Formula for SAR 1 Mark L1 CO3
 - 15 Potentially toxic ions in irrigation water are 1 Mark L2 CO3
 - 16 The breakdown of contaminants taken up by plants through metabolic process with in the plant this phenomenon is known as 1 Mark L2 CO4
 - 17 Land capability class that does not have any limitations is 1 Mark L2 CO4
 - 18 Land capability Class II is represented by the colour 1 Mark L1 CO4
 - 19 Under land suitability classification the c and t representand 1 Mark L2 CO4
 - 20 Expand NDVI 1 Mark L1 CO4

PART - B

**Answer any Ten Question
All Questions Carry Equal Marks**

II		10 x 3 = 30 Marks		
1	Define soil quality and soil health. What are the types of soil health indicators and different parameters under each category?	3 Marks	L2	CO1
2	Briefly discuss about waste lands and problem soils.	3 Marks	L3	CO1
3	What are the problems of alkalinity on soil characteristics and plants? Briefly explain them.	3 Marks	L2	CO1
4	Briefly discuss the management of surface crusting.	3 Marks	L3	CO2
5	What is leaching requirement? What are factors that affect leaching requirement?	3 Marks	L2	CO2
6	Explain clearly the procedure for reclamation of alkali soils using gypsum.	3 Marks	L2	CO2
7	What is remote sensing? Discuss different types of RS based on the altitude of the sensors used.	3 Marks	L3	CO3
8	Briefly explain about salt index, bicarbonate hazard and boron concentration in irrigation water.	3 Marks	L3	CO3
9	What is specific ion toxicity in irrigation water? What are the effects of specific ion toxicity on soils and plants?	3 Marks	L2	CO3
10	What is bioremediation? Discuss about the methods of bioremediation and the approaches of bioremediation using microbes.	3 Marks	L3	CO4
11	What is land capability classification and its importance? What are the land capability classes and the colours with which they are represented?	3 Marks	L3	CO4
12	What are multipurpose trees? What are the benefits of multipurpose trees?	3 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations July – 2023

INTRODUCTION TO BIOLOGY

[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 about Role of Centrioles in cells. | 2 Marks | L1 | CO1 |
| | b) | What is the significance of Lysosomes? | 2 Marks | L2 | CO1 |
| | c) | Describe Pteridophytes | 2 Marks | L1 | CO2 |
| | d) | What is a Cysticercus larva? | 2 Marks | L1 | CO2 |
| | e) | Discuss significance of mRNA | 2 Marks | L1 | CO3 |
| | f) | Write the functions of tRNA | 2 Marks | L1 | CO3 |
| | g) | Define Osmoregulation | 2 Marks | L2 | CO4 |
| | h) | What are Neurotransmitters? | 2 Marks | L1 | CO4 |
| | i) | Write the Functions of PS II | 2 Marks | L1 | CO5 |
| | j) | What is the significance 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) | Describe the structure and function of Golgi complex. | 8 Marks | L1 | CO1 |
| | b) | Describe the structure and function of Mitochondria. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------|---------|----|-----|
| 3. | a) | Compare and contrast the Plant and Animal cells. | 8 Marks | L2 | CO1 |
| | b) | Discuss in detail the structure and function of Nucleus. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Compare and contrast Dicots and Monocots. | 8 Marks | L1 | CO2 |
| | b) | Describe in detail Whittaker's classification of Animal Kingdom . | 8 Marks | L1 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Discuss in detail the life cycle of <i>Plasmodium vivax</i> in female Anopheles mosquito. | 8 Marks | L1 | CO2 |
| | b) | Explain with suitable diagram the life cycle of Wuchereria in man. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------|---------|----|-----|
| 6. | a) | Discuss in detail the Double Helical structure of DNA. | 8 Marks | L1 | CO3 |
| | b) | Evaluate the central dogma of Molecular Biology. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------|---------|----|-----|
| 7. | a) | Explain in detail the process of Translation. | 8 Marks | L1 | CO3 |
| | b) | Describe the protocol of rDNA technology. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|---------------------------------------------------------|---------|----|-----|
| 8. | a) | Write an essay on the Physiology of Blood. | 8 Marks | L2 | CO4 |
| | b) | Draw a labeled diagram of Respiratory system in Humans. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Discuss in detail the structure and function of Pituitary gland. | 8 Marks | L1 | CO4 |
| | b) | Explain the process of events at the Neuro-muscular junction. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|---------------------------------------------------|---------|----|-----|
| 10. | a) | Write an essay on the C4 Cycle. | 8 Marks | L2 | CO5 |
| | b) | Explain the process of anoxygenic photosynthesis. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-----------------------------------------------------------|---------|----|-----|
| 11. | a) | Compare and contrast PS I and PS II. | 8 Marks | L2 | CO5 |
| | b) | Explain the mechanism of non-cyclic photophosphorylation. | 8 Marks | L2 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations July – 2023

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 Natural Gas. | 2 Marks | L1 | CO1 |
| | b) | Differentiate between Renewable and Non Renewable Energy Resources. | 2 Marks | L1 | CO1 |
| | c) | What is DDT? | 2 Marks | L1 | CO2 |
| | d) | Write about two impurities in water and their consequences. | 2 Marks | L1 | CO2 |
| | e) | Recall effects of overgrazing. | 2 Marks | L1 | CO3 |
| | f) | Define pollutant and pollution. | 2 Marks | L1 | CO3 |
| | g) | What is global warming? | 2 Marks | L1 | CO4 |
| | h) | What is ozone layer depletion? | 2 Marks | L1 | CO4 |
| | i) | Which solvent is non-toxic and environmentally friendly? | 2 Marks | L1 | CO5 |
| | j) | State about Green 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) | Explain in detail about wind energy and tidal energy. | 8 Marks | L2 | CO1 |
| | b) | Briefly discuss about coal gas and natural gas. | 8 Marks | L6 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Differentiate between Renewable energy and non Renewable energy. | 8 Marks | L2 | CO1 |
| | b) | Explain about solar cells with a neat sketch. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain about impurities in water and their consequences. | 8 Marks | L2 | CO2 |
| | b) | Describe the process of waste water management. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------|---------|----|-----|
| 5. | a) | Explain about effects of Hardness of water. | 8 Marks | L2 | CO2 |
| | b) | Explain in detail about Eutrophication. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------|---------|----|-----|
| 6. | a) | Summarize about thermal and marine pollution. | 8 Marks | L2 | CO3 |
| | b) | Discuss about control measures of various pollutions. | 8 Marks | L6 | CO3 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain about Radiation pollution and Nuclear hazard. | 8 Marks | L2 | CO3 |
| | b) | Explain about effects of modern agriculture. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Summarize detail about urban problems to water conservation. | 8 Marks | L2 | CO4 |
| | b) | Summarize in detail about urban problems to rain water harvesting. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Write about ozone depletion and explain the complete process of e-waste management. | 8 Marks | L2 | CO4 |
| | b) | Explain about rain water harvesting Techniques. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------|---------|----|-----|
| 10. | a) | Explain about tools of green chemistry. | 8 Marks | L2 | CO5 |
| | b) | Explain about Green manufacturing Systems. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Summarize the principles of green chemistry. | 8 Marks | L2 | CO5 |
| | b) | Explain the statement, "Green Chemistry is Sustainable Chemistry. | 8 Marks | L2 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

BIOMOLECULES

[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) | List out various biomolecules in our body. | 2 Marks | L1 | CO1 |
| | b) | Write the importance of carbohydrates in the human body. | 2 Marks | L1 | CO1 |
| | c) | Sketch the structure of any one basic amino acid structure. | 2 Marks | L1 | CO2 |
| | d) | List out various Essential amino acids. | 2 Marks | L1 | CO2 |
| | e) | Define the saponification number and state its significance. | 2 Marks | L1 | CO3 |
| | f) | Write the significance of RM number in Lipids. | 2 Marks | L1 | CO3 |
| | g) | List the pyrimidines in RNA. | 2 Marks | L1 | CO4 |
| | h) | Define Chargaff's rule with a brief explanation. | 2 Marks | L1 | CO4 |
| | i) | Describe various roles of "Heme". | 2 Marks | L1 | CO4 |
| | j) | List out various examples of Chlorophyll. | 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) | Sketch with figures the structures of carbohydrates in their increasing order of the number of carbons in their backbone: D-Glucose, D-Galactose. | 8 Marks | L3 | CO1 |
| | b) | Explain anomeric carbon in carbohydrate structure. Outline the difference between the alpha and beta types of anomers. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain the importance of glycogen and chondroitin sulfate with structural representation. | 8 Marks | L2 | CO1 |
| | b) | Categorize the chemical reactions that carbohydrates undergo. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Read the one-letter amino acid sequences and write the complete amino acid name R-I-N-G, S-T-R-A-I-N, N -E-C- K, M-A-N-G. | 8 Marks | L2 | CO2 |
| | b) | Articulate briefly about the classification of proteins based on their shape. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Extend a note on various types of secondary structures present within a protein. | 8 Marks | L2 | CO2 |
| | b) | Discuss the various functions of Globular and Fibrous Proteins with suitable examples. | 8 Marks | L6 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain in brief about the Polyunsaturated Fatty Acids and their Derivatives. | 8 Marks | L2 | CO3 |
| | b) | Summarize the structure and functions of the Biological Membranes. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Outline the Function and Importance of Lipoproteins. | 8 Marks | L2 | CO3 |
| | b) | Essential fatty acids act as the functional components of foods. Justify the Sentence. | 8 Marks | L5 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Elucidate a neat labeled DNA double helix structure and write in detail the biological functions of DNA. | 8 Marks | L2 | CO4 |
| | b) | Illustrate the functioning of r-RNA and label the figure. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Illustrate the structure of B-form of DNA with suitable figure. | 8 Marks | L1 | CO4 |
| | b) | Discuss the difference between the sugar moiety of DNA and RNA with structural representation. | 8 Marks | L6 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-----------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Analyze the Uses, Interactions, and Mechanism of Action of Porphobilinogen. | 8 Marks | L4 | CO4 |
| | b) | Explain in detail about the role of carotenoids in human health. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|-----|----|------------------------------------------------------|---------|----|-----|
| 11. | a) | Identify the structure and function of Cytochromes. | 8 Marks | L4 | CO4 |
| | b) | Outline in detail about the synthesis of Porphyrins. | 8 Marks | L2 | CO4 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023**INORGANIC AND PHYSICAL 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 Lewis base with an example. | 2 Marks | L1 | CO1 |
| | b) Explain any one method of preparation of borazole | 2 Marks | L1 | CO1 |
| | c) <u>Explain how transition elements form coloured compounds?</u> | 2 Marks | L1 | CO1 |
| | d) Discuss the uses of transition metals in daily life. | 2 Marks | L1 | CO1 |
| | e) Justify the position of lanthanides and actinides in the periodic table. | 2 Marks | L1 | CO1 |
| | f) Define insulators based on band theory of solids and give one example. | 2 Marks | L1 | CO2 |
| | g) Define nematic Liquid Crystal with an example. | 2 Marks | L1 | CO3 |
| | h) Define Immiscible liquid with an example. | 2 Marks | L1 | CO4 |
| | i) Explain Upper & Lower Consolute temperature with an example. | 2 Marks | L2 | CO4 |
| | j) Explain FCC & BCC with 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) Summarize the classification of Silicones. | 8 Marks | L2 | CO1 |
| | b) Discuss the Synthesis and structure of Diborane. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | |
|----|--------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) Illustrate the Structures of any one AX ₃ type interhalogen compounds. | 8 Marks | L2 | CO1 |
| | b) Outline the Oxoacids of Sulphur. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | |
|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Explain the characteristics of f-block elements with special reference to electronic configuration. | 8 Marks | L2 | CO1 |
| | b) Explain the Catalytic properties of d- block elements. | 8 Marks | L2 | CO1 |

(OR)

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|----|----|----------------------------------------------------|---------|----|-----|
| 5. | a) | Interpret the Lanthanide contraction. | 8 Marks | L2 | CO1 |
| | b) | Illustrate the magnetic properties of lanthanides. | 8 Marks | L3 | CO1 |

MODULE-III

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain the thermal and electrical conductivity of metals based on free electron theory. | 8 Marks | L2 | CO2 |
| | b) | Describe the formation of bands based on the band theory. | 8 Marks | L2 | CO2 |

(OR)

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|----|----|------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain the free electron theory of metals. | 8 Marks | L2 | CO2 |
| | b) | Explain the metallic Properties and its limitations. | 8 Marks | L2 | CO2 |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain Azeotropic mixture with an example. | 8 Marks | L2 | CO3 |
| | b) | Explain the following terms with example:
i) Minimum Boiling Azeotropes or Negative Azeotrope
ii) Maximum Boiling Azeotropes or Positive Azeotrope | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain Henry's law and its applications . | 8 Marks | L2 | CO4 |
| | b) | Interpret partially miscible liquids of phenol-water system. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|----------------------------------------------------------|---------|----|-----|
| 10. | a) | Evaluate the symmetry in crystals. | 8 Marks | L2 | CO5 |
| | b) | Illustrate the X-ray diffraction and crystal structures. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------|---------|----|-----|
| 11. | a) | Explain the Bravais lattices and crystal systems. | 8 Marks | L2 | CO5 |
| | b) | Discuss the various types of Crystal defects. | 8 Marks | L2 | CO5 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

PERSONALITY DEVELOPMENT

[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 personality development. | 2 Marks | L1 | CO1 |
| | b) | Explain about decision Making skills. | 2 Marks | L1 | CO1 |
| | c) | Explain about self- Esteem. | 2 Marks | L1 | CO2 |
| | d) | How you consider turn failure in to Success. | 2 Marks | L1 | CO2 |
| | e) | Explain about unproductive Attitude. | 2 Marks | L1 | CO3 |
| | f) | How do you change Negative attitude to positive attitude? | 2 Marks | L1 | CO3 |
| | g) | Explain about Team player. | 2 Marks | L1 | CO4 |
| | h) | Identify the leadership qualities. | 2 Marks | L1 | CO4 |
| | i) | Explain about balancing life and work. | 2 Marks | L1 | CO1 |
| | j) | Describe about critical thinking. | 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) | What are the three dimensions of psychoanalytic theory? | 8 Marks | L2 | CO2 |
| | b) | Briefly explain about personalities. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------------|----------|----|-----|
| 3. | a) | What are the strategies to overcome hurdles in life? | 10 Marks | L4 | CO3 |
| | b) | Explain the Concept of Attitude. Discuss with examples the types of attitudes. | 6 Marks | L2 | CO3 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Discuss about stress management and how to overcome Explain with examples. | 8 Marks | L2 | CO4 |
| | b) | What are the characteristics of team building? | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------|--------|----|-----|
| 5. | a) | What is the difference between positive attitude and negative attitude? Explain with examples. | 9Marks | L2 | CO3 |
| | b) | What is the role of body language in an interview? | 7Marks | L1 | CO4 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain about self- confidence. | 8 Marks | L2 | CO2 |
| | b) | Identify two problems in your life to change the behavior modification. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain a boudefin. Define creative skills and explain with examples
Explain about
Define behavior | 7 Marks | L2 | CO5 |
| | b) | What is meant by team management? | 9 Marks | L3 | CO5 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain the concept of confusion and uncertainty. | 8 Marks | L2 | CO5 |
| | b) | Explain about problem solving skills how it useful in life. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------|---------|----|-----|
| 9. | a) | Explain about the Freud's psycho analytic theory. | 8 Marks | L2 | CO5 |
| | b) | Define behavior Modification. | 8 Marks | L2 | CO2 |

MODULE-V

- | | | | | | |
|-----|----|-------------------------------------------------------------|---------|----|-----|
| 10. | a) | Explain the concept of confusion and uncertainty. | 8 Marks | L2 | CO2 |
| | b) | Explain about problem solving skills how it useful in life. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain bout goal setting. | 8 Marks | L2 | CO2 |
| | b) | What is the difference between self -confidence and self-esteem?
Explain with examples. | 8 Marks | L2 | CO3 |



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

TELUGU

[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) | "ఎక్కట్లు" పాఠంలో 'పండ్రి' అనుపదమునకు అర్థం ఏమిటి? | 2 Marks | L1 | CO1 |
| b) | మహాత్ముని ఆస్థాన కవిగ ప్రసిద్ధుడైన కవి వరేణ్యుడు? | 2 Marks | L1 | CO1 |
| c) | తిక్కనా మాత్యుడు ప్రతిపాదించిన సిద్ధాంతం పేరేమిటి? | 2 Marks | L2 | CO2 |
| d) | తిక్కన సోమయాజి ప్రసిద్ధ కవితాలక్షణం ఏమిటి? | 2 Marks | L1 | CO2 |
| e) | ధృవోపాఖ్యానం మహాభాగవతం ఏస్కందములోనిది? | 2 Marks | L1 | CO3 |
| f) | ధృవుడి తల్లితండ్రుల పేరేమిటి? | 2 Marks | L2 | CO3 |
| g) | దువ్వారారామిరెడ్డిగారి రచనలు పేర్కొనండి. | 2 Marks | L1 | CO4 |
| h) | "నినున్కన్నెత్తియుంజూతురే" — ఈవాక్యంలో ఎవరిని గురించి కవి పేర్కొన్నాడు | 2 Marks | L1 | CO4 |
| i) | "అష్టైశ్వర్యములు"- ఏ సంది? | 2 Marks | L2 | CO5 |
| j) | "ధృవోపాఖ్యానము"-ఇది ఏ సమాసము. | 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) | "ఎక్కట్లు" సారాంశాన్ని వివరించండి. | 8 Marks | L3 | CO1 |
| b) | మానవుడు ఎందుకు కొయ్యగాదని శ్రీతుమ్మల వారు చెప్పారు? | 8 Marks | L3 | CO1 |
| (OR) | | | | |
| 3. a) | మనిషి పాటించవలసిన ధర్మము, నీతి, నడత, వినయములను గురించి శ్రీతుమ్మలవారు ఇచ్చిన సందేశము. | 8 Marks | L3 | CO1 |
| b) | మూర్ఖులైనవారి గురించి తుమ్మలవారు బోధించిన అంశాలు. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|-------|----------------------------------------------------------------------------------------|---------|----|-----|
| 4. a) | ఈక్రింది పద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి:
"పరిమెయిబారి---వారలోల్లమిన్"- | 8 Marks | L2 | CO2 |
| b) | నాడిజంఘడికి, బ్రాహ్మణునికి మధ్యజరిగిన సంభాషణ తెలియజేయండి | 8 Marks | L3 | CO2 |

(OR)

5. a) ఈ క్రిందిపద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి: 8 Marks L2 CO2
"అతడును----ప్రస్తుతించుచున్"-
- b) "కృతఘ్నుడి మాంసాన్ని కుక్కలు కూడా ముట్టవు"-అన్నవేదవాక్యానికి 8 Marks L3 CO2
మూలమైన మీపాఠ్యభాగ పాత్రను ఆవిష్కరించండి

MODULE-III

6. a) ఈక్రిందిపద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి: 8 Marks L3 CO3
"చనిఉగ్రాటవిజోచ్చి---యిట్లాటకున్"-
- b) బమ్మెరపోతన గావించిన శ్రీహరివర్ణనలు 8 Marks L2 CO3

(OR)

7. a) ఈక్రింది పద్యానికి ప్రతిపదార్థ, తాత్పర్యాలు వ్రాయండి: 8 Marks L3 CO3
"అతడుననన్యదృష్టి--- మయ్యెభూవరా!"-
- b) మీపాఠ్యభాగమాధారముగా ధృవుడి యొక్క అనన్యభక్తిని తెలుపండి. 8 Marks L2 CO3

MODULE-IV

8. a) కవి కోకిలవర్ణించిన కృషి వలుడు 8 Marks L2 CO4
- b) ఈక్రిందివాక్యాన్ని సందర్భసహితంగా వ్యాఖ్యానించండి: 8 Marks L2 CO4
"నీహలంబుకన్న ప్రార్థనీయమగునే!"-

(OR)

9. a) రామిరెడ్డి వర్ణించిన కృషివలుడి ఆవేదన 8 Marks L2 CO4
- b) కృషివలుడి కష్టాలను ఒకప్రత్యేకకావ్యంగా రచించిన కవిని పరిచయం 8 Marks L2 CO4
చేయండి

MODULE-V

10. a) నాలుగు తత్పురుష సమాసములను లక్ష్య, లక్షణ సమన్వయంగా 8 Marks L3 CO5
వివరించండి.
- b) అనుప్రాస అలంకారములను లక్ష్య, లక్షణ సమన్వయంగా వివరించండి. 8 Marks L3 CO5

(OR)

11. a) ఉత్పలమాల, శార్దూలం ఛందస్సులను లక్ష్య, లక్షణ సమన్వయంగా 8 Marks L3 CO5
వివరించండి.
- b) ఏవైనానాలుగు తెలుగు సంధులను లక్ష్య, లక్షణ సమన్వయంగా 8 Marks L3 CO5
వివరించండి.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

SANSKRIT

[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) | श्रीरामः पितृ मरण वार्ता निसम्यकिम अकरोत्? | 2 Marks | L1 | CO1 |
| b) | भरतः श्रीरामं किम अभ्यर्धितवान्? | 2 Marks | L1 | CO1 |
| c) | अपूर्णमनोरथः भारतः किम अकरोत् ? | 2 Marks | L1 | CO1 |
| d) | किम जनानं परच्याते राजन्? कः रामश्चा प्रकीर्तितः ? | 2 Marks | L1 | CO1 |
| e) | किं हित्वा अर्थवान् भवति? किंनु हित्वा सुखी भवति? | 2 Marks | L1 | CO1 |
| f) | भोजराज लिखित रामायण नामः? | 2 Marks | L1 | CO2 |
| g) | मोहापनोदः पाठस्य लेखकः कः? | 2 Marks | L1 | CO2 |
| h) | तेषां वसुधा एवं कुटुम्बकम् भवति? | 2 Marks | L1 | CO3 |
| i) | चंपकवती नाम अरण्यानी कुत्र असित | 2 Marks | L1 | CO3 |
| j) | राजा वीरवराय किं ददौ? | 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) | आर्यपादुकाभिषेकः कथासारं लिखत? | 8 Marks | L3 | CO1 |
| b) | इति पाठ्यभागानुसाराम सत्यस्य महिमानं विवृणुता | 8 Marks | L3 | CO1 |
| (OR) | | | | |
| 3. a) | यक्ष परस्नेषु विवृतान लौकिक धर्मान वर्णयत | 8 Marks | L3 | CO1 |
| b) | पाण्डवान् उद्दिश्य वर्णयत? | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|-------|-----------------------------------------|---------|----|-----|
| 4. a) | अमृततरंगिणी कथम् वर्णयत | 8 Marks | L3 | CO2 |
| b) | भगीरथः किं निमित्तीकृत्य घोरं तपस्तेपे? | 8 Marks | L3 | CO2 |
| (OR) | | | | |
| 5. a) | सुनंदायाः विषये लिखत | 8 Marks | L3 | CO2 |
| b) | मोहापनादः कथं वर्णयत | 8 Marks | L3 | CO2 |

MODULE-III

6. a) काकेनोत्तं गृध्रमार्जार कथां विशदयत। 8 Marks L3 CO3
b) भवतः पाठस्य सारं कथयतु मित्र लाभः 8 Marks L3 CO3
- (OR)
7. a) वीरवरः कथं स्वामीभक्तिम प्रदर्शितवान 8 Marks L3 CO3
b) वीरवरस्य धैर्यमुद्धिश्य वर्णयत। 8 Marks L3 CO3

MODULE-IV

8. a) महान् संस्कृत व्याकरणीय पाणिनी विषये लिखत 8 Marks L3 CO4
b) कौटिल्यस्य विषये लिखत 8 Marks L3 CO4
- (OR)
9. a) शङ्कराचार्य जीवन वृत्तान्तम् वर्णयत। 8 Marks L3 CO4
b) भवभूति कल्पना वर्णन वैशिष्ट्यं लिखत। 8 Marks L3 CO4

MODULE-V

10. a) उकारान्तः पुलिङ्ग भानु शब्दः। 8 Marks L3 CO5
b) ऋकारान्तः पुलिङ्ग धातु शब्दः। 8 Marks L3 CO5
- (OR)
11. a) अकारान्तः पुलिङ्गः देवा शब्दः 8 Marks L3 CO5
b) रमा शब्दः सम्पूर्णतया लिखत 8 Marks L3 CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

GENERAL ENGLISH

[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) | List the plural forms to the following:
a) bus b) staff c) virus d) life | 2 Marks | L1 | CO3 |
| b) | Find the vowel sound in the given words.
a) feet b) pet c) hard d) word | 2 Marks | L1 | CO3 |
| c) | State the meanings to the following words.
a) shift b) fragment | 2 Marks | L1 | CO2 |
| d) | List any two examples for imperative sentences. | 2 Marks | L1 | CO3 |
| e) | List any two examples for present perfect tense. | 2 Marks | L1 | CO3 |
| f) | Fill the blanks with suitable preposition.
a) I have to work _____ night. (at/in).
b) He was happy to be _____ friends again. (between/among). | 2 Marks | L1 | CO3 |
| g) | State the passive voice for the give sentences.
a) The enemy has defeated our army.
b) I know her. | 2 Marks | L1 | CO3 |
| h) | Use the following conjunctions in a sentence.
a) However b) either/or | 2 Marks | L3 | CO1 |
| i) | Find the suitable article to fill the blank.
a) Do you know who invented _____ computer?
b) Have you seen _____ newspaper? I can't find it anywhere. | 2 Marks | L1 | CO3 |
| j) | Find the number of syllables in the given words.
a) Computer b) Cough | 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) | Explain the irony at the end of the story "A Snake in the Grass" by R. K. Narayan. | 8 Marks | L2 | CO1 |
| b) | Narrate the attempts of the people to catch the cobra in the story "A Snake in the Grass". | 8 Marks | L2 | CO1 |
| (OR) | | | | |
| 3. a) | Discuss in brief the snake charmer's view of catching a snake. | 8 Marks | L1 | CO1 |
| b) | What impression of Dasa do you get from the episode in which his involvement is needed to catch the snake? | 8 Marks | L1 | CO1 |

MODULE-II

4. a) Write, in your own words, about the incident on bus which the author and the bus conductor involved. 8 Marks L2 CO2
b) How does Gardiner use everyday incidents to illuminate his concerns towards life? Explain briefly. 8 Marks L2 CO2
- (OR)**
5. a) Illustrate the behavior of the polite conductor with different people in various situations. 8 Marks L2 CO2
b) Change the following sentences into interrogative. 8 Marks L1 CO3
i) Sankar can play the piano.
ii) She lives in Hyderabad.
iii) Everyone will praise him.
iv) It is a great pleasure to see an old friend.

MODULE-III

6. a) Give your own interpretation of the poem “If You Forget Me” in not less than 200 words. 8 Marks L2 CO4
b) What imagery is used in the poem ‘f You Forget Me’ by Pablo Neruda? Discuss at least 3 images in your answer. 8 Marks L2 CO4
- (OR)**
7. a) Why does the speaker insist that his lover return his love in “If You Forget Me”? 8 Marks L2 CO1
b) Use appropriate tense form to fill the blanks given. 8 Marks L2 CO3
a) You can go home now. You ____ emails for over three hours. You must be very tired. (write)
b) The president ____ for his speech the whole morning. He still isn't finished. (prepare)
c) She ____ while she ____ after the bus. (fall, run)
d) When my husband ____ home, I ____ the laundry. (come, do)

MODULE-IV

8. a) The story ‘After the Sunset’ describes woes of the ordinary people in many ways. Explain. 8 Marks L2 CO1
b) Who is the protagonist of the story ‘After the Sunset’? Discuss her plight in the story. 8 Marks L2 CO1
- (OR)**
9. a) Do you agree with the opinion that sufferers and victims are the poor always? Justify your answer. 8 Marks L1 CO1
b) Write a dialogue between friends on the advantages ‘Google maps’? 8 Marks L1 CO3

MODULE-V

10. a) Are the views of Russell about war relevant today? Justify Russell’s statements. 8 Marks L1 CO2
b) “The world is full of conflicts.” What conflicts are highlighted by the author in his essay? 8 Marks L1 CO2
- (OR)**
11. a) Are the propositions of Russell relevant in contemporary world? If so, how? 8 Marks L3 CO5
b) Rewrite the sentences with necessary corrections. 8 Marks L3 CO4
i) One of my teachers live in our colony.
ii) Neither of them work hard.
iii) It is raining for ten hours.
iv) Each of the boys are guilty.



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

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) | If statements p, q are true and r, s are false, determine the truth values of the following. $\sim p \wedge (q \vee \sim r)$. | 2 Marks | L1 | CO1 |
| | b) | Define DNF and CNF. | 2 Marks | L1 | CO1 |
| | c) | For any sets A, B and C prove that:
$A \times (B \cap C) = (A \times B) \cap (A \times C)$. | 2 Marks | L1 | CO2 |
| | d) | Define partially ordered set. | 2 Marks | L1 | CO2 |
| | e) | Define Shift and Forward operator. | 2 Marks | L1 | CO3 |
| | f) | Differentiate Relation and a function. | 2 Marks | L1 | CO3 |
| | g) | State the generalized pigeonhole principle. | 2 Marks | L1 | CO4 |
| | h) | How many permutations of the letters in ABCDEFGH contain the string ABC? | 2 Marks | L1 | CO4 |
| | i) | Define graph. | 2 Marks | L1 | CO5 |
| | j) | Define complete 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. | Construct the truth tables for: | 16 Marks | L3 | CO1 |
| | i) $[((\sim p \rightarrow q) \rightarrow \sim r) \rightarrow (p \vee q)]$ | | | |
| | ii) $((p \vee q) \wedge (r)) \leftrightarrow q \wedge (p \vee r)$. | | | |

(OR)

- | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) Without constructing the truth table obtain the product-of-sums canonical form of the formula $(\sim P \rightarrow R) \wedge (Q \leftrightarrow P)$. Hence find the sum-of-products canonical form. | 8 Marks | L3 | CO1 |
| | b) Obtain the PDNF and PCNF of $P \vee (\sim P \rightarrow (Q \vee (\sim Q \rightarrow R)))$. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|----|--------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Prove by mathematical induction that $6^{n+2} + 7^{2n+1}$ is divisible by 43 for each positive integer n. | 8 Marks | L5 | CO2 |
| | b) Prove that $A - (B \cap C) = (A - B) \cup (A - C)$. | 8 Marks | L3 | CO2 |

(OR)

5. a) Enumerate proper and improper subsets of the set $\{1, 0, -1\}$. 8 Marks L5 CO2
b) By using mathematical induction, prove that: 8 Marks L3 CO2
$$1^3 + 2^3 + 3^3 + \dots + n^3 = \frac{n^2(n+1)^2}{4}.$$

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 8 Marks L2 CO3
 $R = \{(x, y) : x - y \text{ is divisible by } 3\}$. Then prove that R is an equivalence relation.

MODULE-IV

8. a) Describe counting principles of techniques of counting. 8 Marks L1 CO4
b) Explain pigeonhole principle with suitable illustration. 8 Marks L3 CO4

(OR)

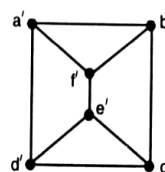
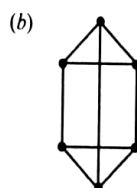
9. a) List out some Elegant Applications of the Pigeonhole Principle. 8 Marks L2 CO4
b) How many positive integers 'n' can be formed using the digits 8 Marks L1 CO4
3,4,4,5,5,6,7 if 'n' has to exceed 50, 00, 000?

MODULE-V

10. a) Explain in detail about Eulerian graph and semi-Eulerian graph. 8 Marks L2 CO5
With suitable examples.
b) List out the conditions satisfied by Hamiltonian graphs. 8 Marks L2 CO5

(OR)

11. a) Construct an influence graph for the board members of a company 8 Marks L5 CO5
if the President can influence the Director of Research and Development, the Director of Marketing, and the Director of Operations; the Director of Research and Development can influence the Director of Operations; the Director of Marketing can influence the Director of Operations; and no one can influence, or be influenced by, the Chief Financial Officer.
b) Explain the properties of the graphs shown below. 8 Marks L1 CO5



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

DESCRIPTIVE STATISTICS AND PROBABILITY

[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 questionnaire and schedule? | 2 Marks | L1 | CO1 |
| | b) Write the difference between multiple and subdivided bar diagram. | 2 Marks | L1 | CO1 |
| | c) Find the median of 3, 7, 7, 9, 5, 3, 8 and 10. | 2 Marks | L1 | CO2 |
| | d) Write the relation between geometric, harmonic and arithmetic mean. | 2 Marks | L1 | CO2 |
| | e) Sum of squares of deviation taken from the mean is 125 and number of observation given is 9, find the standard deviation value? | 2 Marks | L1 | CO3 |
| | f) The second and fourth moments about mean of a distribution are 2.5 and 18.75. Find coefficient of kurtosis. | 2 Marks | L1 | CO3 |
| | g) Two dice are thrown, find the probability of getting sum is 3 given that sum on the numbers on the die was 6? | 2 Marks | L1 | CO4 |
| | h) Define conditional probability. | 2 Marks | L1 | CO4 |
| | i) Define continuous random variable and given an example. | 2 Marks | L1 | CO5 |
| | j) Given the following bivariate probability distribution, obtain the marginal distributions of X and Y. | 2 Marks | L1 | CO5 |

		x		
		-1	0	1
y	0	1/15	2/15	1/15
	1	3/15	2/15	1/15
	2	2/15	1/15	2/15

PART - B

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

5 x 16 = 80 Marks

MODULE-I

- | | | | | |
|----|-------------------------------------------------------------------------------|---------|----|-----|
| 2. | a) Define primary and secondary data. Write its advantages and disadvantages. | 8 Marks | L2 | CO1 |
| | b) Define Histogram and draw histogram from the given data. | 8 Marks | L2 | CO1 |

Class Interval	20-30	30-40	40-50	50-60	60-70	70-80	90-100
Number of plants	5	9	9	15	8	4	3

(OR)

3. a) What is secondary data? Explain in brief the sources of secondary data. 8 Marks L2 CO1
 b) Define Pie diagram. Draw a Pie diagram for the following data. 8 Marks L2 CO1

Items	Agriculture	Industry	Irrigation	Education	Others
Expenditure	800	600	425	300	200

MODULE-II

4. a) Write the advantages and disadvantages of arithmetic mean and geometric mean? 8 Marks L2 CO2
 b) A frequency distribution of adults by blood sugar levels are given below. Calculate the median. 8 Marks L2 CO2

Blood Sugar (mg%)	60-65	65-70	70-75	75-80	80-85	85-90	90-95
Number of individuals	10	30	60	59	71	85	80

(OR)

5. a) Explain various measures of central tendency. 8 Marks L2 CO2
 b) H.M formula – 2M, table – 3M and Ans – 3M. 8 Marks L2 CO2

MODULE-III

6. a) Explain with suitable examples the term dispersion. State the relative and absolute measures of dispersion and describe the merits and demerits of standard deviation. 8 Marks L2 CO3
 b) A frequency distribution of adults by blood sugar levels are given below. Calculate variance and standard deviation. 8 Marks L3 CO3

Blood Sugar (mg%)	60-65	65-70	70-75	75-80	80-85	85-90	90-95
Number of individuals	10	30	60	59	71	85	80

(OR)

7. a) What do you understand by skewness? How is it measured? Distinguish clearly, by giving figures, between positive and negative skewness? 8 Marks L2 CO3
 b) For a distribution tire mean is 10, variance is 16, γ_2 is + 1 and β_2 is 4. Obtain the first four moments about the origin, i.e., zero. Comment upon the nature 'of distribution. 8 Marks L3 CO3

MODULE-IV

8. a) State and Prove addition theorem on probability for 2 events? 8 Marks L2 CO4
 b) A business man goes to hotels X, Y, Z are 25%, 55% and 20% of the time respectively. It is known that 3%, 5% and 4% of the rooms in X, Y and Z hotels faulty plumbing. What is the probability that business man's room having faulty plumbing is assigned to i) hotel X, ii) hotel Y, iii) hotel Z? 8 Marks L3 CO4

(OR)

9. a) Explain the various approaches of probability. 8 Marks L2 CO4
 b) On New Year's Eve, the probability of a person having a car accident is 0.09. The probability of a person driving while intoxicated is 0.32 and probability of a person having a car accident while intoxicated is 0.15. What is the probability of a person driving while intoxicated or having a car accident? 8 Marks L2 CO4

MODULE-V

10. a) Define probability distribution function and state its properties. 8 Marks L2 CO5
 b) A random variable x has the following probability distribution function. 8 Marks L2 CO5

x	0	1	2	3	4	5	6	7	8
p(x)	a	3a	5a	7a	⁹ a	11a	13a	15a	17a

Determine the value of a, find $p(x \geq 3)$ and $p(0 < x < 5)$, find out the distribution function of x?

(OR)

11. a) The probability density function of a continuous random variable, X, is given as follows. Find i) E(x) and V(x)? 8 Marks L3 CO5

$$f(x) = \begin{cases} x, & 0 \leq x < 1 \\ 2 - x, & 1 \leq x \leq 2 \\ 0, & \text{otherwise} \end{cases}$$

- b) The joint density function of two random variables X and Y is 8 Marks L3 CO5

$$f(x, y) = \begin{cases} \frac{2}{3}(x + 2y), & 0 \leq x \leq 1, 0 \leq y \leq 1, \\ 0, & \text{elsewhere.} \end{cases}$$

Find the i) marginal density function of x and y, ii) conditional distribution function, iii) verify x and y are independent.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

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) | What is pseudo code? | 2 Marks | L1 | CO1 |
| | b) | Define constant. How it will be differed from variable | 2 Marks | L1 | CO1 |
| | c) | Differentiate between while and do ... while loop. | 2 Marks | L1 | CO2 |
| | d) | What is recursion in C? | 2 Marks | L1 | CO2 |
| | e) | List out different string handling functions. | 2 Marks | L1 | CO3 |
| | f) | How a nested structure is created? | 2 Marks | L1 | CO3 |
| | g) | Write some of the differences between Structure and Union. | 2 Marks | L1 | CO4 |
| | h) | Mention advantage of pointers. | 2 Marks | L1 | CO4 |
| | i) | Specify different operations performed on files. | 2 Marks | L1 | CO5 |
| | j) | List out DMA functions in C. | 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 different fundamental data types in C? Explain with example. | 8 Marks | L1 | CO1 |
| | b) | Write an algorithm, flowchart, and C program to find the sum of numbers from 1 to n. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain in detail about type conversion and type casting with example. | 8 Marks | L1 | CO1 |
| | b) | Discuss about the following operators in C language with example. | 8 Marks | L1 | CO1 |
| | | i) Bitwise operators | | | |
| | | ii) Increment and decrement operators | | | |
| | | iii) Logical operators | | | |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Analyze the importance of for loop and nested for loops with example. | 8 Marks | L3 | CO2 |
| | b) | Explain else-if ladder with suitable example. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------|---------|----|-----|
| 5. | a) | List and explain loop control statements in C. | 8 Marks | L2 | CO2 |
| | b) | How does switch case works, explain with an example. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain how one can dimensional arrays be used for inter function communication with passing Addresses and Passing the entire array. | 8 Marks | L1 | CO3 |
| | b) | Define string. How is string declared and initialized? Explain string input/output functions with an example. | 8 Marks | L1 | CO3 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Write a program to input elements of two dimensional array and print in matrix form. | 8 Marks | L1 | CO3 |
| | b) | Write a C Program to implement string copy operation strcpy (str1, str2) that copies string str1 to another string str2 without using library function. | 8 Marks | L3 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Write a program in C using functions to swap two numbers using call by reference concept. | 8 Marks | L3 | CO4 |
| | b) | Write a c program to find factorial of number using recursion. | 8 Marks | L1 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Create array of structures. Explain with help of an example. | 8 Marks | L5 | CO4 |
| | b) | How data elements are stored under unions? Explain with example. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|---------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Elaborate various modes in which a file can be opened in C. | 8 Marks | L3 | CO5 |
| | b) | With proper examples explain different arithmetic operations on pointers. | 8 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Define a pointer. How is pointer declared and initialized in C with an example? | 8 Marks | L1 | CO5 |
| | b) | Write a program to create a Text file and to perform write/read operations on file. | 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) Supplementary Examinations July – 2023

PROFESSIONAL ENGLISH

[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) | Write the meanings of the following words: | 2 Marks | L1 | CO2 |
| | i) Martyrdom | | | |
| | ii) Diplomatic | | | |
| b) | Fill in the blanks with suitable verbs: | 2 Marks | L1 | CO3 |
| | i) Riya _____ (swim) very fast. | | | |
| | ii) You _____ (come) late yesterday? | | | |
| c) | Write the past and past participle of the following base verbs: | 2 Marks | L1 | CO3 |
| | i) Draw | | | |
| | ii) Swim | | | |
| d) | Write the comparative and superlative forms of the following words: | 2 Marks | L1 | CO3 |
| | i) Old | | | |
| | ii) Little | | | |
| e) | Combine the following sentences using 'too...to' or 'so...that'. | 2 Marks | L1 | CO3 |
| | i) He is old. He can't work. | | | |
| | ii) The room is very small. It cannot accommodate everybody. | | | |
| f) | Write the phonetic transcriptions of the following words: | 2 Marks | L1 | CO2 |
| | i) Student | | | |
| | ii) Master | | | |
| g) | Change the voice of the given sentences: | 2 Marks | L1 | CO3 |
| | i) Mohan parked the bike under the banyan tree. | | | |
| | ii) Rama got scolded by his teacher for cheating in exam. | | | |
| h) | Rearrange the jumbled words: | 2 Marks | L1 | CO2 |
| | i) R-L-U-I-V-T-A | | | |
| | ii) I-E-A-M-D | | | |
| i) | Fill in the blanks with suitable conjunctions: | 2 Marks | L1 | CO3 |
| | i) He married Richa, _____ he would get a lot of assets. | | | |
| | ii) We should not disobey the traffic rules _____ we would be punished. | | | |
| j) | Change the following sentences as directed: | 2 Marks | L1 | CO3 |
| | i) Mittaiah was angry. Mittaiah kept smiling. (into compound) | | | |
| | ii) The lesson was difficult so Urwashi could not understand it. (into complex) | | | |

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2. a) Summarize the poem 'Be the Best of Whatever You Are' by Douglas Malloch. 8 Marks L2 CO1
b) List out the kinds of relationships indicated by prepositions. 8 Marks L1 CO3
(OR)
3. a) What are non-gradable adjectives? Make sentences using ten different non-gradable adjectives. 8 Marks L1 CO3
b) Write a letter to your friend demonstrating about the Annual Day celebrations in your college. 8 Marks L1 CO5

MODULE-II

4. a) Explain how the stream of general life get affects by one's behavior from the short essay 'On Saying Please'. 8 Marks L2 CO1
b) What are Imperative and Exclamatory sentence? Give suitable examples. 8 Marks L1 CO3
(OR)
5. a) What are Assertive and Interrogative sentence? Give suitable examples. 8 Marks L1 CO3
b) Write an email to the manager of JW Marriott hotel to make a reservation for your sister's marriage. 8 Marks L1 CO5

MODULE-III

6. a) Analyze these lines from the poem 'If You Forget Me'. 8 Marks L4 CO1
I shall lift my arms
and my roots will set off
to seek another land.
b) Show the classification of verb with suitable examples. 8 Marks L1 CO3
(OR)
7. a) What are tenses? List out the different types of tenses with examples. 8 Marks L1 CO3
b) Write an essay on 'Prohibition of Child Labor'. 8 Marks L1 CO5

MODULE-IV

8. a) Describe the lamentations of the victims of the Gokul Chat blast from the short story 'After the Sunset'. 8 Marks L2 CO1
b) What is passivisation? List out the rules of passivisation. 8 Marks L1 CO3
(OR)
9. a) Discuss direct and indirect speech with examples. 8 Marks L2 CO3
b) Write a case study on 'The main challenges of learning at home'. 8 Marks L1 CO5

MODULE-V

10. a) Explain these lines from the essay 'Man's Peril.' 8 Marks L2 CO1
"There lies before us, if we choose continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels?"
b) What is work ethics? List out the characteristics of work ethics. 8 Marks L1 CO5
(OR)
11. a) Create conversation between parents talking on ill effect of mobile on children. 8 Marks L1 CO5
b) Write a report on International Science Day celebrated in your college. 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) Supplementary Examinations July – 2023

GENERAL AND CLINICAL PSYCHOLOGY

[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 hallucinations? | 2 Marks | L2 | CO1 |
| | b) | Who explained operant conditioning? | 2 Marks | L1 | CO1 |
| | c) | What are conative processes? | 2 Marks | L3 | CO2 |
| | d) | What is regression? | 2 Marks | L1 | CO2 |
| | e) | What is nature vs nurture controversy? | 2 Marks | L3 | CO2 |
| | f) | Who is father of psychology? | 2 Marks | L1 | CO2 |
| | g) | Define attention. | 2 Marks | L2 | CO1 |
| | h) | What is introspection? | 2 Marks | L3 | CO1 |
| | i) | Hazards of old age. | 2 Marks | L2 | CO1 |
| | j) | Formula for intelligence quotient. | 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 conflict and explain types of conflict. | 8 Marks | L2 | CO1 |
| | b) | Management of frustration and conflicts. | 8 Marks | L3 | CO1 |
| (OR) | | | | | |
| 3. | a) | Explain management of stress. | 8 Marks | L1 | CO1 |
| | b) | Enumerate different defense mechanism. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|------|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Define psychology and explain different branches of applied psychology. | 8 Marks | L4 | CO2 |
| | b) | Enumerate the importance of psychology in physiotherapy. | 8 Marks | L3 | CO2 |
| (OR) | | | | | |
| 5. | a) | Write the definitions of psychology and explain different pure psychology branches. | 8 Marks | L3 | CO2 |
| | b) | Describe the different schools of psychology. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|------|----|--------------------------------------------------|---------|----|-----|
| 6. | a) | Explain psychology of senses. | 8 Marks | L4 | CO3 |
| | b) | Explain errors of perception. | 8 Marks | L3 | CO3 |
| (OR) | | | | | |
| 7. | a) | Define motivation and describe motivation cycle. | 8 Marks | L3 | CO3 |
| | b) | Describe Abraham Maslow's theory. | 8 Marks | L1 | CO3 |

MODULE-IV

8. a) Define learning and laws of learning. 8 Marks L4 CO4
b) Explain different theories of learning. 8 Marks L3 CO4

(OR)

9. a) Define personality and explain the theories of personality. 8 Marks L3 CO4
b) Describe different techniques of personality assessment. 8 Marks L1 CO4

MODULE-V

10. a) Explain three levels of analysis of emotions. 8 Marks L4 CO5
b) Describe theories of emotions. 8 Marks L3 CO5

(OR)

11. a) Explain rules in problem solving. 8 Marks L3 CO5
b) Describe creative thinking. 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) Supplementary Examinations, July – 2023

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) | Levels of health care systems. | 2 Marks | L2 | CO1 |
| | b) | What are the central programs in health care system? | 2 Marks | L1 | CO1 |
| | c) | What is naturopathy? | 2 Marks | L3 | CO2 |
| | d) | What is Unani medicine? | 2 Marks | L1 | CO2 |
| | e) | Impact of demography. | 2 Marks | L3 | CO2 |
| | f) | What is Non-communicable disease? | 2 Marks | L1 | CO2 |
| | g) | What is communicable disease? | 2 Marks | L2 | CO1 |
| | h) | What is immunization? | 2 Marks | L3 | CO1 |
| | i) | What is disability? | 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) | What are the levels of health care? Explain in detail about the levels of health care. | 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) | What is maternal health? Explain in detail about the maternal health? | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | What is the full form of AYUSH? Explain its Aims and Objectives of AYUSH? | 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) | What is Homeopathy Medicine? Principles of Homeopathy Medicine. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|------------------------------------------------------------|---------|----|-----|
| 6. | a) | Define Demography. What are the indications of 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) | Describe the Significance of vital statistics, and Describe the recording of vital statistics. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Define epidemiology. Discuss the aims and concept of epidemiology, | 8 Marks | L4 | CO4 |
| | b) | Describe the principles of epidemiology. Discuss about the Epidemiological triad. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Describe the epidemiological communicable diseases. Describe the epidemiological non-communicable diseases. | 8 Marks | L3 | CO4 |
| | b) | What are the uses of epidemiology? What are the characteristics of epidemiology? | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | What is rehabilitation? What are the principles of rehabilitation? | 8 Marks | L4 | CO5 |
| | b) | Name the types of rehabilitation. Explain the scope of rehabilitation. | 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.P.T. I Semester (MBU-22) Supplementary Examinations, July – 2023

BASIC ETHICS AND REGULATION OF PHYSIOTHERAPY

[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 ethics? | 2 Marks | L2 | CO1 |
| | b) | Define the principles of professional ethics. | 2 Marks | L1 | CO1 |
| | c) | Define malpractice. | 2 Marks | L3 | CO2 |
| | d) | Define negligence.. | 2 Marks | L1 | CO2 |
| | e) | Write about the Law of Torts. | 2 Marks | L3 | CO2 |
| | f) | List the medical legal aspects. | 2 Marks | L1 | CO2 |
| | g) | List the seven principles of public life. | 2 Marks | L2 | CO1 |
| | h) | Define any two legal responsibilities. | 2 Marks | L3 | CO1 |
| | i) | What is liability? | 2 Marks | L2 | CO1 |
| | j) | What is abuse? | 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 the rules, responsibilities and regulations in physiotherapy. | 8 Marks | L2 | CO1 |
| | b) | Explain about constitution and guiding principles of world confederation of physiotherapy WCPT. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Describe WCPT outline the rules and responsibilities of physiotherapy down by WCPT. | 8 Marks | L1 | CO1 |
| | b) | Illustrate the structure and practice guidelines let down by IAP. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Describe the details about safe guards in physiotherapy practice. | 8 Marks | L4 | CO2 |
| | b) | Explain in detail about medico-legal cases. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------|---------|----|-----|
| 5. | a) | List the legal aspects to medical negligence and liability. | 8 Marks | L3 | CO2 |
| | b) | Write about the abuse and management of difficulty in patients. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What are the characteristics of leadership in physiotherapy, Explain the characteristics of leadership in physiotherapy represent ethical issues in treating vulnerable population? | 8 Marks | L4 | CO3 |
| | b) | Evaluate the role of emotional intelligence in physiotherapy practice. | 8 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain the mentorship program. | 8 Marks | L3 | CO3 |
| | b) | Portray the outline of the need for maintaining physiotherapy profession. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | What are the characteristics of leadership which represents ethical issues in treating vulnerable population? | 8 Marks | L4 | CO4 |
| | b) | Explain the role of emotional intelligence in physiotherapy practice that treats the vulnerable people having ethical issues. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain the mentorship program in ethical issues in treating vulnerable population. | 8 Marks | L3 | CO4 |
| | b) | Outline the need of physiotherapy in health care system, Explain need of physiotherapy in handling ethical issues while treating vulnerable population. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|---------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Mention the good leader attributes and relate in context of physiotherapy. | 8 Marks | L4 | CO5 |
| | b) | Explain about leadership quality and ethical issues mentioned in physiotherapy. | 8 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Describe the ethical principles for governing practices in physiotherapy. | 8 Marks | L3 | CO5 |
| | b) | Analyze the ethical dilemmas ascending out of evaluation of patient and management. | 8 Marks | L1 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. I Semester (MBU-22) Supplementary Examinations July – 2023

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 about Median cubital vein. | 2 Marks | L2 | CO1 |
| | b) What are Sesamoid bones? | 2 Marks | L1 | CO1 |
| | c) What is Inguinal ligament? | 2 Marks | L3 | CO2 |
| | d) Define Wolf's law. | 2 Marks | L1 | CO2 |
| | e) Write about Sural nerve. | 2 Marks | L3 | CO2 |
| | f) Name the carpal 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) Define Erb's point. | 2 Marks | L2 | CO1 |
| | j) What is a Foot drop. | 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) Explain Radial nerve under the following headings. | 8 Marks | L2 | CO1 |
| | i) Origin ii) Course & Relations | | | |
| | iii) Branches iv) Applied anatomy | | | |
| | b) Describe Hip joint under the following headings. | 8 Marks | L3 | CO1 |
| | i) Type and Variety | | | |
| | ii) Articular surfaces, ligaments & Relations | | | |
| | iii) Blood supply and Nerve supply | | | |
| | iv) Applied anatomy. | | | |

(OR)

- | | | | | |
|----|-------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) Define joint. Classify types of joints with examples. | 8 Marks | L1 | CO1 |
| | b) Describe external features of heart and internal features of right atrium. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | |
|----|------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Explain lung under the following headings. | 8 Marks | L4 | CO2 |
| | i) Introduction ii) External features | | | |
| | ii) Blood supply & Nerve supply iv) Applied anatomy | | | |
| | b) Describe Knee joint under the following headings. | 8 Marks | L3 | CO2 |
| | i) Type and Variety | | | |
| | ii) Articular surfaces, ligaments & Relations | | | |
| | iii) Blood supply and Nerve supply | | | |
| | iv) Applied anatomy. | | | |

(OR)

5. a) Explain Common Peroneal nerve under the following headings. 8 Marks L3 CO2
i) Origin ii) Course and Relations
iii) Branches iv) Applied anatomy
b) What is a synovial joint? Explain types of synovial joints with 8 Marks L1 CO2
examples.

MODULE-III

6. a) What are pharyngeal arches? Explain its derivatives. 8 Marks L4 CO3
b) Explain femoral triangle and its contents. 8 Marks L3 CO3

(OR)

7. a) What are the structures under cover of gluteal muscles? 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) Describe Ankle joint under the following headings. 8 Marks L3 CO4
i) Type and Variety
ii) Articular surfaces, ligaments & Relations
iii) Blood supply and Nerve supply
iv) Applied anatomy.

(OR)

9. a) Explain Femoral nerve under the following headings. 8 Marks L3 CO4
i) Origin ii) Course & Relations
iii) Branches iv) Applied anatomy
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) Describe arches of foot and factors maintaining it. 8 Marks L3 CO5

(OR)

11. a) What is retinaculum? Write a note on structures under cover of 8 Marks L3 CO5
extensor retinaculum of foot.
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.P.T. I Semester (MBU-22) Supplementary Examinations July – 2023

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) | Name the plasma proteins. | 2 Marks | L2 | CO1 |
| | b) | What is endoplasmic reticulum | 2 Marks | L1 | CO1 |
| | c) | Define depolarization period | 2 Marks | L3 | CO2 |
| | d) | Define pH | 2 Marks | L1 | CO2 |
| | e) | Write about Muscle paralysis | 2 Marks | L3 | CO2 |
| | f) | Define Osmosis | 2 Marks | L1 | CO2 |
| | g) | Write the normal values of R.B.C. and Hemoglobin | 2 Marks | L2 | CO1 |
| | h) | What is Muscle tone? | 2 Marks | L3 | CO1 |
| | i) | List out the functions of erythropoietin | 2 Marks | L2 | CO1 |
| | j) | Define Resting Membrane Potential. | 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 hemopoiesis. Explain the stages of leucopoiesis. | 8 Marks | L2 | CO1 |
| | b) | Explain the mechanism of sliding filament theory. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | What is passive transport? Describe the types of passive transport. | 8 Marks | L1 | CO1 |
| | b) | Define blood pressure. State the factors maintaining the blood pressure. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Write in detail about mechanism of transport of carbon-dioxide. | 8 Marks | L4 | CO2 |
| | b) | Define sarcomere. Describe the structure of sarcomere with a diagram. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | What is refractory period? Explain types of refractory period with examples. | 8 Marks | L3 | CO2 |
| | b) | Define homeostasis. Explain the factors maintaining homeostasis. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Define cardiac output. Explain the physiological and pathological variations of cardiac output. | 8 Marks | L4 | CO3 |
| | b) | Define fatigue. Describe the causes of fatigue, site of fatigue and a muscle recovery after fatigue. | 8 Marks | L3 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Define tetanus. Explain the types of tetanus. | 8 Marks | L3 | CO3 |
| | b) | What is an active transport? Describe the structure of Sodium - potassium pump and it's function. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Define respiration. Explain the regulation of respiration. | 8 Marks | L4 | CO4 |
| | b) | What is electromyogram? Explain the uses of electromyogram and disorders of skeletal muscle. | 8 Marks | L3 | CO4 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain the length - tension relationship of a muscle. | 8 Marks | L3 | CO4 |
| | b) | Illustrate the special types of passive transport with examples. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-------------------------------------------------------------|---------|----|-----|
| 10. | a) | Define ECG. Explain the waves of ECG. | 8 Marks | L4 | CO5 |
| | b) | Write the differences between skeletal and cardiac muscles. | 8 Marks | L3 | CO5 |

(OR)

- | | | | | | |
|-----|----|--------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain the effect of load on a muscle. | 8 Marks | L3 | CO5 |
| | b) | Draw the diagram of homeostatic system and Explain the positive and negative feedback mechanism of homeostatic system with 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) Supplementary Examinations, July – 2023

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 | L2 | CO1 |
| | b) | Outline the fields of sociology. | 2 Marks | L1 | CO1 |
| | c) | List the methods of sociological investigation. | 2 Marks | L1 | CO1 |
| | d) | Define socialization. | 2 Marks | L1 | CO2 |
| | e) | What are the characteristics of primary groups? | 2 Marks | L1 | CO2 |
| | f) | List the functions of secondary groups. | 2 Marks | L1 | CO2 |
| | g) | Outline the characteristics of culture. | 2 Marks | L1 | CO3 |
| | h) | Write about Alcoholism. | 2 Marks | L1 | CO4 |
| | i) | Define Beggary. | 2 Marks | L1 | CO4 |
| | j) | What is Prostitution? | 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 meaning and scope of sociology. | 8 Marks | L2 | CO1 |
| | b) | Relationship of Sociology with Anthropology and Psychology. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------|---------|----|-----|
| 3. | a) | Discuss the nature of Sociology. | 8 Marks | L2 | CO1 |
| | b) | Discuss the importance of Sociology. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|------------------------------------------------------------|---------|----|-----|
| 4. | a) | Describe the process of socialization. | 8 Marks | L2 | CO2 |
| | b) | Discuss various types of socialization and its importance. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------|---------|----|-----|
| 5. | a) | Discuss the agencies of Socialization | 8 Marks | L2 | CO2 |
| | b) | Describe the characteristics of primary groups. | 8 Marks | L2 | CO2 |

MODULE-III

6. a) Define community. Discuss the characteristics of a community. 8 Marks L2 CO3
b) Describe the characteristics of rural communities. 8 Marks L2 CO3

(OR)

7. a) Describe the characteristics of urban communities. 8 Marks L2 CO3
b) Discuss various health hazards among the rural communities. 8 Marks L2 CO3

MODULE-IV

8. a) Discuss the social problems of disabled. 8 Marks L2 CO4
b) Discuss the remedies with related to social problems of disabled. 8 Marks L2 CO4

(OR)

9. a) Define poverty and discuss the causes of poverty. 8 Marks L2 CO4
b) Outline various social security measures for the disabled. 8 Marks L2 CO4

MODULE-V

10. a) Discuss the role of social factors on health in rural areas. 8 Marks L2 CO1
b) Discuss the changes in family patterns. 8 Marks L2 CO2

(OR)

11. a) Discuss the health hazards of tribal communities. 8 Marks L2 CO3
b) Discuss the issues of employment in India. 8 Marks L2 CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Supplementary Examinations July – 2023

GREEN CHEMISTRY [Organic Chemistry]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|------|
| 1. | a) | How does green chemistry differ from traditional efforts to reduce pollution? | 2 Marks | L1 | CO 1 |
| | b) | Briefly describe the need of green chemistry. | 2 Marks | L2 | CO 1 |
| | c) | Write an example showing the significance of green solvent in organic synthesis. | 2 Marks | L1 | CO 1 |
| | d) | Discuss about the barriers in implementation of green chemistry. | 2 Marks | L2 | CO 1 |
| | e) | List out the types of biocatalysts | 2 Marks | L1 | CO 2 |
| | f) | Explain the uses of biocatalysts with examples. | 2 Marks | L2 | CO 2 |
| | g) | Write the benefits of solvent free reactions. | 2 Marks | L1 | CO 3 |
| | h) | Explain the principle of ultrasound assisted synthesis. | 2 Marks | L2 | CO 3 |
| | i) | Green chemistry and sustainable development are interrelated. Explain. | 2 Marks | L1 | CO 4 |
| | j) | Discuss the classification of biodegradable polymers. | 2 Marks | L2 | CO 4 |

PART - B

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

5 x 16 = 80 Marks

MODULE-I

- | | | | | | |
|----|--|----------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 2. | | Plastic waste imposes a great problem in today's world. Discuss the approach of an environmentalist and a green chemist in combating this problem. | 16 Marks | L2 | CO1 |
|----|--|----------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain the principles of sustainability of green chemistry | 8 Marks | L2 | CO1 |
| | b) | Discuss briefly about impact of chemistry in environment and its assessment. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Catalytic reagents are superior to stoichiometric reagents. Explain. | 8 Marks | L2 | CO1 |
| | b) | Discuss the advantages of combinatorial approach over conventional synthesis. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Give a brief account on function of protecting groups and catalysis | 8 Marks | L2 | CO1 |
|----|----|---------------------------------------------------------------------|---------|----|-----|

- b) Explain how you design biodegradable products using green chemistry principles. 8 Marks L2 CO1

MODULE-III

6. a) What are photocatalysts? How photocatalytic reactions are different from photochemical reactions? 8 Marks L2 CO2
b) Differentiate between homogenous and heterogenous catalysis. Bio catalysis is homogenous or heterogenous? Explain. 8 Marks L2 CO 2

(OR)

7. Apply the principle of biocatalysis and explain the following reactions with suitable mechanism and example: 16 Marks L3 CO2
i) Wurtz reaction
ii) Pincole coupling

MODULE-IV

8. Interpret the role of solvent in a chemical reaction? How is the role fulfilled in solvent free reaction? What are the advantages of solvent free synthesis? Explain with suitable reactions. 16 Marks L3 CO3

(OR)

9. Discuss two advantages of microwave assisted organic synthesis. Write the reaction of saponification of ester and Diel's alder reaction under microwave irradiation. 16 Marks L3 CO3

MODULE-V

10. Apply the principle of sonochemistry in organic synthesis with suitable examples. 16 Marks L3 CO4

(OR)

11. Illustrate the mechanism of degradation of biodegradable polymers and give their applications. 16 Marks L3 CO4



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

COMPUTATIONAL STATISTICS

[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 the properties of a good average. | 2 Marks | L1 | CO1 |
| | b) Define Moments. | 2 Marks | L1 | CO1 |
| | c) Outline the important features of R Programming. | 2 Marks | L1 | CO1 |
| | d) Write down any two basic concepts in R programming. | 2 Marks | L2 | CO1 |
| | e) The mean and variance of the binomial distribution are 4 and 4/3 respectively. Find $P(X \geq 1)$. | 2 Marks | L2 | CO2 |
| | f) Define Normal distribution | 2 Marks | L1 | CO2 |
| | g) State different types of correlation. | 2 Marks | L1 | CO3 |
| | h) Outline the difference between linear and non-linear regression. | 2 Marks | L1 | CO3 |
| | i) Identify the two types of errors of decision that arise in testing of hypothesis. | 2 Marks | L1 | CO4 |
| | j) Distinguish between Population and Sample | 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) Calculate Median for the following frequency distribution. 8 Marks L2 CO1
- | | | | | | |
|-----------------|--------------|-------|-------|-------|--------------|
| Marks | Less than 35 | 35-50 | 50-60 | 60-75 | 75 and above |
| No. of students | 15 | 20 | 30 | 30 | 5 |
- b) An examination is conducted for two sections of a class. The following information is obtained. State which section is more variable, using standard deviation? 8 Marks L2 CO1

Marks	Students of Section-A	Students of Section B
0-10	2	1
10-20	3	4
20-30	5	6
30-40	6	5
40-50	4	3
50-60	1	2

(OR)

3. a) Find the upper, lower quartile, median and quartile deviation for 8 Marks L1 CO1

the following data.

Marks :	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students:	6	5	8	15	7	6	3

- b) Calculate the Karlpearson's coefficient of skewness for the following data and also find coefficient of variation. 8 Marks L2 CO1

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
frequency	2	6	11	20	40	75	45	25	18	8

MODULE-II

4. a) Describe different matrix operations in R. 8 Marks L1 CO1
 b) Explain different data structures in R. 8 Marks L2 CO1

(OR)

5. a) Describe how R can be used for predictive analysis. 8 Marks L2 CO1
 b) Discuss in detail about user defined functions in R with suitable example. 8 Marks L1 CO1

MODULE-III

6. a) Fit a Poisson distribution to the following data 8 Marks L4 CO2
 X: 0 1 2 3 4 5
 Y: 3 9 12 27 4 1
 Also test the adequacy of the model.
 b) If x is b(x, n, p), show that; 8 Marks L2 CO2
 i) $E(X/n) = p$
 ii) $E((X/n)-p)^2 = P(1-P)/n$

(OR)

7. a) In a test on 2000 electric bulbs, it was found that the life of a particular make was normally distributed with an average life of 2040 hours and S.D. of 60 hours. Estimate the number of bulbs likely to burn for 8 Marks L1 CO2
 i) More than 2150 hours
 ii) Less than 1950 hours
 iii) More than 1920 hours and but less than 2160 hours.
 iv) Write syntax to solve the given problem in R.
 b) Suppose that a computer on an assembly line must undergo 5 operations in order to become finished product. Suppose also that each operation malfunctions with probability P. The distribution of computer with malfunctions, for 200 computers is obtained as 8 Marks L4 CO2
 No. of computers with
 Malfunctions (x): 0 1 2 3 4 5
 No. of computers (f): 118 64 14 2 1 1
 Fit a Binomial distribution to the above data.

MODULE-IV

8. a) The following table gives the data on corn yield x and peanut yield y (mt/ha) for eight different types of soil. 8 Marks L2 CO3

x : 2.4 3.4 4.6 3.7 2.2 3.3 4.0 2.1
 y : 1.33 2.12 1.80 1.65 2.00 1.76 2.11 1.63

Obtain the correlation between corn yields x and peanut yield and interpret the value.

- b) In the accompanying table, x is the tensile force applied to a steel specimen in thousands of pounds, and y is the resulting elongation in thousands of an inch. 8 Marks L2 CO3

x	0	1	2	3	4	5	6
y	1	4	5	3	2	3	4

- i) Estimate the quadratic regression equation.
 ii) Predict Y when $x=2$.

(OR)

9. a) The value of Karlpearson's correlation (r) for the following data is **0.636**. 8 Marks L1 CO3

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?

- 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 L1 CO3

	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-V

10. a) Ten specimens of copper wires drawn from a large lot have the following breaking strength: 578, 572, 570, 568, 572, 571, 570, 572, 596, and 548. Test whether the mean breaking strength of the lot may be taken to be 578kg. Assume 0.05 level? 8 Marks L4 CO4

- b) Describe the procedure of test of significance for difference of proportions. 8 Marks L1 CO4

(OR)

11. a) The following table gives the number of accidents that work place in an industry surveying varies days of the week. Test if the accidents are uniformly distributed over the week. 8 Marks L2 CO4

Days:	Mon	Tue	Wed	Thu	Fri	Sat
No. of accidents	14	18	12	11	15	14

- b) Measuring specimens of nylon yarn taken from two spinning machines, it was found that 8 specimens from the first machine had a mean denier of 9.67 with a standard deviation of 1.81, while 10 specimens from the second machine had a mean denier of 7.43 with a standard deviation of 1.48. Assuming that the populations sampled are normal and have the same variance, test the null hypothesis $\mu_1 - \mu_2 = 1.5$ against the alternative hypothesis $\mu_1 - \mu_2 > 1.5$ at the 0.05 level of significance. 8 Marks L2 CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. I Semester (MBU-22) Supplementary Examinations, July – 2023

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) | Describe Batch systems. | 2 Marks | L1 | CO1 |
| | b) | Write about multiprocessor systems and give their advantages. | 2 Marks | L1 | CO1 |
| | c) | Explain about graceful degradation. | 2 Marks | L2 | CO2 |
| | d) | Explain how can a user program disrupt the normal operations of a system. | 2 Marks | L2 | CO2 |
| | e) | Write about context switch. | 2 Marks | L1 | CO3 |
| | f) | Compare user threads and kernel threads. | 2 Marks | L2 | CO3 |
| | g) | Describe the usage of a Dispatcher. | 2 Marks | L1 | CO4 |
| | h) | Define entry section and exit section. | 2 Marks | L1 | CO4 |
| | i) | Define the sequence in which resources may be utilized. | 2 Marks | L1 | CO5 |
| | j) | Differentiate UFD and MFD. | 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 operating systems are used in a variety of computing environments? What are the main differences between operating systems for mainframe computers and personal computers? | 8 Marks | L2 | CO1 |
| | b) | What are the main differences between operating systems for mainframe computers and personal computers? | 8 Marks | L1 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | What is operating system? Explain multiprogramming and time-sharing systems. Explain different operations performed by the operating system. | 8 Marks | L2 | CO1 |
| | b) | What are the functionalities of Operating Systems? Explain in detail. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain scheduling criteria used to compare scheduling algorithms. Explain fine Process state model and types of process schedulers used in each state. | 8 Marks | L2 | CO2 |
| | b) | Describe dining-philosopher problem. Write an algorithm to solve the problem using semaphores. | 8 Marks | L1 | CO2 |

(OR)

5. a) Explain about Semaphore. Explain the usage and implementation of monitors. Give the solution to Reader's – writer's problem. 8 Marks L2 CO2
b) Explain the basic concepts of process synchronization. How message passing mechanism is working inwards communication of processes? 8 Marks L3 CO2

MODULE-III

6. a) Compare Paging with Segmentation with respect to the amount of memory required by the address translation structures in order to convert virtual addresses to physical addresses. 8 Marks L4 CO3
b) i) Explain about Swapping and memory management module. 8 Marks L3 CO3
ii) What is thrashing? Explain the Causes of Thrashing.

(OR)

7. a) Consider the page reference string 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6 Determine how many page faults would occur for Optimal page replacement algorithm? Assume three, four frames are initially empty. 8 Marks L3 CO3
b) Explain the terms in Memory Partitioning with examples: 8 Marks L2 CO3
i) Fixed Partitioning ii) Dynamic partitioning

MODULE-IV

8. a) Consider the following snapshot of a system: 8 Marks L4 CO4

Processes	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	2	1	0	0
P1	2	0	0	0	2	7	5	0				
P2	0	0	3	4	6	6	5	6				
P3	2	3	4	5	4	3	5	6				
P4	0	3	3	2	0	6	5	2				

Answer the following questions using the banker's algorithm:

- i) What is the content of the matrix Need?
ii) Is the system in a safe state! Why?
iii) Is the system currently deadlocked! Why or why not?
iv) Which process, if any, or may become deadlocked if this whole request is granted immediately?

- b) Illustrate the functions of file and file implementation. 8 Marks L3 CO4

(OR)

9. a) Compare the performance of write operations achieved by a RAID level 5 organization with that achieved by a RAID level 0 organizations? 8 Marks L4 CO4
b) Explain the following with relevant diagrams: 8 Marks L2 CO4
i) Single level directory structure.
ii) Tree-structured directory structure

MODULE-V

10. a) Describe the system security model. How the cryptography ensures system security? Discuss. 8 Marks L2 CO5
b) Explain Capability-Based Protection system. How it achieves the goals of the protection system? 8 Marks L3 CO5

(OR)

11. a) What is access matrix? What are various methods to implement it? 8 Marks L1 CO5
b) Discuss about revocation of access rights and their role in system protection. 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, July – 2023

HETEROCYCLIC CHEMISTRY

[Organic Chemistry]

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 heterocyclic compounds? | 2 Marks | L1 | CO1 |
| | b) | Write the rules for naming of heterocyclic ring with example? | 2 Marks | L2 | CO1 |
| | c) | Draw the Molecular orbital picture showing the aromaticity of thiophene and pyridine. | 2 Marks | L2 | CO2 |
| | d) | Explain the tautomerism in pyridine. | 2 Marks | L1 | CO2 |
| | e) | Give the chemical structures of thiirane and azetidene. | 2 Marks | L2 | CO3 |
| | f) | Write anyone chemical reaction of oxetane. | 2 Marks | L1 | CO3 |
| | g) | Explain any one method of preparation of furan. | 2 Marks | L1 | CO4 |
| | h) | Compare the basicity of pyrrole and pyridine. | 2 Marks | L2 | CO4 |
| | i) | Outline the physical properties of indole. | 2 Marks | L1 | CO5 |
| | j) | Write the chemical structure, numbering, and IUPAC name of quinoline. | 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 classification of monocyclic and bridged heterocyclic compounds. | 8 Marks | L2 | CO1 |
| | b) | Describe the nomenclature of fused heterocyclic compounds. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain the classification of fused and bridged heterocyclic compounds. | 8 Marks | L2 | CO1 |
| | b) | Describe the nomenclature of heterocyclic compounds. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Discuss molecular orbital picture, structure, and aromaticity of furan. | 8 Marks | L6 | CO2 |
| | b) | Explain the tautomerism in pyridine. | 8 Marks | L2 | CO2 |

(OR)

5. a) Discuss molecular orbital picture, structure, and aromaticity of pyridine. 8 Marks L6 CO2
b) Explain the aromatic reactivity in thiophene. 8 Marks L2 CO2

MODULE-III

6. a) Explain the synthesis and chemical reactions of thiiranes. 8 Marks L2 CO3
b) Illustrate the chemical reactions of aziridines. 8 Marks L2 CO3

(OR)

7. a) Discuss the synthesis and chemical reactions of oxetane. 8 Marks L6 CO3
b) Describe any two chemical reactions of azetidine and thietane. 8 Marks L2 CO3

MODULE-IV

8. a) Explain any two methods of preparation and four chemical reactions of pyrrole. 8 Marks L2 CO4
b) Outline the preparation and chemical reactions of furan. 8 Marks L2 CO4

(OR)

9. a) Explain the electrophilic and nucleophilic reactions of pyridine. 8 Marks L2 CO4
b) Elaborate a comparison of reactivity of pyrrole, furan and thiophene. 8 Marks L6 CO4

MODULE-V

10. a) Explain any two methods of preparation and four chemical reactions of indole. 8 Marks L2 CO5
b) Outline the preparation and chemical reactions of quinoline. 8 Marks L2 CO5

(OR)

11. a) Explain the electrophilic and nucleophilic reactions of isoquinoline. 8 Marks L2 CO5
b) Outline any four chemical reactions of indole and quinoline for each ring. 8 Marks L2 CO5



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations July – 2023**MEDICINAL CHEMISTRY****[Organic Chemistry]****Time: 3 hours****Max. Marks: 100****PART - A****Answer All Questions.****All Questions Carry Equal Marks****10 x 2 = 20 Marks**

- | | | | | |
|----|------------------------------------------------|---------|----|-----|
| 1. | a) Define drug and disease. | 2 Marks | L1 | CO1 |
| | b) State antagonism. | 2 Marks | L1 | CO1 |
| | c) Write the structure of Ibuprofen. | 2 Marks | L1 | CO2 |
| | d) Define anti-pyretics. | 2 Marks | L2 | CO2 |
| | e) Draw the structure of Chloroquine. | 2 Marks | L1 | CO3 |
| | f) What is the most common antimalarial drug? | 2 Marks | L1 | CO3 |
| | g) What is the purpose of anti-diabetic drugs? | 2 Marks | L1 | CO4 |
| | h) Describe a note on anti-diabetics. | 2 Marks | L2 | CO4 |
| | i) Draw the structure of cycloserine. | 2 Marks | L1 | CO5 |
| | j) Write any two drugs for tuberculosis. | 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 all stages in the drug discovery cycle. | 8 Marks | L2 | CO1 |
| | b) Explain the theories of drug receptor interaction. | 8 Marks | L2 | CO1 |
| (OR) | | | | |
| 3. | a) Explain SAR of Penicillin. | 8 Marks | L4 | CO1 |
| | b) Write a note on current trends in antibiotic therapy. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|------|---------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Describe the synthesis, properties and side effects of Diclofenac. | 8 Marks | L4 | CO2 |
| | b) Discuss the preparation and properties of Meperidine. | 8 Marks | L3 | CO2 |
| (OR) | | | | |
| 5. | a) Classify non-steroidal anti-inflammatory drugs with suitable examples. | 8 Marks | L2 | CO2 |
| | b) Describe the pharmacology of Aspirin. | 8 Marks | L3 | CO2 |

MODULE-III

- | | | | | |
|------|---------------------------------------------------------------|---------|----|-----|
| 6. | a) Describe the synthesis of Amodiaquine with its importance. | 8 Marks | L3 | CO3 |
| | b) Write the anti-malarial drugs in use. | 8 Marks | L2 | CO3 |
| (OR) | | | | |
| 7. | a) Explain the synthesis of Quinine. | 8 Marks | L3 | CO3 |
| | b) Synthesis, properties and side effects of Chloroquine. | 8 Marks | L2 | CO3 |

MODULE-IV

8. a) Explain the structure of any two anti-diabetic drugs. 8 Marks L2 CO4
b) Discuss the study the treatment strategy of diabetic mellitus. 8 Marks L3 CO4

(OR)

9. a) Define hypoglycemic agents and give its classification. 8 Marks L2 CO4
b) Explain the mechanism of action of sulfonylureas. 8 Marks L2 CO4

MODULE-V

10. a) Explain classification of tuberculosis drugs. 8 Marks L3 CO5
b) Discuss of Isoniazid mechanism and list of its uses. 8 Marks L4 CO5

(OR)

11. a) Describe the mechanism of action of drugs employed for the treatment of Tuberculosis. 8 Marks L3 CO5
b) Describe the preparation of any two Tuberculosis drugs. 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 July – 2023

MICROBIAL GENETICS & RECOMBINANT RDNA TECHNOLOGY

[Bio-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 meant by transformation? | 2 Marks | L1 | CO1 |
| | b) | What is reverse mutation? | 2 Marks | L1 | CO1 |
| | c) | Define plasmid. List the types of plasmids. | 2 Marks | L1 | CO2 |
| | d) | What are transposable elements? | 2 Marks | L1 | CO2 |
| | e) | Write the purpose of protein purification in gene expression studies. | 2 Marks | L1 | CO3 |
| | f) | What is meant by heterologous gene expression? | 2 Marks | L1 | CO3 |
| | g) | Write a note on gene conversion. | 2 Marks | L1 | CO4 |
| | h) | Write differences between pET & pBAD vectors. | 2 Marks | L1 | CO4 |
| | i) | Write any four applications of rDNA technology. | 2 Marks | L1 | CO5 |
| | j) | What is meant by the term 'Bt transgenic'? | 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 DNA damage and repair process. | 8 Marks | L2 | CO1 |
| | b) | Outline the structure, physical and chemical properties of RNA. | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | Describe the types and mechanisms of transduction with schematic illustrations. | 8 Marks | L2 | CO1 |
| | b) | Briefly explain the concept of <i>E.coli</i> cell transformation. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|------|----|------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Discuss the concept of loss and gain of function mutants. | 8 Marks | L2 | CO2 |
| | b) | Outline the genome organization of <i>Saccharomyces</i> . | 8 Marks | L2 | CO2 |
| (OR) | | | | | |
| 5. | a) | Summarize the plasmid replication and add a note on copy number. | 8 Marks | L2 | CO2 |
| | b) | Describe prokaryotic transposable elements. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|------|----|-----------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Discuss the general aspects of gene expression and regulation. | 8 Marks | L2 | CO3 |
| | b) | Explain how vectors are selected for the expression of recombinant proteins by taking any vector as an example. | 8 Marks | L2 | CO3 |
| (OR) | | | | | |
| 7. | a) | Outline the concept of signal transduction in microbes. | 8 Marks | L2 | CO3 |
| | b) | Discuss the features and uses of pET and pBAD vectors. | 8 Marks | L2 | CO3 |

MODULE-IV

8. a) Describe the features, uses, and drawbacks of bacteriophage lambda vectors. 8 Marks L2 CO4
b) Summarize the cloning tools. 8 Marks L2 CO4
- (OR)
9. a) Outline the construction of genomic libraries and their uses. 8 Marks L2 CO4
b) Classify vectors and give advantages and disadvantages about them. 8 Marks L2 CO4

MODULE-V

10. a) Illustrate phosphor amidite method for DNA synthesis with a diagrammatic representation. 8 Marks L2 CO5
b) Write a note on gene therapy. 8 Marks L2 CO5
- (OR)
11. a) Outline the method of DNA labeling. 8 Marks L2 CO5
b) Discuss the applications of recombinant DNA technology. 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, July – 2023

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) | What is meant by upstream process? Give an example. | 2 Marks | L1 | CO1 |
| | b) | What are traditional applications of biotechnology industry? | 2 Marks | L1 | CO1 |
| | c) | What is meant by solid-state fermentation? Give its uses. | 2 Marks | L1 | CO2 |
| | d) | Write a note on transformation process. | 2 Marks | L1 | CO2 |
| | e) | What do you mean by thermal death of microorganisms? | 2 Marks | L1 | CO3 |
| | f) | Define heat generation by microbial growth. | 2 Marks | L1 | CO3 |
| | g) | What is meant by gas-liquid mass transfer? | 2 Marks | L1 | CO4 |
| | h) | What is meant by cellular oxygen demand? | 2 Marks | L1 | CO4 |
| | i) | Give any two differences between unstructured and structured models of growth and product formation. | 2 Marks | L1 | CO5 |
| | j) | What is Monad model? Give its application. | 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) | Outline the traditional and modern applications of biotechnology industry. | 8 Marks | L2 | CO1 |
| | b) | Briefly discuss the upstream and downstream unit operations. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------|---------|----|-----|
| 3. | a) | Provide a n outline on integrated bioprocess at various levels. | 8 Marks | L2 | CO1 |
| | b) | Discuss the applications of bioprocess technology. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Discuss the concept, applications and advantages of fermentation. | 8 Marks | L2 | CO2 |
| | b) | Describe the range of the fermentation process. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Draw a neat illustration of fermenter structure and explain its components. | 8 Marks | L2 | CO2 |
| | b) | Discuss the factors affecting submerged and solid-state fermentation. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|----------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What are the various medium requirements for fermentation processes? | 8 Marks | L2 | CO3 |
| | b) | Discuss the heat generation by microbial growth. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain the microbial growth parameters and environmental conditions affecting growth kinetics. | 8 Marks | L2 | CO3 |
| | b) | Explain the kinetics of thermal death of microorganisms with a suitable example. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Explain the principles of convective mass transfer and gas-liquid mass transfer. | 8 Marks | L2 | CO4 |
| | b) | Explain the measurement of the volumetric oxygen transfer coefficient. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------|---------|----|-----|
| 9. | a) | Explain the oxygen transfer in a large bioreactor. | 8 Marks | L2 | CO4 |
| | b) | Write a note on oxygen uptake in cell cultures. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|----------------------------------------------------------|---------|----|-----|
| 10. | a) | Explain the phases of cell growth in batch cultures. | 8 Marks | L2 | CO5 |
| | b) | Write briefly about the growth of filamentous organisms. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|---------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Discuss briefly structured models for growth and product formation. | 8 Marks | L2 | CO5 |
| | b) | Write in detail the Leudeking-Piret model and its uses. | 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 July – 2023

BIOINFORMATICS AND 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) | List four names of drug databases. | 2 Marks | L1 | CO1 |
| | b) | Define genomics and proteomics. | 2 Marks | L1 | CO1 |
| | c) | What are ESTs? Give any two uses of EST. | 2 Marks | L1 | CO2 |
| | d) | What is meant by the term 'shotgun'? | 2 Marks | L1 | CO2 |
| | e) | State two reasons why RNA secondary structure information is needed. | 2 Marks | L1 | CO3 |
| | f) | Give any two differences between si-RNA, micro-RNA, and Small nuclear RNA | 2 Marks | L1 | CO3 |
| | g) | Give the names of the methods to model the protein molecules. | 2 Marks | L1 | CO4 |
| | h) | Define structural motif. | 2 Marks | L1 | CO4 |
| | i) | Write two differences between pair-wise and multiple alignments. | 2 Marks | L1 | CO5 |
| | j) | Define dynamic programming. | 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 bioinformatics. Discuss the fields and applications of bioinformatics. | 8 Marks | L2 | CO1 |
| | b) | Summarize any two DNA databases. | 8 Marks | L2 | CO1 |
| (OR) | | | | | |
| 3. | a) | Discuss any two restriction enzyme database features and their uses. | 8 Marks | L2 | CO1 |
| | b) | Explain biological database management with any one example of a biological database. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Summarize the concept of ORF and its importance in sequence analysis. | 8 Marks | L2 | CO2 |
| | b) | What are shotgun projects? Discuss the importance and methods involved in shotgun projects. | 8 Marks | L2 | CO2 |

(OR)

5. a) Write in detail about whole genome analysis and its applications. 8 Marks L2 CO2
 b) Explain SNP analysis. 8 Marks L2 CO2

MODULE-III

6. a) Define and describe the concept of si-RNA, micro-RNA, and small nuclear RNA. 8 Marks L2 CO3
 b) Discuss RNA structure prediction methods. 8 Marks L2 CO3

(OR)

7. a) Discuss the approaches to identify micro RNAs. 8 Marks L2 CO3
 b) Elaborate on si-RNA design and development. 8 Marks L2 CO3

MODULE-IV

8. a) Outline the protein sequence analysis. 8 Marks L2 CO4
 b) Describe the role and importance of hydrophobic patterns in a protein structure. 8 Marks L2 CO4

(OR)

9. a) Explain the ab initio protein modeling approach with its advantages and disadvantages. 8 Marks L2 CO4
 b) What are post-translational modifications? Explain their role in protein sequence analysis. 8 Marks L2 CO4

MODULE-V

10. a) Explain the sequence alignment concepts with schematic examples. 8 Marks L2 CO5
 b) Discuss the concept and features of PAM scoring matrices. 8 Marks L2 CO5

(OR)

11. a) Outline the dynamic programming method employed in bioinformatics. 8 Marks L2 CO5
 b) Discuss the concept and features of BLOSUM scoring matrices. 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, July – 2023

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) | Define adaptive immunity. | 2 Marks | L1 | CO1 |
| | b) | List the cells participating in innate immunity. | 2 Marks | L2 | CO1 |
| | c) | Define antibody. | 2 Marks | L1 | CO2 |
| | d) | List the complement pathways. | 2 Marks | L1 | CO2 |
| | e) | What is the role of Cytotoxic T-cells? | 2 Marks | L2 | CO3 |
| | f) | What is immunodeficiency? | 2 Marks | L1 | CO3 |
| | g) | What is active immunization? | 2 Marks | L1 | CO4 |
| | h) | What is a vaccine? | 2 Marks | L1 | CO4 |
| | i) | What is the importance of RH typing? | 2 Marks | L2 | CO5 |
| | j) | What is ELISA? What is the importance of ELISA? | 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 functions of different cells in innate immunity. | 8 Marks | L2 | CO1 |
| | b) | Describe in detail the process of formation of immune cells with regulations. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain in detail various primary lymphoid organs of the immune system and their role in immune responses. | 8 Marks | L2 | CO1 |
| | b) | Outline the immune system and its role in immunity. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain in detail the components and the role of the complement system in providing immunity. | 8 Marks | L2 | CO2 |
| | b) | Define MHC. Describe in detail the types of MHC in humans. | 8 Marks | L2 | CO2 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain in detail the class, structure, and function of various immunoglobulins. | 8 Marks | L2 | CO2 |
| | b) | What is an antigen? Explain in detail the types of antigens. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What is immunotherapy? Explain how immunotherapy can treat tumors, autoimmune disorders, and immunodeficiency diseases. | 8 Marks | L2 | CO3 |
| | b) | What is an immune disorder? Explain in detail the types of immune disorders. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Explain various T-cells in the immune system; and their role in immune responses. | 8 Marks | L2 | CO3 |
| | b) | What are B-cells? Describe in detail the role of B-cells in the humoral immune responses. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | What are monoclonal antibodies? Explain the use of monoclonal antibodies in the diagnosis of diseases. | 8 Marks | L2 | CO4 |
| | b) | What is the AIDS vaccine? Explain the development of the AIDS vaccine. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | What is a plant-based vaccine? Explain the development of a plant-based vaccine. | 8 Marks | L2 | CO4 |
| | b) | Write down the differences between active and passive immunization. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Describe in detail the production of monoclonal antibodies by Hybridoma technology. | 8 Marks | L2 | CO5 |
| | b) | Write down the principle of antibody-labeled assays. Explain in detail the types of antibody-labeled assays. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | What is immune electrophoresis? Explain the immune-electrophoresis's principle, procedure, advantages, and disadvantages in detail. | 8 Marks | L2 | CO5 |
| | b) | Describe haemagglutination and its importance in the identification of blood groups. | 8 Marks | L3 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations July – 2023**ORGANIC REACTION MECHANISM****[Organic Chemistry]**

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 two rearrangements involving electron deficient carbon atom. | 2 Marks | L1 | CO1 |
| | b) What is Wagner Meerwein reaction with suitable example? | 2 Marks | L1 | CO1 |
| | c) What will form when SeO ₂ oxidizes cyclic ketones? | 2 Marks | L1 | CO2 |
| | d) Write Collins-reagent with suitable example. | 2 Marks | L1 | CO2 |
| | e) What is Birch reduction with suitable example? | 2 Marks | L1 | CO3 |
| | f) What is the Luches reduction catalyst? | 2 Marks | L1 | CO3 |
| | g) Define DDQ with suitable example? | 2 Marks | L1 | CO4 |
| | h) Write any one method for the synthesis of Diazomethane | 2 Marks | L1 | CO4 |
| | i) What is Simmon-Smith rearrangement? | 2 Marks | L1 | CO5 |
| | j) What will form when acetaldehyde reacts with Grignard reagent? | 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 reaction mechanism of Pinacol-Pinacolone rearrangement with any two appropriate examples. | 16 Marks | L2 | CO1 |
| | (OR) | | | |
| 3. | Explain the following rearrangement reaction mechanisms with suitable examples.
i) Favorski ii) Schimdt | 16 Marks | L2 | CO1 |

MODULE-II

- | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 4. | Write the reaction mechanism and any four applications for
i) SeO ₂ ii) CrO ₃ reagents with appropriate examples. | 16 Marks | L2 | CO2 |
| | (OR) | | | |
| 5. | Explain the reaction mechanism of peroxide induced epoxidation with appropriate examples. | 16 Marks | L2 | CO2 |

MODULE-III

6. Discuss the reaction mechanism of LiAlH_4 with various applications. 16 Marks L2 CO3

(OR)

7. Explain Birch and Clemmenson reductions with proper reaction mechanism. 16 Marks L2 CO3

MODULE-IV

8. Describe the synthesis of DDQ. Explain the mechanism of various reactions involving DDQ. 16 Marks L2 CO4

(OR)

9. Explain the synthesis and chemical reactions of anhydrous AlCl_3 . 16 Marks L2 CO4

MODULE-V

10. Briefly discuss synthesis and various chemical reactions of Grignard's reagent. 16 Marks L3 CO5

(OR)

11. Write synthesis and chemical reactions of Organolithium, and Organocopper reagent. 16 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 July – 2023

INORGANIC CHEMISTRY-II

[Organic Chemistry]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.

All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------|---------|----|-----|
| 1. | a) | Identify and write down the structures of Platinum compounds used in cancer therapy. | 2 Marks | L1 | CO1 |
| | b) | Describe the causes for Zinc deficiency. | 2 Marks | L1 | CO1 |
| | c) | Define the term symbol. | 2 Marks | L1 | CO2 |
| | d) | How to calculate microstates? | 2 Marks | L1 | CO2 |
| | e) | Demonstrate the metal ligand equilibria in solution. | 2 Marks | L1 | CO3 |
| | f) | Narrate a short note on Irving-Williams series. | 2 Marks | L1 | CO3 |
| | g) | Write any two examples of homogeneous catalysis. | 2 Marks | L1 | CO4 |
| | h) | Define reduction potential with an example. | 2 Marks | L1 | CO4 |
| | i) | Classify nanomaterial's based on dimensions. | 2 Marks | L1 | CO5 |
| | j) | Draw the structure of Fullerene C60. | 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. | Construct a brief note on Photosynthesis and Nitrogen fixation. | 16 Marks | L2 | CO1 |
| | (OR) | | | |
| 3. | Make a brief note of the metal deficiency and diseases. | 16 Marks | L2 | CO1 |

MODULE-II

- | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 4. | What is Orgel diagram? Build the Orgel diagram of a metal complex with d ⁹ configuration. | 16 Marks | L3 | CO2 |
| | (OR) | | | |
| 5. | Give a brief note on Interpretation of electronic spectra of aqua Complexes of Ti(III), Cr(III), Co(II) and Cu(II). | 16 Marks | L3 | CO2 |

MODULE-III

- | | | | | | |
|----|-------------------------------------------------------------------|-------------------------------------------------------------------------|---------|-----|-----|
| 6. | a) | Explain stepwise and overall formation constants and their interaction. | 8 Marks | L2 | CO3 |
| | b) | Write down the factors effecting on stability of complexes. | 8 Marks | L2 | CO3 |
| | (OR) | | | | |
| 7. | Plan a brief note on Pearson's HSAB concept and its applications. | 16 Marks | L2 | CO3 | |

MODULE-IV

- | | | | | | |
|----|-----------------------------------------------------|-------------------------------------------------------------|---------|-----|-----|
| 8. | a) | Explain the mechanism of redox processes involving ligands. | 8 Marks | L3 | CO4 |
| | b) | Discuss the Factors affecting redox potentials. | 8 Marks | L2 | CO4 |
| | (OR) | | | | |
| 9. | Discuss briefly types of metal catalyzed reactions. | 16 Marks | L2 | CO4 | |

MODULE-V

- | | | | | |
|-----|-------------------------------------------------------------------------------------------|----------|----|-----|
| 10. | Explain the synthesis and biomedical applications of silver and iron oxide nanoparticles. | 16 Marks | L2 | CO5 |
| | (OR) | | | |
| 11. | Describe briefly synthesis, properties and applications of CNTs. | 16 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, July – 2023

PHYSICAL CHEMISTRY-II

[Organic Chemistry]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.

All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 1. | a) | Define Electrode potential. | 2 Marks | L1 | CO1 |
| | b) | Define Electrochemical Series. | 2 Marks | L1 | CO1 |
| | c) | Define standard reference electrode. Give any two examples. | 2 Marks | L1 | CO1 |
| | d) | Define Lattice point. | 2 Marks | L1 | CO2 |
| | e) | List out any two differences between Amorphous and Crystalline solids. | 2 Marks | L1 | CO2 |
| | f) | Explain the following terms with examples.
i) Phase ii) Component. | 2 Marks | L1 | CO3 |
| | g) | Define critical solution temperature. | 2 Marks | L1 | CO3 |
| | h) | What are the advantages of using azeotropic mixtures? | 2 Marks | L1 | CO4 |
| | i) | Write any two differences between Adsorption and Absorption. | 2 Marks | L1 | CO5 |
| | j) | Write any two applications of Adsorption. | 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 construction and working of standard hydrogen electrode with neat labelled diagram. | 8 Marks | L2 | CO1 |
| | b) | Explain the construction and working of Calomel electrode with neat labelled diagram. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|
| 3. | a) | Discuss Electrochemical reduction of carbon dioxide to valuable organic products. | 10 Marks | L2 | CO1 |
| | b) | Using values from the table of standard reduction potentials, calculate the EMF, ΔG and $\log K$ under standard conditions of the following cell: $Zn(s)/Zn^{2+}(aq) // Ag^+(aq) / Ag(s)$
$Ag^+/Ag = +0.80V$ and $Zn/Zn^{2+} = -0.76V$. | 6 Marks | L3 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the Conductor, Semi Conductor, Insulator on the basis of band theory of solids. | 8 Marks | L2 | CO2 |
| | b) | Explain briefly Stoichiometric defects in crystals | 8 Marks | L2 | CO2 |

(OR)

5. Explain the Seven different types of crystal systems with examples. 16 Marks L2 CO2

MODULE-III

6. Explain the phase diagram of the following partially miscible liquids.
i) Phenol-water system ii) Trimethylamine-water system. 16 Marks L2 CO3

(OR)

7. Explain phase rule with the help of a two component system. Give the practical application of this system. 16 Marks L2 CO3

MODULE-IV

8. Discuss the formation of one pair partially miscible liquids (Type II) with a suitable example. 16 Marks L2 CO4

(OR)

9. a) Discuss on bimodal curves for a three component system. 8 Marks L2 CO4
b) Expand on Ternary Azeotropic mixtures. 8 Marks L2 CO4

MODULE-V

10. a) Explain the Freundlich Adsorption isotherm and its limitations. 8 Marks L2 CO5
b) Explain Factors influencing Adsorption. 8 Marks L2 CO5

(OR)

11. Derive Gibbs adsorption isotherm and suitability to the mono and bulk surfaces. 16 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, July – 2023

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) | Is the 'title' important in report writing? Why? | 2 Marks | L1 | CO 1 |
| | b) | What are the components of the technical report? | 2 Marks | L1 | CO 1 |
| | c) | What is syntax? | 2 Marks | L1 | CO2 |
| | d) | What is the use of 'table' in presenting data in reports? | 2 Marks | L1 | CO 2 |
| | e) | Give two examples of illustrations for presenting data. | 2 Marks | L1 | CO3 |
| | f) | What is scientific journal? | 2 Marks | L1 | CO3 |
| | g) | Define DTP. | 2 Marks | L1 | CO4 |
| | h) | What is copyright? Give an example. | 2 Marks | L2 | CO4 |
| | i) | Is cross reference important in report writing? How? | 2 Marks | L2 | CO5 |
| | j) | How do you review a presentation? | 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 characteristics of the technical report in science and technology. | 16 Marks | L3 | CO1 |
|----|----|--------------------------------------------------------------------------------|----------|----|-----|

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------|---------|----|-----|
| 3. | a) | How important 'Title' for the report? Discuss with example. | 8 Marks | L2 | CO1 |
| | b) | Explain the structure of the technical report. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------|----------|----|-----|
| 4. | a) | Discuss the process of writing a technical report. | 16 Marks | L2 | CO2 |
|----|----|----------------------------------------------------|----------|----|-----|

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain the importance of using tables and graphs in a technical report. | 8 Marks | L2 | CO2 |
| | b) | Explain the important features of good discussion. | 8 Marks | L2 | CO2 |

MODULE-III

6. a) Explain different strategies in writing for publication in scientific journal. 16 Marks L2 CO3

(OR)

7. a) What are the different types of graphs those can be used in presenting data in the report? Explain. 8 Marks L2 CO3

b) Explain the citation order system in citations and references. 8 Marks L2 CO3

MODULE-IV

8. a) Discuss the importance of copyright and copyright laws in writing technical report in detail. 16 Marks L2 CO4

(OR)

9. a) What is cross - referencing in report writing? Elucidate with examples. 8 Marks L2 CO4

b) Write about the hints on editing typographic details. 8 Marks L4 CO4

MODULE-V

10. a) What is technical presentation and discuss the challenges in making presentation with appropriate pointing. 16 Marks L2 CO5

(OR)

11. a) What are the rhetoric tips from A to Z? Explain. 8 Marks L2 CO5

b) Discuss the importance of intermediate questions in presentation. 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, July – 2023

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) | Define TLS. | 2 Marks | L1 | CO1 |
| | b) | What is linear crypt analysis? | 2 Marks | L1 | CO1 |
| | c) | What is PGP? | 2 Marks | L1 | CO2 |
| | d) | Explain about brute force attack. | 2 Marks | L1 | CO2 |
| | e) | Define message integrity. | 2 Marks | L1 | CO3 |
| | f) | What is avalanche effect? | 2 Marks | L1 | CO3 |
| | g) | What are various asymmetric cryptographic algorithms? | 2 Marks | L1 | CO4 |
| | h) | Define modern block cipher. | 2 Marks | L1 | CO4 |
| | i) | Explain about mac . | 2 Marks | L1 | CO5 |
| | j) | What is availability? | 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 security mechanisms. | 8 Marks | L1 | CO1 |
| | b) | Explain in detail about Caesar cipher using an example. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------|---------|----|-----|
| 3. | a) | What are various polyalphabetic ciphers explain in detail? | 8 Marks | L3 | CO1 |
| | b) | Elaborate in detail about symmetric cipher model. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------|---------|----|-----|
| 4. | a) | Explain various components of modern block cipher. | 8 Marks | L2 | CO2 |
| | b) | Explain about various product ciphers. | 8 Marks | L1 | CO2 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain the structure of advanced encryption standard. | 8 Marks | L3 | CO2 |
| | b) | What is a multiple DES algorithm. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------|---------|----|-----|
| 6. | a) | Explain about El Gamal cryptosystems in detail. | 8 Marks | L2 | CO3 |
| | b) | Explain about HMAC algorithm. | 8 Marks | L1 | CO3 |

(OR)

- | | | | | | |
|----|----|-----------------------------------------------------------------|---------|----|-----|
| 7. | a) | What is a hash function list out various simple hash functions? | 8 Marks | L2 | CO3 |
| | b) | Explain about digital signature algorithms. | 8 Marks | L3 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------|---------|----|-----|
| 8. | a) | Describe certificate authority and X.509 Certificate. | 8 Marks | L2 | CO4 |
| | b) | Briefly explain about public key Infrastructure. | 8 Marks | L1 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | What are the various keys we have in cryptographic systems What is the distribution of public keys in cryptosystems. | 8 Marks | L3 | CO4 |
| | b) | what is Symmetric key distribution Using symmetric and asymmetric Encryption. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-------------------------------------------------------------------------------|---------|----|-----|
| 10. | a) | Describe how trust in PGP is achieved using web of trust model. | 8 Marks | L1 | CO5 |
| | b) | Explain how email messages are protected using S/MIME signing and encryption? | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------|---------|----|-----|
| 11. | a) | Draw and discuss architecture of IP security. | 8 Marks | L2 | CO5 |
| | b) | Discuss how PGP key rings are maintained by the user. | 8 Marks | L3 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations July – 2023

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 a disjunctive normal form. | 2 Marks | L1 | CO1 |
| | b) List any two differences between the universal quantifier and the existential quantifier. | 2 Marks | L1 | CO1 |
| | c) How are Boolean functions represented and minimized? | 2 Marks | L1 | CO2 |
| | d) Describe Hasse diagram. | 2 Marks | L2 | CO2 |
| | e) Define Euler quotient function. | 2 Marks | L1 | CO3 |
| | f) Explain division algorithm. | 2 Marks | L2 | CO3 |
| | g) Explain homogeneous recurrence relation. | 2 Marks | L1 | CO4 |
| | h) How do you calculate coefficients of a generating function? | 2 Marks | L1 | CO4 |
| | i) List some properties of trees. | 2 Marks | L1 | CO5 |
| | j) List some applications of trees. | 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 $S \vee R$ tautologically implied by $(P \vee Q) \wedge (P \vee R) \wedge (Q \vee S)$. | 8 Marks | L2 | 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) Write the following statements in symbolic form.
i) All men are good ii) No men are good
iii) Some men are good iv) Some men are not Good. | 8 Marks | L2 | CO1 |
| | b) Prove by contradiction that there are infinitely many prime numbers. | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Minimize the expression $Y = AB'C + A'B'C + A'BC + AB'C' + A'B'C'$. | 8 Marks | L3 | CO2 |
| | b) Minimize the Boolean function
$Y = (A'+B'+C+D)(A+B'+C+D)(A+B+C+D')(A+B+C'+D')$
$(A'+B+C+D')(A+B+C'+D)$. | 8 Marks | L3 | |
| (OR) | | | | |
| 5. | a) Define lattice and sub lattice. Explain distributive and semi distributive laws for a lattice. When can a lattice called as a distributive lattice? | 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) State and prove Euclidean algorithm. 10 Marks L3 CO3
b) Using the Euclidean algorithm to determine GCD (234, 42). 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) Find a recurrence relation for the number of ways to lay out a walkway with slate tiles if the tiles are red, green, or gray, so that no two red tiles are adjacent and tiles of the same color are considered indistinguishable. 8 Marks L3 CO4

- b) Explain the methods of characteristic roots with an example. 8 Marks L2 CO4

(OR)

9. a) Find the generating function of the sequence $\{a_n\}$ where $a_n = 3n$. 8 Marks L3 CO4
b) Solve the recurrence relation using the method of characteristic roots $a_n = 3a_{n-1} - 2a_{n-2}$ for $n \geq 2$ given $a_0 = 1$ and $a_1 = 2$. 8 Marks L3 CO4

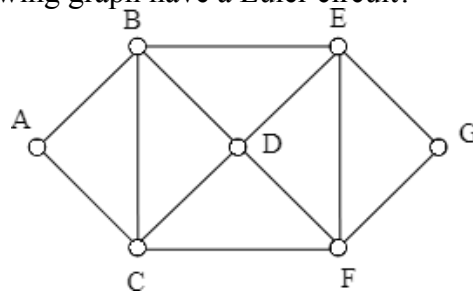
MODULE-V

10. a) Discuss Depth-First Search algorithm, its applications, and compare it with Breadth-First Search algorithm. 8 Marks L2 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) State and explain Euler circuit and Euler path with an example. Find whether the following graph have a Euler circuit? 8 Marks L3 CO5



- b) Prove that a connected graph G has an Eulerian circuit if and only if every vertex of G has even degree. 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, July – 2023

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) | List the data warehouse characteristics. | 2 Marks | L2 | CO1 |
| | b) | Differentiate between ROLAP and MOLAP. | 2 Marks | L4 | CO1 |
| | c) | Define data reduction in data preprocessing. | 2 Marks | L4 | CO2 |
| | d) | Write a short note on market basket analysis. | 2 Marks | L2 | CO2 |
| | e) | Differentiate between regression and classification in data mining. | 2 Marks | L4 | CO3 |
| | f) | Define support and confidence measure. | 2 Marks | L4 | CO3 |
| | g) | Give a note on k means algorithm. | 2 Marks | L2 | CO4 |
| | h) | How to handle noise and outlier? | 2 Marks | L1 | CO4 |
| | i) | What is text mining in data mining? | 2 Marks | L1 | CO5 |
| | j) | What are the 3 phases of web mining? | 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) | With a neat sketch, Explain three tier architecture of data ware housing | 8 Marks | L2 | CO1 |
| | b) | What is concept hierarchy and explain different types of concept hierarchy? | 8 Marks | L1 | CO1 |

(OR)

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|----|----|--------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Differentiate Operational database systems and data warehousing. Explain the star schema and fact constellation schemas. | 8 Marks | L4 | CO1 |
| | b) | Explain working on multidimensional data model with a neat sketch. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Discuss in detail about the steps of knowledge discovery. | 8 Marks | L3 | CO2 |
| | b) | What is data integration in data mining? Explain various approaches for data integration in detail. | 8 Marks | L1 | CO2 |

(OR)

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|----|----|------------------------------------------------------|---------|----|-----|
| 5. | a) | Explain various data mining tasks. | 8 Marks | L2 | CO2 |
| | b) | Illustrate the Data Transformation by Normalization. | 8 Marks | L4 | CO2 |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | Explain how association rules are generated from frequent item sets. | 8 Marks | L2 | CO3 |
| | b) | What is prediction? Explain the various prediction techniques. Explain about Decision tree Induction classification technique. | 8 Marks | L1 | CO3 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------|---------|----|-----|
| 7. | a) | What is Bayesian classification? Explain in detail with an example. | 8 Marks | L1 | CO3 |
| | b) | Explain, how can you improve the performance of Apriori algorithm. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | What is the goal of clustering? How does partitioning around medoids algorithm achieve this goal? | 8 Marks | L1 | CO4 |
| | b) | Explain in detail about divisive clustering? Mention the steps involved in divisive clustering with an example? | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | What are the different clustering methods? Explain in detail. | 8 Marks | L1 | CO4 |
| | b) | What is Hierarchical clustering? Write the key issue in hierarchical clustering algorithm. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|------------------------------------------------------------|---------|----|-----|
| 10. | a) | What are the types of mining sequence data? | 8 Marks | L1 | CO5 |
| | b) | What are different types of data in data mining in detail? | 8 Marks | L1 | CO5 |

(OR)

- | | | | | | |
|-----|----|--------------------------------------------------------|---------|----|-----|
| 11. | a) | Explain positive effects of data mining on society. | 8 Marks | L2 | CO5 |
| | b) | What are the trends in data mining? Explain in detail. | 8 Marks | L1 | CO5 |



MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, July – 2023

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) Write the advantage of logical data independence. | 2 Marks | L2 | CO1 |
| | b) What is a weak entity in ER diagram? | 2 Marks | L1 | CO1 |
| | c) What is Arity and cardinality? | 2 Marks | L1 | CO2 |
| | d) Explain about division operator in relational algebra. | 2 Marks | L2 | CO2 |
| | e) Explain about foreign key? And create a table using foreign key. | 2 Marks | L2 | CO3 |
| | f) Why NULL values are needed in database? | 2 Marks | L2 | CO3 |
| | g) List various problems caused by redundancy. | 2 Marks | L2 | CO4 |
| | h) When can we say a schedule is recoverable? | 2 Marks | L1 | CO4 |
| | i) Explain about Hash based indexing. | 2 Marks | L2 | CO5 |
| | j) Write the significance of a clustered index. | 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) Why would you choose a database system instead of simply storing data in operating system files? When would it make sense not to use a database system? | 8 Marks | L2 | CO1 |
| | b) Explain the difference between external, logical and physical level schemas. How are these different schema layers related to the concepts of logical and physical data independence? | 8 Marks | L2 | CO1 |

(OR)

- | | | | | |
|----|----------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) What is an entity, relationship, types of attributes? Explain each with an example. | 8 Marks | L1 | CO1 |
| | b) Explain the features of ER model. | 8 Marks | L2 | CO1 |

MODULE-II

- | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) Explain about view, usage of creating a view, how to alter and destroy a view each with an example? | 8 Marks | L2 | CO2 |
| | b) Define the following terms: relation schema, relational database schema, domain, attribute, attribute domain, relation instance, and relation cardinality. | 8 Marks | L4 | CO2 |

(OR)

- | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) Explain about Relational algebra. With an example give about selection and projection. | 8 Marks | L2 | CO2 |
| | b) What is JOIN operator in DBMS? Explain all the variations of the JOIN operation in relational algebra with a suitable example. | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Explain various DML commands each with syntax and example. 8 Marks L2 CO3
b) What are nested queries? What is correlation in nested queries? How would you use the operators IN, EXISTS, UNIQUE, ANY, and ALL in writing nested queries? Explain with examples. 8 Marks L1 CO3

(OR)

7. a) Write a CURSOR Program to retrieve the Details of all the Employees using CURSORS. 8 Marks L2 CO3
b) Write a PL/SQL – Procedure to Evaluate, SUM, DIFFERENCE, MULTIPLICATION and DIVISION. 8 Marks L2 CO3

MODULE-IV

8. a) Explain about multi valued dependency with an example and give the rules for 4th normal form. 8 Marks L2 CO4
b) Explain about Scheduling and various types of scheduling with an example. 8 Marks L2 CO4

(OR)

9. a) What are ACID properties? Define with examples. 8 Marks L1 CO4
b) Consider a Relation R(SID,COURSE,HOBBY) SID-->COURSE; SID-->HOBBY AND Check whether its satisfying the 4NF or not. 8 Marks L2 CO4

MODULE-V

10. a) Explain about the measures that are to be considered for comparing the performance of various file organization techniques. 8 Marks L2 CO5
b) Explain two phase locking for ensuring serializability. 8 Marks L2 CO5

(OR)

11. a) What is an index? Discuss important properties of an index that affect the efficiency of searches using the index. 8 Marks L1 CO5
b) Explain various anomalies that arise due to interleaved execution of transactions with suitable examples. 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 July – 2023

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) | Define Daily Stand-Up meeting. | 2 Marks | L2 | CO1 |
| | b) | Define Incremental and Iterative Development. | 2 Marks | L1 | CO1 |
| | c) | Describe non functional requirement. | 2 Marks | L2 | CO2 |
| | d) | How a scenario can be defined in use case? | 2 Marks | L1 | CO2 |
| | e) | List out the common activities in design process. | 2 Marks | L1 | CO3 |
| | f) | What are the elements of design model? | 2 Marks | L2 | CO3 |
| | g) | Define software testing. | 2 Marks | L1 | CO4 |
| | h) | Define a term defect. | 2 Marks | L2 | CO4 |
| | i) | Why estimation is required for developing new software? | 2 Marks | L1 | CO5 |
| | j) | Explain the need of project planning in software development. | 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 Agile and Scrum. | 8 Marks | L2 | CO1 |
| | b) | Define Pair Programming. Write its advantages. | 8 Marks | L3 | CO1 |
| (OR) | | | | | |
| 3. | a) | How Daily Stand-Up meeting is useful for software development? | 8 Marks | L2 | CO1 |
| | b) | Define agile manifesto and its principle. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|------|----|----------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | Write short notes on data dictionary and Petri net with necessary diagram. | 8 Marks | L2 | CO2 |
| | b) | Explain in detail about structured analysis. | 8 Marks | L4 | CO2 |
| (OR) | | | | | |
| 5. | a) | Explain in detail about requirement validation and management. | 8 Marks | L2 | CO2 |
| | b) | Draw use case diagram form online booking system. | 8 Marks | L3 | CO2 |

MODULE-III

- | | | | | | |
|------|----|--------------------------------------------------|---------|----|-----|
| 6. | a) | Explain the concept of data flow architecture. | 8 Marks | L2 | CO3 |
| | b) | Explain the components of class based designing. | 8 Marks | L2 | CO3 |
| (OR) | | | | | |
| 7. | a) | Differentiate Cohesion and Coupling. | 8 Marks | L3 | CO3 |
| | b) | Explain the concept of Design Heuristic. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|--------------------------------------------------|---------|----|-----|
| 8. | a) | Describe regression testing in software testing. | 8 Marks | L3 | CO4 |
| | b) | What are the different levels of testing? | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------|---------|----|-----|
| 9. | a) | Explain the role of testing in software development. | 8 Marks | L2 | CO4 |
| | b) | What is verification and validation in software testing? | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|------------------------------------------------------|---------|----|-----|
| 10. | a) | Define COCOMO. How it is used in project management? | 8 Marks | L3 | CO5 |
| | b) | Explain RMMM plan. | 8 Marks | L2 | CO5 |

(OR)

- | | | | | | |
|-----|----|-------------------------------------------------------------|---------|----|-----|
| 11. | a) | How scheduling useful in software development? | 8 Marks | L3 | CO5 |
| | b) | What is the use project management in software engineering? | 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 July – 2023

RESEARCH METHODOLOGY FOR BIOSTATISTICS

[Orthopaedics, 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 research. | 2 Marks | L1 | CO1 |
| | b) | Define research methodology. | 2 Marks | L1 | CO1 |
| | c) | Define Biostatistics. | 2 Marks | L1 | CO2 |
| | d) | List Variables and Constants in Biostatistics. | 2 Marks | L1 | CO2 |
| | e) | Define Population and Parameter. | 2 Marks | L1 | CO2 |
| | f) | Define Sample and Sampling. | 2 Marks | L1 | CO2 |
| | g) | What are the fundamentals of research? | 2 Marks | L1 | CO1 |
| | h) | What is the research motivation? | 2 Marks | L1 | CO1 |
| | i) | List the types of research. | 2 Marks | L1 | CO1 |
| | j) | List the research methods. | 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) | What are different types of research? | 8 Marks | L1 | CO1 |
| | b) | Explain in detail about practical applications of designs. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Explain in detail about criteria of a good research. | 8 Marks | L2 | CO1 |
| | b) | Analyze some of the important research designs used in experimental hypothesis-testing research study. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------|---------|----|-----|
| 4. | a) | How do you define a research problem? Give three examples to illustrate your answer. | 8 Marks | L1 | CO2 |
| | b) | What is the necessity of defining a research problem? Explain. | 8 Marks | L1 | CO2 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Clearly explain the difference between collection of data through questionnaires and schedules. | 8 Marks | L2 | CO2 |
| | b) | Explain importance of literature review in defining a problem. | 8 Marks | L2 | CO2 |

MODULE-III

- | | | | | | |
|----|----|-------------------------------------------------------|---------|----|-----|
| 6. | a) | Illustrate descriptive statistics in health sciences. | 8 Marks | L2 | CO3 |
| | b) | Explain applications of Biostatistics. | 8 Marks | L2 | CO3 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Which are the Statistical methods useful in health Sciences? | 8 Marks | L1 | CO3 |
| | b) | Explain the importance of Biostatistics in Paramedical Sciences. | 8 Marks | L2 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Classify the methods used to measure the spread of data from its distribution with suitable examples. | 8 Marks | L2 | CO4 |
| | b) | Explain Student's t-test for single and two samples. | 8 Marks | L2 | CO4 |

(OR)

- | | | | | | |
|----|----|----------------------------------------|---------|----|-----|
| 9. | a) | Explain in detail about One-Way ANOVA. | 8 Marks | L2 | CO4 |
| | b) | Explain in detail about Two-Way ANOVA. | 8 Marks | L2 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|--------------------------------------------------------------|---------|----|-----|
| 10. | a) | Explain the techniques of Interpretation. | 8 Marks | L2 | CO5 |
| | b) | Classify the precautions taken while writing interpretation. | 8 Marks | L4 | CO5 |

(OR)

- | | | | | | |
|-----|----|------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Extend a detail note on report writing and presentation of data. | 8 Marks | L2 | CO5 |
| | b) | Explain different steps involved in Report Writing. | 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 July – 2023

PRINCIPLES OF PHYSIOTHERAPY PRACTICE

[Orthopaedics, 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 principles of professional ethics. | 2 Marks | L1 | CO1 |
| | b) | Summarize the ethics and ethical issues in physiotherapy practice. | 2 Marks | L2 | CO1 |
| | c) | Write any two examples in scope of physiotherapy in hospitals. | 2 Marks | L3 | CO2 |
| | d) | Find the communication skills in physiotherapy. | 2 Marks | L1 | CO2 |
| | e) | Classify the functional disabilities and health. | 2 Marks | L3 | CO3 |
| | f) | State any two treatments of physiotherapy in organizations. | 2 Marks | L3 | CO3 |
| | g) | Classify any four concepts of teaching and learning. | 2 Marks | L2 | CO4 |
| | h) | List any two theories of teaching. | 2 Marks | L2 | CO4 |
| | i) | What are the principles and methods of teaching? | 2 Marks | L1 | CO5 |
| | j) | Select the Audiovisual aids. | 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 the rules and responsibilities, and regulations in physiotherapy. | 8 Marks | L2 | CO1 |
| | b) | Outline the development of the physiotherapy profession. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|----------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Write about the abuse and management of difficulty in patients. | 8 Marks | L1 | CO1 |
| | b) | Analyze the ethical principles for governing practice physiotherapy. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------|---------|----|-----|
| 4. | a) | Explain the leadership qualities in physiotherapy. | 8 Marks | L4 | CO2 |
| | b) | Estimate in detail about medical legal cases. | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Determine the legal aspects to medical negligence and liability. | 8 Marks | L3 | CO2 |
| | b) | Write about the abuse and management of difficulty in patients. | 8 Marks | L1 | CO2 |

MODULE-III

6. a) Explain history taking, assessment test, documentation of treatment. 8 Marks L4 CO3
b) Justify treatment organization and planning for intervention. 8 Marks L3 CO3

(OR)

7. a) Evaluate the rehabilitation assessment and management using functional disability and health. 8 Marks L3 CO3
b) Assess the outline of the need for maintaining physiotherapy profession. 8 Marks L1 CO3

MODULE-IV

8. a) Simplify the concepts of teaching and learning, theories of learning. 8 Marks L4 CO4
b) Express the role of emotional intelligence in physiotherapy practice that treats the vulnerable people having ethical issues. 8 Marks L3 CO4

(OR)

9. a) Evaluate relationship between teaching and learning, psychology of learning. 8 Marks L3 CO4
b) Describe in detail about the personality in physiotherapy practice. 8 Marks L1 CO4

MODULE-V

10. a) Compare the guidance and counseling principles and concepts. 8 Marks L4 CO5
b) Examine the mentorship program in ethical issues in treating vulnerable population. 8 Marks L3 CO5

(OR)

11. a) Demonstrate the strategies and planning of teaching. 8 Marks L3 CO5
b) Write the lesson plan audio visual aids and teaching methods. 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 July – 2023

EXERCISE PHYSIOLOGY AND NUTRITION

[Orthopaedics, Sports]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

- | | | | | | |
|----|----|-----------------------------------------------------------|---------|----|-----|
| 1. | a) | Explain Macronutrients. | 2 Marks | L2 | CO1 |
| | b) | Define Exercise Physiology. | 2 Marks | L1 | CO1 |
| | c) | Write short notes on Measurement of Energy. | 2 Marks | L3 | CO2 |
| | d) | State the First Law of Thermodynamics. | 2 Marks | L1 | CO2 |
| | e) | Effect of the <i>parathyroid gland</i> . | 2 Marks | L3 | CO3 |
| | f) | Write short notes on Insulin. | 2 Marks | L1 | CO3 |
| | g) | What are the salient applications of BMI? | 2 Marks | L2 | CO4 |
| | h) | Distinguish between Conduction, Convection and Radiation. | 2 Marks | L3 | CO4 |
| | i) | Write short note on “ <i>endurance exercise</i> ”. | 2 Marks | L2 | CO5 |
| | j) | Briefly write about “ <i>exercise prescription</i> ”. | 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) | Classification of Macronutrients and its effects. | 8 Marks | L2 | CO1 |
| | b) | Explain the macronutrient necessary for weight lifting. | 8 Marks | L3 | CO1 |

(OR)

- | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------|---------|----|-----|
| 3. | a) | Define fatigue. Write about causes and prevention of fatigue. | 8 Marks | L1 | CO1 |
| | b) | Discuss about the facts ‘Measurement of Glycemic index’ and ‘Planning a diet for Diabetic Mellitus patients’. | 8 Marks | L4 | CO1 |

MODULE-II

- | | | | | | |
|----|----|---------------------------------------------------------|---------|----|-----|
| 4. | a) | Elaborate, the measurement of human energy expenditure. | 8 Marks | L4 | CO2 |
| | b) | Discuss, Energy transfer during exercise | 8 Marks | L3 | CO2 |

(OR)

- | | | | | | |
|----|----|------------------------------------------------------------------------|---------|----|-----|
| 5. | a) | Apply the concept of MET in exercise prescription and its limitations. | 8 Marks | L3 | CO2 |
| | b) | Elaborate, energy expenditure during swimming. | 8 Marks | L1 | CO2 |

MODULE-III

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------|---------|----|-----|
| 6. | a) | What are various types of exercises and write a detail note on mood enhancement exercises. | 8 Marks | L4 | CO3 |
| | b) | List and explain the effects of exercise on musculoskeletal system. | 8 Marks | L3 | CO3 |

(OR)

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|----|----|--------------------------------------------------------------------|---------|----|-----|
| 7. | a) | Demonstrate aerobic exercises and their influence on hypertension. | 8 Marks | L3 | CO3 |
| | b) | Define heart rate. Explain the intrinsic regulation of heart rate. | 8 Marks | L1 | CO3 |

MODULE-IV

- | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|
| 8. | a) | Differentiate the effects of aerobic exercise and anaerobic exercise on health with suitable examples. | 8 Marks | L4 | CO4 |
| | b) | Write about typical applications of 'principles of exercise training in sports'. | 8 Marks | L3 | CO4 |

(OR)

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|----|----|------------------------------------------------------------------------------|---------|----|-----|
| 9. | a) | Define Osteoporosis. Write about types of exercise training in osteoporosis. | 8 Marks | L3 | CO4 |
| | b) | Explain the physiological changes of exercise training. | 8 Marks | L1 | CO4 |

MODULE-V

- | | | | | | |
|-----|----|-----------------------------------------------------------|---------|----|-----|
| 10. | a) | Outline the different types of body composition analysis. | 8 Marks | L4 | CO5 |
| | b) | Distinguish between overweight, overfat, and obesity. | 8 Marks | L3 | CO5 |

(OR)

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|-----|----|-------------------------------------------------------------------------------|---------|----|-----|
| 11. | a) | Energy conservation exercises in aging. | 8 Marks | L3 | CO5 |
| | b) | Discuss the skin fold measurement procedure for analysis of subcutaneous 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, July – 2023

CLINICAL ELECTROPHYSIOLOGY

[Orthopaedics, Sports]

Time: 3 hours

Max. Marks: 100

PART - A

Answer All Questions.
All Questions Carry Equal Marks.

10 x 2 = 20 Marks

- | | | | | | |
|----|----|--------------------------------------------------------|---------|----|-----|
| 1. | a) | Label SNR and its formulae. | 2 Marks | L1 | CO1 |
| | b) | Utilize the Electrical properties of Excitable tissue. | 2 Marks | L3 | CO1 |
| | c) | Outline the surface markings in X-ray. | 2 Marks | L2 | CO2 |
| | d) | Recollect the types of needle electrodes in ECG. | 2 Marks | L1 | CO2 |
| | e) | Relate the Radial Nerve Entrapment Syndromes. | 2 Marks | L1 | CO3 |
| | f) | Define Onset of Latency and Amplitude. | 2 Marks | L2 | CO3 |
| | g) | Design the use of Electrodes in EEG. | 2 Marks | L2 | CO4 |
| | h) | Recognize the types of needle electrodes in EMG. | 2 Marks | L2 | CO4 |
| | i) | Design the Evoked Potential and its Types? | 2 Marks | L2 | CO5 |
| | j) | State the Cognitive 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) | Recall the Electrodes in Electro diagnostic tests and Electrical Properties of Muscles. | 8 Marks | L1 | CO1 |
| | b) | Demonstrate the Electrical properties of nerve tissue. | 8 Marks | L2 | CO1 |

(OR)

- | | | | | | |
|----|----|-------------------------------------------------|---------|----|-----|
| 3. | a) | Illustrate the Physiology of Pain? | 8 Marks | L2 | CO1 |
| | b) | Describe the measurements of electrical events? | 8 Marks | L3 | CO1 |

MODULE-II

- | | | | | | |
|----|----|----------------------------------------------------------------|---------|----|-----|
| 4. | a) | Memorize the ECG and Discuss the Electrodes Placements of ECG. | 8 Marks | L1 | CO2 |
| | b) | Characterize the Diagnostic Modalities of Ultrasound. | 8 Marks | L2 | CO2 |

(OR)

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|----|----|--------------------------------------------------|---------|----|-----|
| 5. | a) | Describe the Diagnostic Modalities of Doppler. | 8 Marks | L2 | CO2 |
| | b) | Acronym MRI and Discuss in detail about the MRI. | 8 Marks | L2 | CO2 |

MODULE-III

6. a) Explain in detail about the Radial Nerve- 8 Marks L3 CO3
a) Anatomy b) NCS and c) Ulnar Neuropathy.
b) Classify the Components of Nerve Conduction Study. 8 Marks L3 CO3

(OR)

7. a) Discuss in detail about the Entrapment Syndromes of Median 8 Marks L3 CO3
Nerve.
b) Enumerate the clinical Brachial Plexopathy. 8 Marks L2 CO3

MODULE-IV

8. a) Trace out the abnormal EMG wave forms. Explain the 8 Marks L3 CO4
interpretation for Neurogenic diseases.
b) Justify the Macro electromyography. 8 Marks L3 CO4

(OR)

9. a) Define biofeedback. Elucidate the technique of application and 8 Marks L3 CO4
effects of EMG biofeedback.
b) Predict the Repetitive nerve stimulation (RNS). 8 Marks L3 CO4

MODULE-V

10. a) Memorize Evoked Potential and Discuss the types of Evoked 8 Marks L3 CO5
Potentials.
b) Justify the Auditory Evoked Potential in Pediatric. 8 Marks L3 CO5

(OR)

11. a) Summarize the Waveform Identification and Measurement in 8 Marks L3 CO5
Cognitive Evoked Potential.
b) Elucidate the Brainstem evoked potential. 8 Marks L3 CO5



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 Business Systems]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1. a) Find a real root of the equation $\cos x = xe^x$ by Newton-Raphson method correct to three decimal places. 7 Marks L3 CO1 PO1
- b) Use the Regula Falsi method to find the 4th root of 32 correct to three decimal places. 7 Marks L3 CO1 PO1

(OR)

2. a) Using suitable interpolation, find $f(41)$ from the following table. 7 Marks L3 CO1 PO1
- | | | | | | | |
|-------------|-----|-----|-----|-----|-----|-----|
| x | 20 | 25 | 30 | 35 | 40 | 45 |
| f(x) | 354 | 332 | 291 | 260 | 231 | 204 |
- b) Find the polynomial $P(x)$ of degree 2 or less such that $P(1) = 1$, $P(3) = 27$, $P(4) = 64$. 7 Marks L3 CO1 PO1

UNIT-II

3. a) An experiment provides the following results for the pressure (P) and specific volume (V) of some vapor. 7 Marks L3 CO1 PO2

V	1	2	3	4	5
P	21	8	5	3.5	3

Find the rate of change of pressure with respect to volume when $V = 2$.

- b) Use Simpson's 1/3 rule to find $\int_0^{0.6} e^{-x^2} dx$ by taking seven ordinates. 7 Marks L3 CO1 PO2

(OR)

4. a) Solve the Recatti equation $\frac{dy}{dx} = x^2 + y^2$ using Taylor's method for the initial condition $y(0) = 0$, where $0 \leq x \leq 0.4$, and $h = 0.2$. 7 Marks L3 CO1 PO1
- b) Apply Runge-Kutta method to evaluate (1.2) from the differential equation $\frac{dy}{dx} = x - y$ with initial condition $y(1) = 1$, take $h = 0.1$. 7 Marks L5 CO1 PO2

UNIT-III

5. a) A random variable X has the following probability distribution 7 Marks L2 CO2 PO2
- | | | | | | | | | |
|-------------|---|----|----|----|----|----|----|----|
| x | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| P(x) | k | 2k | 3k | 4k | 5k | 6k | 7k | 8k |

Find: i) k ii) mean iii) $p(2 \leq X \leq 5)$

- b) A random variable has the probability density $f(x)$ as 7 Marks L2 CO2 PO2

$$f(x) = \begin{cases} ke^{-2x}; & \text{for } x > 0 \\ 0; & \text{for } x \leq 0 \end{cases}$$

Find: i) k ii) mean iii) variance of the distribution.

(OR)

6. a) A sample of 4 items is selected at random from a box containing 12 items of which 5 are defective. Find the expected number E of defective items. 7 Marks L2 CO2 PO2

- b) A random variable X has the following probability function. 7 Marks L2 CO2 PO2

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

Determine: i) k ii) Expectation iii) Variance

UNIT-IV

7. a) The mean and variance of a binomial distribution are 4 and $\frac{4}{3}$ respectively. Find $P(X \geq 1)$. 7 Marks L2 CO3 PO2

- b) Given a random variable having the normal distribution with $\mu = 16.2$ and $\sigma^2 = 1.5625$. Find the probabilities that it will take on a value i) greater than 16.8 ii) between 13.6 and 18.8 iii) less than 14.9. 7 Marks L2 CO3 PO2

(OR)

8. a) Fit a Poisson distribution to the following data and find the expected frequencies. 7 Marks L2 CO3 PO2

x	0	1	2	3	4
$f(x)$	109	65	22	3	1

- b) The number of personal computers (PCs) sold daily at computer world is uniformly distributed with minimum of 2000 PCs and a maximum of 5000 PCs. Find the probability that the:
 i) Daily sales will fall between 2500 and 3000 PCs.
 ii) Computer world will sell at least 4000 PCs.
 iii) Computer world will exactly sell 2500 PCs. 7 Marks L2 CO3 PO2

UNIT-V

9. a) Write about:
 i) Null hypothesis ii) Type-I and Type-II errors
 iii) Alternative hypothesis iv) Critical region. 7 Marks L1 CO4 PO1

- b) A manufacturer claimed that at least 95% of the equipment which he supplied to a factory conformed to specifications. An examination of a sample of 200 pieces of equipment revealed that 18 were faulty. Test this claim at 5% level of significance. 7 Marks L2 CO4 PO2

(OR)

- 10 a) The blood pressure of 5 women before and after intake of a certain drug is given below. 7 Marks L2 CO4 PO5

Before	110	120	125	132	125
After	120	118	125	136	121

Test whether there is significant change in blood pressure at 1% level of significance.

- b) A pair of dice is thrown 360 times and the frequency (f) of each sum (s) is indicated below. 7 Marks L2 CO4 PO5

s	2	3	4	5	6	7	8	9	10	11	12
f	8	24	35	37	44	65	51	42	26	14	14

Would you say that the dice are fair on the basis of the Chi-square test at 0.05 level of significance?



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

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) | Prove that $\Gamma\left(\frac{1}{2}\right) = \sqrt{\pi}$. | 7 Marks | L1 | CO1 | PO1 |
| | b) | Prove that $\int_0^1 x^5(1-x)^3 dx = \frac{1}{504}$. | 7 Marks | L1 | CO1 | PO1 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) | Evaluate $\int_0^\infty xe^{-x^8} dx$. $\int_0^\infty x^2 e^{-x^4} dx$ using beta and gamma functions. | 7 Marks | L5 | CO1 | PO1 |
| | b) | Prove that $\int_0^\infty \frac{x^8(1-x^6)dx}{(1+x)^{24}} = 0$ using $\beta - \Gamma$ functions. | 7 Marks | L3 | CO1 | PO1 |

UNIT-II

- | | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | Prove that $J_{\frac{1}{2}}(x) = \sqrt{\frac{2}{\pi x}} \sin x$. | 7 Marks | L1 | CO2 | PO2 |
| | b) | Express $x^3 - 5x^2 + x + 2$ in terms of Legendre polynomials. | 7 Marks | L2 | CO2 | PO2 |
- (OR)
- | | | | | | | |
|----|----|------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Prove that $\frac{d}{dx} [x^{-n} J_n(x)] = -x^{-n} J_{n+1}(x)$. | 7 Marks | L2 | CO2 | PO1 |
| | b) | Show that $P'_n(1) = \frac{n(n+1)}{2}$. | 7 Marks | L2 | CO2 | PO2 |

UNIT-III

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) | Determine the analytic function whose real part is $e^x \cos y$. | 7 Marks | L3 | CO3 | PO2 |
| | b) | Find the image of the region in the z -plane between the lines $y=0$ and $y = \frac{\pi}{2}$ under the transformation $w = e^z$. | 7 Marks | L3 | CO4 | PO2 |
- (OR)
- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) | Show that $f(z) = z + 2\bar{z}$ is not analytic anywhere in the complex plane. | 7 Marks | L1 | CO3 | PO2 |
| | b) | Find the bilinear transformation which transforms the points $-1,0,1$ in the z -plane into $0,i,3i$ in w -plane. | 7 Marks | L3 | CO4 | PO2 |

UNIT-IV

7. a) Evaluate $\int_C \frac{z}{(z-1)(z-2)^2} dz$, using Cauchy's integral formula, 7 Marks L5 CO5 PO2
where $C: |z-2| = \frac{1}{2}$.

b) Find Taylor's expansion of $f(z) = \frac{z+1}{(z-3)(z-4)}$ about the 7 Marks L3 CO5 PO2
point $z=2$.

(OR)

8. a) Using Cauchy's integral formula, evaluate 7 Marks L3 CO5 PO2
 $\int_C \frac{z^2 - z - 1}{z(z-i)^2} dz$, with $C: \left|z - \frac{1}{2}\right| = 1$.

b) Express $f(z) = \frac{z}{(z-1)(z-3)}$ in a series of positive and negative 7 Marks L2 CO5 PO2
powers of $(z-1)$.

UNIT-V

9. a) Determine the poles and the residues at each pole of 7 Marks L3 CO5 PO1
 $f(z) = \frac{e^z}{z^2 + \pi^2}$.

b) Evaluate $\int_C \frac{\cos \pi z^2}{(z-1)(z-2)} dz$ using residue theorem, where 7 Marks L5 CO5 PO2
 C is $|z| = \frac{3}{2}$.

(OR)

10 Show by the method of residues $\int_0^{2\pi} \frac{1 + 4 \cos \theta}{17 + 8 \cos \theta} d\theta = 0$. 14 Marks L3 CO5 PO3



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 (Internet of Things)]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

1. a) Construct the truth table for the following: 7 Marks L2 CO1 PO1
 $[(p \vee q) \wedge (\sim r)] \leftrightarrow (q \rightarrow r)$.
- b) Obtain the principle conjunctive normal form of the following: 7 Marks L4 CO1 PO1
 i) $p \wedge q$ using truth table
 ii) $(\sim p \Rightarrow r) \wedge (q \Leftrightarrow p)$ without using the truth table.

(OR)

2. a) Explain rules of inference using examples. 7 Marks L2 CO1 PO1
 PO1
- b) Use truth table to verify the associative law $(P \vee Q) \vee r = P \vee (Q \vee r)$. 7 Marks L4 CO1 PO1

UNIT-II

3. a) Let $X = \{1, 2, 3, 4\}$ and $R = \{(1, 1), (1, 4), (4, 1), (4, 4), (2, 2), (2, 3), (3, 2), (3, 3)\}$. Prove that R is an equivalence relation. 7 Marks L4 CO2 PO2
- b) Draw the Hasse diagram for the partial ordering \subseteq on the power set P(S) where $S = \{a, b, c\}$. 7 Marks L3 CO2 PO2
 PO1

(OR)

4. a) If the relations R and S are irreflexive, Show that $R \cup S$ and $R \cap S$ are also irreflexive. 7 Marks L3 CO2 PO2
 PO1
- b) Let $X = \{1, 2, 3, 4\}$ and f and g be functions from X to X given by $f = \{(1, 4), (2, 1), (3, 2), (4, 3)\}$ and $g = \{(1, 2), (2, 3), (3, 4), (4, 1)\}$. Prove that f and g are inverses of each other. 7 Marks L4 CO2 PO2

UNIT-III

5. a) Let $(A, *)$ be a semi group. Show that for a, b, c in A if $a * c = c * a$ and $b * c = c * b$, then $(a * b) * c = c * (a * b)$. 7 Marks L3 CO3 PO1
 PO3
- b) Let $H = \{4, 8, 12\}$ Check that $(H, +6)$ is a sub group of $(Z_6, +6)$. 7 Marks L4 CO3 PO2
 PO3

(OR)

- | | | | | | | |
|----|----|-----------------------------------------------------------------------|---------|----|-----|------------|
| 6. | a) | Show that the intersection of two submonoids of a monoid is a monoid. | 7 Marks | L3 | CO3 | PO3
PO1 |
| | b) | Prove that every cyclic group is abelian group. | 7 Marks | L4 | CO3 | PO3
PO1 |

UNIT-IV

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 7. | a) | Prove by the principle of mathematical induction that $1^2+2^2+3^2+4^2+\dots+n^2= n(n+1)(2n+1)/6$ where 'n' is a +ve integer. | 7 Marks | L3 | CO4 | PO3
PO1 |
| | b) | What is the pigeonhole principle? Explain with example. | 7 Marks | L2 | CO4 | PO1
PO1 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 8. | a) | What is meant by the principle of inclusion and exclusion? How many integers from 1 to 100 are multiples of 2 or 3 solve by inclusion and exclusion principle? | 7 Marks | L3 | CO4 | PO1
PO3 |
| | b) | Compute the number of integers between 1000 and 10000 that are not divisible by 2, 3, 5 or 7. | 7 Marks | L3 | CO4 | PO2
PO3 |

UNIT-V

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 9. | a) | What is Graph? Explain basic terminology and various types of graphs. | 7 Marks | L2 | CO5 | PO3
PO1 |
| | b) | What do you mean by a spanning tree? Explain BFS method for finding a spanning tree from the undirected connected graph. | 7 Marks | L4 | CO5 | PO1
PO3 |

(OR)

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 10 | a) | Can a graph have both Euler path and Euler circuit? How to find whether a given graph is Eulerian or not? | 7 Marks | L4 | CO5 | PO2
PO3 |
| | b) | Explain Graph coloring problem with an example. | 7 Marks | L2 | CO5 | PO1
PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**CONSTRUCTION, PLANNING AND PROJECT MANAGEMENT****[Civil 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 types of foundation and explain its applications. 7 Marks L2 CO1 PO1
PO2
PO5
- b) Compare cavity walls and partition walls. 7 Marks L4 CO1 PO1
PO2
PO5
PO10

(OR)

2. a) Draw the king post truss and mention the parts. 8 Marks L3 CO1 PO1
PO3
PO5
- b) Write short notes on: 6 Marks L2 CO1 PO1
i) Lintel, ii) Arch, and iii) Vaults PO2
PO10

UNIT-II

3. a) Distinguish clearly between plastering and pointing. 6 Marks L4 CO2 PO1
PO2
PO5
PO7
- b) What is distemper? And discuss how it is more economical as compare with other types of paint? 8 Marks L2 CO2 PO1
PO2
PO10

(OR)

4. a) Explain about the Form work for slabs and beams with sketches. 8 Marks L2 CO2 PO1
PO7
PO12
- b) Discuss the following with sketches: 6 Marks L2 CO2 PO1
i) Single scaffolds. PO7
ii) Double scaffolds, and PO12
iii) Ladder scaffolds

UNIT-III

5. a) Explain about the importance of safety in construction projects. 7 Marks L2 CO3 PO1
PO2
PO5
PO6
PO9
PO11
- b) List out the salient features of Workmen's act of 1923. 7 Marks L1 CO3 PO1
PO6
PO8
PO11

(OR)

6. a) Discuss about the hoisting and earthwork equipment. 7 Marks L2 CO3 PO1
PO5
PO6
PO9
- b) Explain the steps involved in Resource Smoothing and Resource Leveling. 7 Marks L2 CO3 PO1
PO2
PO9
PO11

UNIT-IV

7. a) What are the shortcomings of bar charts? How are these removed? 7 Marks L2 CO4 PO1
PO2
PO3
PO5
PO10
PO11
- b) What is a Gantt bar chart? Explain how you control the project period with the help of suitable example for the project management. 7 Marks L3 CO4 PO1
PO2
PO3
PO5
PO10
PO11

(OR)

8. a) What are the basic elements in a project network? Explain each with a suitable example. 7 Marks L2 CO4 PO1
PO3
PO10
PO11
- b) Explain briefly about the graphical guidelines of network and numbering the events in network. 7 Marks L2 CO4 PO1
PO2
PO3
PO11

UNIT-V

9. a) What is resource allocation? Illustrate with an example. 7 Marks L2 CO5 PO1
PO2
PO3
PO4
PO10
PO11
- b) Differentiate clearly between most likely time estimate (t_L), mean time (t_m) and expected time (T_E). 7 Marks L4 CO5 PO1
PO5
PO10
PO11

(OR)

10. A small project consists of 7 activities. The time estimates (in weeks) of different activities are given below. 14 Marks L6 CO5 PO1
PO2
PO3
PO4
PO5
PO11
- | Activity | 1-2 | 1-3 | 1-4 | 2-5 | 3-5 | 4-6 | 5-6 |
|----------|-----|-----|-----|-----|-----|-----|-----|
| t_o | 1 | 1 | 2 | 1 | 2 | 2 | 3 |
| t_m | 1 | 4 | 2 | 1 | 5 | 5 | 6 |
| t_p | 7 | 7 | 8 | 1 | 14 | 8 | 15 |

- i) Find the critical path.
ii) What is the expected project length?
iii) What is the probability of not completing project within 18 weeks?
iv) What is the probability of completing the project 3 weeks

earlier than expected time?



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) A plate having an area of 0.6 m^2 is sliding down the inclined plane at 30° to the horizontal with a velocity of 0.36 m/s . There is a cushion of fluid 1.8 mm thick between the plane and the plate. Find the viscosity of the fluid if the weight of the plate | 7 Marks | L4 | CO1 | PO1
PO2 |
| | b) A differential manometer connected at the two points A and B in a pipe containing an oil of specific gravity of 0.9 shows a difference in mercury levels as 150 mm . Find the difference in pressures at the two points. | 7 Marks | L4 | CO1 | PO1
PO2
PO4
PO10 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------|
| 2. | a) A rectangular plane surface is 2.5 m wide and 4 m deep. It lies in vertical plane in water. Determine the total pressure and position of centre of pressure on the plane surface when its upper edge is horizontal and i) coincides with water surface ii) 3 m below the free water surface. | 7 Marks | L4 | CO1 | PO1
PO2
PO4 |
| | b) State and prove the Hydrostatic law. | 7 Marks | L4 | CO1 | PO1
PO2
PO5
PO10 |

UNIT-II

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------|
| 3. | a) Distinguish between rotational flow and irrotational flow. Give one example of each. | 7 Marks | L4 | CO2 | PO1
PO2 |
| | b) A stream function is given by $\Psi = 5x - 6y$. Calculate the velocity component and also the magnitude and direction of resultant velocity at any point. | 7 Marks | L4 | CO2 | PO1
PO2
PO4
PO10 |

(OR)

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|--------------------|
| 4. | a) Water flows through a pipe AB 1.2 m diameter at 3 m/s and then passes through a pipe BC 1.5 cm diameter. At C, the pipe branches. Branch CD is 0.8 m in diameter and carries one third of its flow in AB. The flow velocity in branch CE is 2.5 m/s . Find the volume rate of flow in AB, the velocity in BC, the velocity in CD and the diameter of CE. | 7 Marks | L4 | CO2 | PO1
PO2
PO10 |
| | b) What is Venturimeter? Derive an expression for the discharge through a Venturimeter. | 7 Marks | L4 | CO2 | PO1
PO2
PO10 |

UNIT-III

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------------|
| 5. | a) In a pipe of length 80 m is flowing at a velocity of 3 m/s . Design the diameter of the pipe using Darcy Weisbach formula. Consider the head loss in the pipe = 2.5 m , coefficient of friction = 0.003 . | 7 Marks | L6 | CO3 | PO1
PO2
PO3
PO4
PO5 |
| | b) At a sudden contraction of water line from diameter of 350 mm to 250 mm and volumetric flow rate $0.03 \text{ m}^3/\text{s}$. Determine the | 7 Marks | L4 | CO4 | PO1
PO2 |

head loss due to contraction. Consider co-efficient of contraction as 0.58.

PO4

(OR)

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------------|
| 6. | a) | Explain and discuss about dimensionless numbers and its significance. | 7 Marks | L2 | CO4 | PO1
PO2
PO5 |
| | b) | In 1 in 40 model of a spillway, the velocity and discharge are 2 m/s and 2.5 m ³ /s, find the corresponding velocity and discharge in the prototype. | 7 Marks | L6 | CO3 | PO1
PO2
PO3
PO4
PO5 |

UNIT-IV

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|----------------------------------|
| 7. | a) | List out types of flows in channels and explain. | 7 Marks | L2 | CO5 | PO1
PO10 |
| | b) | Determine the most economical section of a rectangular channel carrying water at the rate of 0.5 m ³ /s; the bed slope of the channels being 1 in 2000. Take Chezy's constant C = 50. | 7 Marks | L6 | CO5 | PO1
PO2
PO3
PO4
PO10 |

(OR)

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|----------------------------------|
| 8. | a) | The specific energy for a 3 m wide channel is to be 3Nm/N. What would be the maximum possible discharge? | 7 Marks | L4 | CO5 | PO1
PO2
PO10 |
| | b) | A trapezoidal channel having the side slope equal to 70° with the horizontal and laid on a slope of 1 in 500, carries a discharge of 5 m ³ /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 = 55. | 7 Marks | L6 | CO5 | PO1
PO2
PO3
PO4
PO10 |

UNIT-V

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------------|
| 9. | a) | The water available for a Pelton wheel is 3.5 m ³ /s and the total head from the reservoir to the nozzle is 220 m. The turbine has two runners with two jets per runner. All the four jets have the same diameters. The pipe is 2.5 km long. The efficiency of transmission through the pipeline and the nozzle is 91% and efficiency of each runner is 90%. The velocity co-efficient of each nozzle is 0.975 and co-efficient of friction '4f' for the pipe is 0.0045. Determine:
i) The power developed by the turbine.
ii) The diameter of the jet.
iii) The diameter of the pipeline. | 7 Marks | L6 | CO6 | PO1
PO2
PO3
PO4
PO5 |
| | b) | The internal and external diameters of the impeller of the centrifugal pump are 200 mm and 400 mm respectively. The pump is running at 1200 rpm. The vane angles of the impeller at the inlet and outlet are 20° and 30° respectively. The water enters the impeller radially and the velocity of flow is constant. Determine the work done by the impeller per unit weight of water. | 7 Marks | L4 | CO6 | PO1
PO2
PO4
PO5 |

(OR)

- | | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|----------------------------------|
| 10 | a) | A Kaplan turbine develops 25647.6 kW power at an average head of 40 meters. Assuming the speed ratio of 2, flow ratio 0.6, diameter of the boss equal to 0.35 times the diameter of runner and the overall efficiency of 85%, calculate the diameter, speed and specific speed of the turbine. | 7 Marks | L6 | CO6 | PO1
PO2
PO3
PO4
PO10 |
| | b) | A single acting reciprocating pump operates at 60 rpm has a piston diameter of 200 mm and stroke of 300 mm. The suction | 7 Marks | L4 | CO6 | PO1
PO2 |

and delivery heads are 4 m and 20 m respectively. If the efficiencies of both suction and delivery strokes is 75%, determine the power required by the pump.

PO4
PO5



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

MECHANICS OF SOLIDS

[Civil Engineering]

Time: 3 hours

Max. Marks: 70

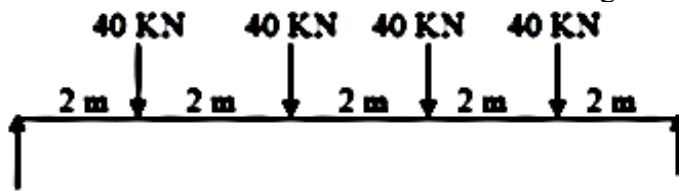
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------|
| 1. | a) | Define beam, what are the types of beam. Explain rate of loading at a section of beam. | 7 Marks | L4 | CO1 | PO1
PO2
PO4
PO10 |
| | b) | A Cantilever 1.5m long is loaded with a UDL of 2KN/m run over a length of 1.25m from free end. It also carries a point load of 3KN at a distance of 0.25m from free end. Draw SFD and BMD. | 7 Marks | L4 | CO1 | PO1
PO2
PO4
PO10 |

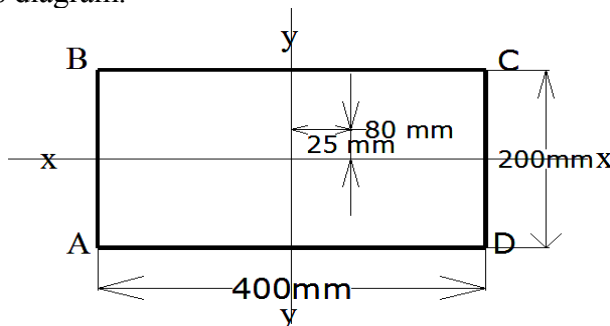
(OR)

- | | | | | | |
|----|---------------------------------------------------------|----------|----|-----|---------------------------|
| 2. | Draw the S. F. D & B.M.D. for the beam shown in Figure. | 14 Marks | L3 | CO1 | PO1
PO2
PO4
PO10 |
|----|---------------------------------------------------------|----------|----|-----|---------------------------|



UNIT-II

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----------------------------------------|
| 3. | a) | Derive an expression for strain energy due to bending. | 7 Marks | L4 | CO2 | PO1
PO2
PO3
PO4
PO6
PO10 |
| | b) | In the rectangular section the compressive load P = 80kN is applied as shown in fig. Find the stresses at each corner and draw the stress diagram. | 7 Marks | L4 | CO2 | PO1
PO2
PO10 |



(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|----------------------------------|
| 4. | Derive an expression for the Normal and Tangential Stresses on an oblique plane, when the body is subjected to direct stresses in two mutually perpendicular direction accompanied by a shear stress. | 14 Marks | L4 | CO2 | PO1
PO2
PO4
PO5
PO10 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|----------------------------------|

UNIT-III

5. A solid shaft has to transmit 75KW at 200 rpm, taking allowable shear stress as 70N/mm^2 . Find suitable diameter for shaft, if the maximum torque transmitted at each revolution exceeds the mean by 30%. 14 Marks L4 CO3 PO1
PO2
PO4
PO5
PO10

(OR)

6. A closely-coiled helical spring has 20 turns of wire diameter 25mm. The mean radius of coils is 100mm. Find the maximum shear stress and elongation of the spring under an axial load of 2kN. $G = 85\text{GPa}$. 14 Marks L4 CO4 PO1
PO2
PO4
PO6

UNIT-IV

7. In a plane stress system the normal stress along X and Y planes are 200N/mm^2 and 100N/mm^2 respectively and a shear stress 80N/mm^2 . Determine the principle planes and principle stresses by mohr's circle method. 14 Marks L4 CO5 PO1
PO2
PO10

(OR)

8. Derive an expression for the stresses on an oblique plane of a rectangular body, when the body is subjected simple shear stresses. 14 Marks L4 CO5 PO1
PO2
PO6
PO10

UNIT-V

9. At a point in a stressed material the principle stresses are 90N/mm^2 (tensile), 60N/mm^2 (tensile) and 30N/mm^2 (compressive). Find the factor of safety according to maximum shear stress theory. If the yield stress is 230N/mm^2 . 14 Marks L4 CO6 PO1
PO2
PO5
PO6

(OR)

10. Derive the expression for the crippling load by Rankine's method. 14 Marks L4 CO6 PO1
PO2



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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**SURVEYING**
[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 different types of errors? Illustrate your answer for the case of linear measurement with a tape. | 6 Marks | L2 | CO1 | PO1 |
| | b) A line was measured with a steel tape which was exactly 30m at 20°C and at a pull of 98.1 N, the measured length being 1650.00 m. The temperature during measurement was 30°C, and the pull was 147.15 N. Find the true length of the line if the cross sectional area of the tape was 0.025 cm ² . The coefficient of expansion of the material of the tape per °C = 3.5 x 10 ⁻⁶ , and modulus of elasticity of the material of the tape = 2.06 x 10 ⁵ N/mm ² . | 8 Marks | L4 | CO1 | PO1
PO2 |

(OR)

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 2. | a) What is local attraction? How would you detect it at a place? Explain the methods of determination of the correct bearings of lines of a traverse if some stations are suspected of local attraction. | 7 Marks | L3 | CO1 | PO1
PO2
PO4 |
| | b) What are the different types of errors in compass traverse? How can these be minimized? | 7 Marks | L2 | CO1 | PO1
PO2 |

UNIT-II

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|--------------------------|
| 3. | a) Discuss various uses of contour maps. | 6 Marks | L2 | CO2 | PO1
PO5 |
| | b) The following consecutive readings were taken with a dumpy level and a 4m staff on continuously sloping ground at 30m intervals.
0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530, 2.250.
The R.L. of the starting point was 90.750.
i) Rule out a page of level book and enter the readings.
ii) Carry out reductions of heights by collimation method.
iii) Apply arithmetic checks.
iv) Determine the gradients of line joining the first and last point. | 8 Marks | L4 | CO2 | PO1
PO2
PO4
PO5 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------|---------|----|-----|--------------------------|
| 4. | a) Describe both the methods of reducing the levels, and their relative advantages and disadvantages. | 6 Marks | L3 | CO2 | PO1
PO2 |
| | b) Describe briefly the radiation method and intersection method of plane table surveying with help of neat sketches. | 8 Marks | L2 | CO1 | PO1
PO2
PO4
PO5 |

UNIT-III

5. a) How would you measure a horizontal angle by repetition? What are its advantages? 7 Marks L3 CO3 PO1
PO2
PO4
PO5
- b) What do you understand by omitted measurements? What are various cases? Explain any two cases in brief. 7 Marks L2 CO3 PO1
PO2

(OR)

6. a) Explain the procedure to determine the tacheometric constants by. 6 Marks L3 CO3 PO1
PO2
- i) Fixed hair method ii) Movable hair method
- b) The stadia readings with horizontal sight on a vertical staff held 50 m from a tacheometer were 1.285 m and 1.780 m. The focal length of the object glass was 25 cm. The distance between the object glass and the vertical axis of the tacheometer was 15 cm. Calculate the stadia interval. 8 Marks L4 CO3 PO1
PO2
PO4

UNIT-IV

7. a) Draw the sketch of a two-level section, and derive an expression for the area of cross-section. 7 Marks L3 CO4 PO1
PO2
- b) Calculate the volume of embankment of which the cross-sectional areas at 20m interval are as follows. Use 7 Marks L4 CO4 PO1
PO2
- i) trapezoidal formula ii) prismoidal rule.

Distance (m)	0	20	40	60	80	100	120
Area (m ²)	10	45	68	72	150	190	240

(OR)

8. a) Mention the various linear methods adopted for setting out simple curves. Explain any two methods in details with neat sketches. 7 Marks L2 CO5 PO1
PO2
- b) Two roads having a deviation angle of 45° at apex point V are to be joined by a 200 m radius circular curve. If the chainage of apex point is 1839.2 m, calculate necessary data to set the curve by ordinates from long chord at 10 m interval. 7 Marks L6 CO5 PO1
PO2
PO3
PO6

UNIT-V

9. a) Write down the working principle of total station. What are the various applications of total station? 7 Marks L3 CO6 PO1
PO2
PO5
PO6
- b) List out various modern surveying electronic equipment. Discuss them briefly. 7 Marks L2 CO6 PO1
PO2
PO5

(OR)

10. a) How can we determine the areas and stockpile volumes using drone surveying? Explain. 7 Marks L3 CO6 PO1
PO2
PO5
PO10
PO12
- b) State the working principle of drone surveying. What are the various applications of drone surveying? 7 Marks L2 CO6 PO1
PO5
PO10
PO12



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) Derive the expression for electric field intensity due to an infinite line charge. 7 Marks L2 CO1 PO1
- b) Determine the electric field intensity produced by a point charge distribution at P(1,1,1) caused by four identical 3nC point charges located at A(1,1,0), B(-1,1,0), C(-1,-1,0) and D(1,-1,0). 7 Marks L3 CO1 PO2

(OR)

2. a) State and compare Coulomb's Law and Gauss's Law. 7 Marks L2 CO1 PO1
- b) The potential in a certain region is given as $V=x^4+4y^3+8z$. Find the electric field intensity at the point P(1,-3,4). 7 Marks L3 CO1 PO2

UNIT-II

3. a) Derive the expressions for potential and electric field intensity due to a dipole. 7 Marks L2 CO2 PO1
- b) A capacitor consists of square shape metal plates of each 80 cm side placed parallel and 3 mm apart. The space between the plates is filled with a dielectric having a relative permittivity of 3. A potential difference of 300 V is maintained between the plates. Calculate i) the capacitance ii) charge on the capacitor iii) the electric flux density iv) energy stored in the capacitor. 7 Marks L3 CO2 PO2

(OR)

4. a) Explain the boundary conditions between conductor and free space for electric fields. 7 Marks L2 CO2 PO1
- b) Derive the expression for capacitance of a parallel plate capacitor with composite dielectric. 7 Marks L2 CO2 PO1

UNIT-III

5. a) Using Ampere's circuital Law, obtain an expression for magnetic field intensity due to a toroid. 7 Marks L3 CO3 PO5
- b) Derive an expression for magnetic field intensity due to an infinite current carrying conductor using Biot-Savart's Law. 7 Marks L3 CO3 PO5

(OR)

6. a) Obtain the expression for Magnetic field strength in all the regions, if a cylindrical conductor carries a DC current of 'I' and its radius is 'R' m and also plot the variation of Magnetic field strength against the distance 'r' from the Centre of the conductor. 7 Marks L3 CO3 PO2
- b) A surface current density $\vec{K} = 30\vec{a}_x$ A/m flows in y=0 plane throughout the region $-5 < Z < 5$ m, $-\infty < X < \infty$. Find \vec{H} at (0,15,0) in free space. 7 Marks L3 CO3 PO2

UNIT-IV

7. a) Obtain the expression for torque on a current loop placed in a magnetic field. 7 Marks L2 CO3 PO1
- b) A rectangular coil carrying a current of 5A is placed in the magnetic field $\vec{B} = 0.3(\vec{a}_x + \vec{a}_y)T$. The coil is lying in the y-z plane and has dimensions 0.8m x 0.4m. Find the torque on the coil. 7 Marks L3 CO3 PO2

(OR)

8. a) Derive the expression of force for the following cases: 6 Marks L2 CO3 PO1
- i) Due to a charged particle in magnetic field.
- ii) Differential current element.
- b) If a point charge of 3 coulombs moves with a velocity of $\vec{u} = 7\vec{a}_x + 4\vec{a}_y - 6\vec{a}_z \text{ m/s}$, find the force exerted. 8 Marks L3 CO3 PO2
- i) if the electric field intensity is $\vec{E} = 12\vec{a}_x + 4\vec{a}_y - 6\vec{a}_z \text{ V/m}$
- ii) if the flux density is $\vec{B} = 6\vec{a}_x + 5\vec{a}_y - 6\vec{a}_z \text{ wb/m}^2$.

UNIT-V

9. Write the Maxwell's equations in both point form and integral forms for free space and good conductor. 14 Marks L2 CO4 PO1
- (OR)**
- 10 a) Differentiate between statically induced EMF and dynamically induced EMF and discuss their applications in electrical machines. 8 Marks L2 CO4 PO6
- b) A capacitor has a capacitance of 1.5pF. Find the displacement current at $t=0$, if a voltage $5\sin 100(\pi*t)$ is applied to it. 6 Marks L3 CO4 PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) Briefly explain the lap and wave type of armature windings. | 7 Marks | L3 | CO1 | PO2 |
| | b) Briefly explain the various types of losses in a DC generator. Draw the power flow diagram. | 7 Marks | L3 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Derive the expression for generated e.m.f in a DC generator. | 7 Marks | L3 | CO1 | PO2 |
| | b) An 8-pole DC machine has an armature with 100 slots and 12 conductors per slot runs at 1500 r.p.m, the flux per pole is 0.05 wb. Determine the induced e.m.f if winding is Lap connected and wave connected. | 7 Marks | L3 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|----|-----------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Define commutation and explain the process of commutation in a DC generator. | 8 Marks | L3 | CO2 | PO5 |
| | b) What are the different types of excitation in a DC generator? Explain them in brief. | 6 Marks | L3 | CO2 | PO5 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Explain the internal and external characteristics of DC shunt and DC series generator. | 7 Marks | L3 | CO2 | PO5 |
| | b) An 8-pole dc shunt generator has 778 wave armature conductors running at 500 rpm supplies a load of 10Ω resistance at a terminal voltage of 230V. The armature resistance is 0.1Ω and field resistance is 250Ω. Find out the armature current, induced emf, flux per pole. | 7 Marks | L2 | CO2 | PO1 |

UNIT-III

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Define back e.m.f, explain its significance and derive the expression for it. | 7 Marks | L3 | CO2 | PO5 |
| | b) Explain the speed control methods armature control and field control for a DC shunt motor. | 7 Marks | L3 | CO2 | PO5 |

(OR)

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Explain the speed-torque, torque-current characteristics of DC shunt motor. | 7 Marks | L3 | CO2 | PO5 |
| | b) A 220V D.C series motor runs at 1000 rpm when taking a current of 20A. The resistance of armature is 0.5Ω and that of field is 0.3Ω. If the current remains constant, calculate the resistance required to reduce the speed to 240 rpm. | 7 Marks | L3 | CO2 | PO5 |

UNIT-IV

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Derive the expression for efficiency of a transformer. | 7 Marks | L3 | CO3 | PO5 |
| | b) | Calculate the efficiency of a 20kVA 2500V/250V single transformer from the following data.
OC Test (L.V):250V, 1.4A, 105W
SC Test (H.V): 104V, 8A, 320W. | 7 Marks | L3 | CO3 | PO5 |

(OR)

- | | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | Derive the expression for emf induced in transformer. | 7 Marks | L3 | CO3 | PO5 |
| | b) | What is an auto transformer? Explain the comparison of two winding transformer and auto transformer. | 7 Marks | L2 | CO3 | PO1 |

UNIT-V

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | Explain the scott connection of a transformer. | 7 Marks | L3 | CO4 | PO4 |
| | b) | A Δ - Δ bank consisting of three 20kVA, 2300V/230V transformers supplies a load of 40kVA. If one the transformer is removes find the results for the V-V connection. a) kVA load carried by each transformer, percent of load carried by each transformer, tota kVA rating of the V-V bank. | 7 Marks | L2 | CO4 | PO1 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------|---------|----|-----|-----|
| 10 | a) | Explain the operation of a OFF load tap changing transformer. | 7 Marks | L3 | CO4 | PO4 |
| . | b) | Explain the tertiary winding connection of a transformer. | 7 Marks | L2 | CO4 | PO1 |



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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

SIGNALS AND NETWORKS

[Electrical and Electronics Engineering]

Time: 3 hours

Max. Marks: 70

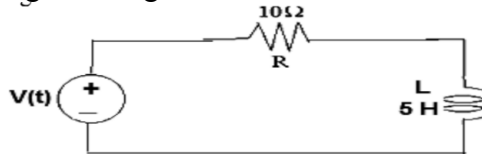
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Write short notes on the following signals. 7 Marks L2 CO1 PO1
 i) Unit step ii) Unit impulse
 iii) Unit ramp iv) Signum function
 - b) How are signals classified? Differentiate between them. 7 Marks L2 CO1 PO6
- (OR)**
2. Determine whether the following systems are linear, time invariant, causal, static or not. 14 Marks L3 CO1 PO1
 i) $y(n) = x(n^2)$ ii) $y(n) = x^2(n)$
 iii) $y(n) = ax(n) + b$ iv) $y(n) = e^{x(n)}$

UNIT-II

3. a) State the properties of Fourier series and Fourier transform. 7 Marks L2 CO1 PO1
- b) Determine the current passing through inductor $i(t)$, if the source of voltage applied to circuit is $v(t) = 5 + 8(\sin t + \sin 3t + \sin 5t)$ as shown in figure using Fourier transform. 7 Marks L2 CO1 PO5



(OR)

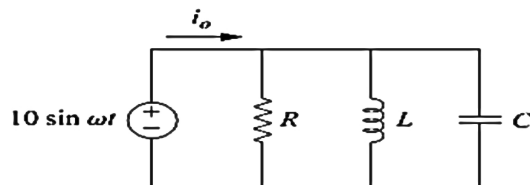
4. a) Compare Fourier and Laplace transforms in solving the network problems. 7 Marks L2 CO2 PO1
- b) Using the modulation theorem find out the Fourier transform of RF pulse Given as $y(t) = A \text{rect}(t/\tau) \cos 2\pi f_c t$. 7 Marks L2 CO2 PO5

UNIT-III

5. a) Find the Laplace transform and ROC of the signal. $-e^{-at}U(-t)$. 7 Marks L1 CO3 PO1
 - b) Find the Laplace transform of the function $f(t) = A \sin \omega_0 t$ for $0 < t < T/2$. 7 Marks L2 CO3 PO6
- (OR)**
6. a) Explain the initial value and final value theorems. 7 Marks L2 CO3 PO1
 - b) Explain how Impulse Response and Transfer Function of a LTI system are related. 7 Marks L3 CO3 PO5

UNIT-IV

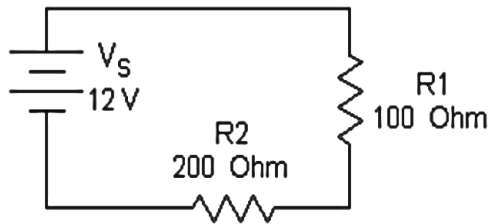
7. a) In the parallel RLC circuit of figure, assume $R=8k\Omega$, $L=0.2mH$ and $C=8\mu F$ then calculate resonant frequency, half-power frequencies, bandwidth and quality factor. 7 Marks L1 CO4 PO1



- b) Design a series RLC circuit that resonates at 1.5KHz and consumes 50W from a 50V AC source operating at the resonance frequency. The bandwidth is 0.75KHz. 7 Marks L2 CO4 PO1

(OR)

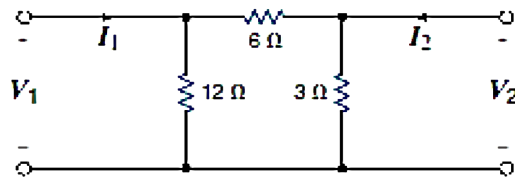
8. a) Differentiate RL and RC circuits. 7 Marks L2 CO4 PO1
 b) For the electrical network shown below, answer the following. 7 Marks L2 CO4 PO5



- i) Find the impulse response function for this network.
 ii) Determine the frequency response function.
 iii) Sketch the magnitude and the phase response. Assume that the output is taken across the 100ohm resistor.

UNIT-V

9. a) The impedance parameters of a two-port network are $Z_{11} = 10\Omega$, $Z_{22} = 15\Omega$, $Z_{12} = Z_{21} = 5\Omega$. Compute the equivalent T network and ABCD parameters. 7 Marks L1 CO5 PO1
 b) Compute the Z parameters and T parameters of the two port network shown in figure. 7 Marks L2 CO5 PO3



(OR)

- 10 a) Define the driving point function and transfer Function with relevant expression of a two-port network. 7 Marks L2 CO5 PO5
 b) Explain the transmission (ABCD) parameters in detail. 7 Marks L3 CO5 PO5



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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 about: 7 Marks L2 CO1 PO1
 i) Thermodynamic equilibrium
 ii) Quasi-Static process and
 iii) Temperature.
- b) Define path and point functions. Show that all the properties are point functions. 7 Marks L1 CO1 PO1

(OR)

2. a) Write down the general energy equation for steady flow system and simplify when applied for the following systems: 7 Marks L1 CO1 PO1
PO2
 i) Steam nozzle ii) Reciprocating air compressor
 iii) Steam turbine iv) Gas turbine
- b) A cylinder piston arrangement containing a fluid at a pressure of 3 bar and with specific volume of 0.18 m³/kg allows the fluid to expand reversibly to a pressure of 0.6 bar according to the law $P = C/V^2$ where C is a constant. Determine the work done by the fluid on the piston. 7 Marks L3 CO1 PO1
PO2

UNIT-II

3. a) State and explain the Kelvin Planck and Clausius statements of second law of thermodynamics and establish equivalence between them. 7 Marks L1 CO1 PO1
- b) What is the absolute thermodynamic temperature scale? Why is it called absolute? How is the absolute scale independent of the working substance? 7 Marks L1 CO1 PO1

(OR)

4. a) Derive the following expression for change of entropy for an ideal gas. 7 Marks L3 CO1 PO1

$$\Delta s = C_p \ln\left(\frac{v_2}{v_1}\right) + C_v \ln\left(\frac{p_2}{p_1}\right).$$
- b) Calculate the decrease in available energy, when 25 kg water at 95°C mix with 35 kg of water at 35°C, pressure being taken as constant and the temperature of the surroundings being 15°C. C_p of water 4.2 kJ/kg K. 7 Marks L3 CO1 PO1

UNIT-III

5. a) Define pure substance and draw p-v, t-s & h-s diagrams for steam generation. 7 Marks L1 CO2 PO1
PO2
- b) Find the internal energy, enthalpy and entropy of 1 kg of steam at 10 bar, when the condition of steam is i) 0.9 dry, ii) dry and saturated, iii) superheated steam at 225°C. 7 Marks L2 CO2 PO1

(OR)

6. a) Derive Tds equation, when;
i) T and V independent ii) T and P independent. 7 Marks L3 CO2 PO1
b) Discuss the significance of Gibbs and Helmholtz functions. 7 Marks L2 CO2 PO1

UNIT-IV

7. a) A mixture of ideal gases consists of 3 kg of nitrogen and 5 kg of carbon dioxide and at a pressure of 300KPa and temperature of 20°C. Find: i) the mole fraction of each constituent, ii) the equivalent molecular weight of the mixture, iii) the equivalent gas constant of the mixture, iv) the partial pressures and partial volumes, v) the volume and density of mixture, and vi) the Cp and Cv of the mixture. If the mixture is heated at constant volume to 40°C, find the changes in internal energy, enthalpy and entropy of the mixture. If heating is done at constant pressure, calculate the changes in internal energy, enthalpy and entropy of the mixture.
Take for CO₂ and N₂ to be 1.286 and 1.4 respectively. 10 Marks L3 CO3 PO1
b) Define the characteristic gas constant. How does it differ from universal gas constant? Write units for these constants. 4 Marks L1 CO3 PO1

(OR)

8. a) Distinguish between Gravimetric & Volumetric analysis and explain the procedure to convert one from the other. 7 Marks L2 CO3 PO1
b) Explain the difference between a Perfect gas and Real gas. What are reasons of deviation of a Real gas from a perfect gas? 7 Marks L1 CO3 PO1

UNIT-V

9. a) Explain the processes considered in Otto cycle and derive the equation to find the air standard efficiency of Otto cycle. 7 Marks L1 CO4 PO1
b) An Ericsson cycle operating with an ideal regenerator works between 1100 K and 288 K. The pressure at the beginning of isothermal compression is 1.013 bar. Determine:
i) Work per kg of air, and ii) The cycle efficiency. 7 Marks L2 CO4 PO1
PO2

(OR)

- 10 a) Compare Otto, Diesel and Dual cycles for
i) Same compression ratio, heat supplied and
ii) Same maximum pressure and temperatures. 7 Marks L2 CO4 PO1
b) A gas turbine plant operates on the Brayton cycle between T_{min}=300K and T_{max}=1073K. Find the maximum work done per kg of air, and the corresponding cycle efficiency. How does this efficiency compare with the car not cycle efficiency operating between same temperature limits? 7 Marks L3 CO4 PO1
PO2



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

KINEMATICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours

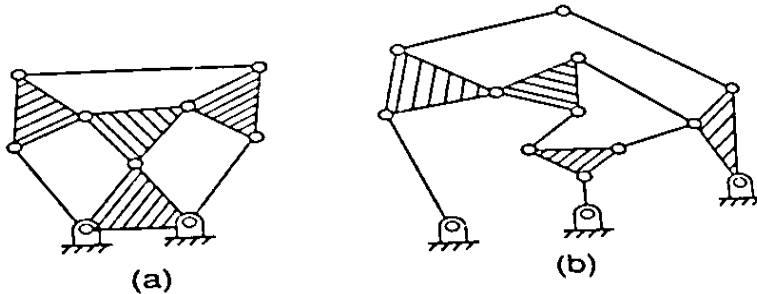
Max. Marks: 70

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 1. | a) | Explain degrees of freedom and its significance of a kinematic chain when it functions as a mechanism. Give examples. | 7 Marks | L1 | CO1 | PO1
PO2 |
| | b) | For the kinematic linkages shown in figure (a) and (b) Identify the number of binary links, quaternary links, quaternary links, total number of links and degrees of freedom. | 7 Marks | L1 | CO1 | PO1
PO2 |



(OR)

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 2. | The Whitworth quick return mechanism has the driving crank 150mm long. The distance between fixed centres is 100mm. The line of stroke of the ram passes through the centre of rotation of the slotted lever whose free end is connected to the ram by a connecting link. Find the ratio of time of cutting to time of return. | 14 Marks | L2 | CO1 | PO1
PO2 |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|

UNIT-II

- | | | | | | |
|----|----------------------------------------------------------------------------------------|----------|----|-----|-------------------|
| 3. | Sketch and explain Scott-Russel Mechanism. What is its limitation? How is it modified? | 14 Marks | L1 | CO1 | PO1
PO2 |
| | (OR) | | | | |
| 4. | Explain Ackerman's steering gear mechanism. | 14 Marks | L1 | CO3 | PO1
PO2
PO3 |

UNIT-III

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------|----------|----|-----|-------------------|
| 5. | What are the various types of gear trains? Explain them with neat sketch. | 14 Marks | L4 | CO3 | PO1
PO2 |
| | (OR) | | | | |
| 6. | What is the function of a differential gear in an automobile? Explain its working with a neat sketch. | 14 Marks | L4 | CO4 | PO1
PO2
PO3 |

UNIT-IV

7. A disc cam used for moving a knife edge follower with SHM during lift and uniform acceleration and retardation motion during return. Cam rotates at 300 r.p.m clockwise direction. The line of motion of the follower has an offset 10 mm to the right angle of cam shaft axis. The minimum radius of the cam is 30mm. The lift of the follower is 40 mm. The cam rotation angles are: rise 60°, dwell 90°, return 120° and remaining angle for dwell. Draw the cam profile and determine the maximum velocity and acceleration during the lift and return.

14 Marks L3 CO5 PO1
PO2
PO3
PO10

(OR)

8. A cam with a minimum radius of 25 mm is to be designed for a knife-edge follower with the following data:

14 Marks L3 CO5 PO1
PO2
PO3
PO10

i) To raise the follower through 35 mm during rotation of the cam.

ii) Dwell for next of the cam rotation.

iii) Descending of the follower during the next of the cam rotation.

iv) Dwell during the rest of the cam rotation.

Draw the profile of the cam if the ascending and descending of the cam is with simple harmonic motion and the line of stroke of the follower is offset 10 mm from the axis of the cam shaft. What is the maximum velocity and acceleration of the follower during the ascent and descent if the cam rotates at 150 r.p.m?

UNIT-V

9. Locate all the instantaneous centers of the slider crank mechanism. The lengths of crank OB and connecting rod AB are 100 mm and 400 mm respectively. If the crank has turned 45° clockwise from the inner dead center position with an angular velocity of 10 rad/sec, find the velocity of slider A and angular velocity of the connecting rod AB.

14 Marks L4 CO6 PO1
PO2
PO3
PO10

(OR)

10. In a four bar chain ABCD, AD is fixed and is 15 cm long. The crank AB is 4 cm long and rotates at 120 r.p.m clockwise, while the link CD (= 8 cm) oscillates about D. BC and AD all of equal length. Find the angular velocity of link CD when angle BAD = 60°.

14 Marks L4 CO6 PO1
PO2
PO3
PO10



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**MANUFACTURING TECHNOLOGY****[Mechanical Engineering]****Time: 3 hours****Max. Marks: 70****Answer One Question from each Unit****All questions carry equal marks****UNIT-I**

1. a) Define Pattern and list any four varieties of patterns and their applications. 7 Marks L2 CO1 PO1
 b) Discuss properties of moulding sand. 7 Marks L2 CO1 PO1
- (OR)**
2. a) What is the function of a gate? Describe various types of gates. 7 Marks L2 CO1 PO1
 b) What is the function of a core? Describe various types of cores. 7 Marks L2 CO1 PO1

UNIT-II

3. a) Explain investment casting process and its applications. 7 Marks L2 CO2 PO1
 b) Explain any three inspection methods of casting. 7 Marks L2 CO2 PO1
- (OR)**
4. a) Describe carbon dioxide moulding process in detail. 7 Marks L2 CO2 PO1
 b) Discuss any four casting defects and how they can be rectified. 7 Marks L2 CO2 PO1

UNIT-III

5. a) Discuss the principle of forging. List various defects in forging. 7 Marks L2 CO3 PO2
 b) Describe wire drawing operation with a neat sketch. 7 Marks L2 CO3 PO2
- (OR)**
6. a) Explain the working of combination die with a neat sketch. 7 Marks L2 CO3 PO1
 b) Summarize the electro hydraulic forming process. 7 Marks L2 CO3 PO2

UNIT-IV

7. a) Explain the construction of submerged arc welding with its advantages and applications. 7 Marks L2 CO4 PO1
 b) Explain various welding defects and their remedies. 7 Marks L4 CO4 PO1
- (OR)**
8. a) Explain electron beam welding process and its applications 7 Marks L2 CO4 PO1
 b) Discuss any three non-destructive testing methods 7 Marks L2 CO4 PO1

UNIT-V

9. a) Describe the working principle of injection moulding process. 7 Marks L2 CO5 PO2
 b) List the various types of plastics and applications. 7 Marks L2 CO5 PO2
- (OR)**
10. a) Explain the working principle of extrusion process. 7 Marks L2 CO5 PO2
 b) List the various additives used during processing of plastics and emphasize the advantages and disadvantages of plastics. 7 Marks L2 CO5 PO2



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

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) Classify types of stress and strains. | 4 Marks | L1 | CO1 | PO1 |
| | b) Three different materials, designated A,B and C, are tested in tension using test specimens having diameters of 12 mm and gauge lengths of 50 mm. At failure, the distances between the gauge marks are found to be 54.5 mm, 63.2 mm, and 69.4 mm, respectively. Also, at the failure cross sections the diameters are found to be 11.46, 9.48, and 6.06 mm, respectively. Determine the percent elongation and percent reduction in area of each specimen, and then, using your own judgement, classify each material as brittle or ductile. | 10 Marks | L3 | CO1 | PO1
PO2 |

(OR)

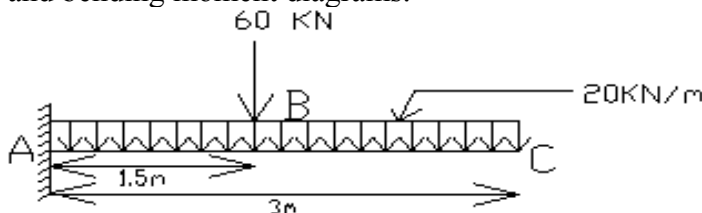
- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 2. | a) An axial pull of 40000 N is acting on a bar consisting of three sections of length 30 cm, 25 cm and 20 cm and of diameters 2 cm, 4 cm and 5 cm respectively. If the Young's modulus = 2×10^5 N/mm ² , determine stress in each section and total extension of the bar. | 7 Marks | L3 | CO1 | PO1
PO2 |
| | b) A rectangular bar of cross sectional area 12000mm ² is subjected to an axial load of 360 N. Determine the normal and shear stresses on a section which is inclined at an angle of 30° with the normal cross section of the bar. | 7 Marks | L3 | CO1 | PO1
PO2 |

UNIT-II

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 3. | a) What is the necessity of SFD and BMD? | 4 Marks | L2 | CO2 | PO2 |
| | b) A beam of length 10 m is simply supported and carries point loads of 5 kN each at a distance of 3 m and 7 m from left support and also a uniformly distributed load of 1 kN/m between the point loads. Draw S.F. and B.M. diagrams for the beam and determine the maximum bending moment. | 10 Marks | L3 | CO2 | PO2
PO3 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|
| 4. | a) A cantilever beam 3m long is loaded with uniformly distributed load and a point load as shown in the Figure. Draw the shear force and bending moment diagrams. | 12 Marks | L3 | CO2 | PO1
PO2 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|------------|



- | | | | | | |
|----|---------------------------------|---------|----|-----|-----|
| b) | Define point of contra flexure. | 2 Marks | L1 | CO2 | PO1 |
|----|---------------------------------|---------|----|-----|-----|

UNIT-III

5. a) Derive shear formula for I cross section. 4 Marks L2 CO2 PO1
b) A simply supported beam, 2 cm wide by 4 cm high and 120 cm long is subjected to a concentrated load of 2000 N at a point 30 cm from one of the supports. Determine the maximum fiber stress and the stress in a fiber located 0.5 cm from the top of the beam at mid span. 10 Marks L3 CO2 PO5

(OR)

6. a) Derive bending moment equation and state the assumptions. 6 Marks L3 CO2 PO1
b) An I- section beam is of flanges 200mm X 15mm thick, web 300mm X 15mm thick. Draw the shear distribution diagram across the section, if it carries a shear force of 30KN. Calculate the position of the neutral Axis. 8 Marks L3 CO2 PO1 PO2

UNIT-IV

7. a) Derive torsion equation and state the assumptions. 6 Marks L3 CO3 PO1
b) A hollow circular shaft 2m long is required to transmit 1000KW power when running at speed of 300rpm. If the outer diameter of the shaft is 150mm and inner diameter is 120mm, find the maximum shear stress and strain energy stored in the shaft. 8 Marks L3 CO3 PO1

(OR)

8. A steel shaft ABCD having a total length 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 0.82×10^5 MPa. 14 Marks L3 CO3 PO1 PO2

UNIT-V

9. a) Derive slope and deflection equation for cantilever beam subjected to point load at free end. 6 Marks L2 CO4 PO1
b) A cantilever of length 9m carrying a uniformly distributed load of 10KN per unit run for the whole length. It also subjected to a load of 18KN at free end. 8 Marks L3 CO4 PO1 PO2
i) Determine the deflection at the free end of the beam.
ii) Determine the slope at free end of the beam.

(OR)

- 10 a) Describe Double integration method. 4 Marks L2 CO4 PO1 PO2
b) A tube 40 mm outside diameter, 5 mm thick and 1.5 m long, simply supported at 125 mm from each end carries a concentrated load of 1 kN from each extreme end. 10 Marks L3 CO4 PO1
i) Neglecting the weight of the tube, sketch the shearing force and bending moment diagrams.
ii) Calculate the radius of curvature and deflection at mid-span. Take the modulus of elasticity of the material as 208 GN/m².



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) Draw the high pass circuit, sketch the response of this circuit for exponential input. Derive the output equations for the same. | 7 Marks | L2 | CO1 | PO2 |
| | b) Explain how a low pass RC circuit acts as an integrator. | 7 Marks | L3 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Draw a typical circuit for clipping at two independent levels. Explain in detail the circuit and sketch characteristics. | 7 Marks | L2 | CO1 | PO3 |
| | b) Derive the steady state response of clamping circuit for a square wave input in which the resistance of the signal source is taken into account. | 7 Marks | L4 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) An NPN transistor with $\beta=50$ is used in a common emitter circuit with $V_{cc}=10V$, $R_c=2k\Omega$. the bias is obtained by connecting a $100k\Omega$ resistance from collector to base. Assume $V_{BE}=0.7V$. Find the quiescent point and stability factor. | 7 Marks | L3 | CO2 | PO2 |
| | b) Draw a BJT fixed bias circuit and derive the expression for the stability factor S. | 7 Marks | L2 | CO2 | PO1 |

(OR)

- | | | | | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Determine the quiescent current and the collector to emitter voltage for a Germanium transistor with $\beta=50$ in self biasing arrangement. Draw the circuit with a given component value $V_{cc}=20V$, $R_c=2k\Omega$, $R_e=100\Omega$, $R_1=100k\Omega$, $R_2=5k\Omega$. Also find out stability factor. | 7 Marks | L3 | CO2 | PO2 |
| | b) Compare BJT biasing methods. | 7 Marks | L2 | CO2 | PO1 |

UNIT-III

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) What are h-parameters? Why they called so? Define them and explain the benefits of h-parameters. | 7 Marks | L1 | CO3 | PO1 |
| | b) A BJT connected in CC configuration has a load resistance. Using h-parameter equivalent circuit obtain an expression for input and output resistance of the configuration. | 7 Marks | L2 | CO3 | PO2 |

(OR)

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) | Derive the expression for voltage gain and input impedance of CE and CC amplifier using simplified hybrid model. | 7 Marks | L2 | CO3 | PO2 |
| | b) | Find voltage gain, current gain and input impedance of CE amplifier with hybrid parameters $h_{ie}=1.1k\Omega$, $h_{re}=2.5\times 10^{-4}$, $h_{fe}=50$, $h_{oe}=1/(40k\Omega)$ and $R_L=R_S=1k\Omega$. | 7 Marks | L3 | CO3 | PO2 |

UNIT-IV

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Explain the principle of operation of an N-channel depletion type MOSFET. | 7 Marks | L2 | CO4 | PO1 |
| | b) | Determine the operating point for the self bias circuit of N-channel JFET given $V_{DD}=15V$, $R_D=500\Omega$, $R_S=1k\Omega$, $R_1=12k\Omega$, $R_2=4k\Omega$, $I_{DSS}=8mA$, $V_p=-4V$. | 7 Marks | L3 | CO4 | PO2 |

(OR)

- | | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | Explain construction and principle of operation of P-channel JFET. | 7 Marks | L2 | CO4 | PO1 |
| | b) | Draw the schematic of Nchannel JFET explain the operation. | 7 Marks | L2 | CO4 | PO1 |

UNIT-V

- | | | | | | | |
|----|----|-------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | Draw simplified equivalent circuit of UJT and characteristics. | 7 Marks | L2 | CO5 | PO1 |
| | b) | If $\eta=0.8$, $V_{BB}=15V$ and $V_D=0.7V$, find the value of V_p . | 7 Marks | L3 | CO5 | PO2 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------|---------|----|-----|-----|
| 10 | a) | Explain VI characteristics of tunnel diode. | 7 Marks | L2 | CO5 | PO1 |
| | b) | Explain schematic construction of TRIAC. | 7 Marks | L2 | CO5 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) Write the mathematical expression for unit step and unit impulse signal and give the relationship between them. | 6 Marks | L1 | CO1 | PO1 |
| | b) Test the linearity and time variance property of the following system.
i) $\cos[x(n)]$ ii) $nx[n]$ | 8 Marks | L2 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) Determine the convolution for two square signals of equal width? | 8 Marks | L2 | CO1 | PO2 |
| | b) Implement the basic operations like time shifting, time reversal and time scaling operations for any signal with neat sketches? | 6 Marks | L2 | CO1 | PO2 |

UNIT-II

- | | | | | | |
|----|--------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Find the trigonometric Fourier series for the half wave rectified sine wave and sketch the line spectrum. | 8 Marks | L2 | CO2 | PO2 |
| | b) State and prove parsavels's relation and multiplication property of Fourier transform? | 6 Marks | L2 | CO2 | PO2 |

(OR)

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Find the Fourier transform of the following signals.
i) $e^{-a t }$ and ii) $x(t) = \begin{cases} A & t < T_0 \\ 0 & t > T_0 \end{cases}$. | 8 Marks | L4 | CO2 | PO4 |
| | b) State and prove convolution property and time shifting property of Fourier transform? | 6 Marks | L2 | CO2 | PO2 |

UNIT-III

- | | | | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Write the properties of correlation function? | 7 Marks | L2 | CO3 | PO2 |
| | b) Distinguish between energy spectral density and power spectral density? Also state and prove Parsavels's theorem for energy signal? | 7 Marks | L4 | CO3 | PO4 |

(OR)

- | | | | | | |
|----|---------------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Prove energy density function and auto correlation forms a Fourier transform pair? | 7 Marks | L2 | CO3 | PO4 |
| | b) Explain how correlation helps to detect periodic signal in presence of noise? | 7 Marks | L2 | CO3 | PO6 |

UNIT-IV

7. a) State sampling theorem and Illustrate the effecting of aliasing or spectrum folding with neat sketch? 8 Marks L4 CO4 PO4
b) Determine the Nyquist rate for the following signals. 6 Marks L4 CO4 PO4
i) $\sin c(\pi t)$ and ii) $\sin^2(200\pi t)$.

(OR)

8. a) Explain the process of reconstruction of signal from its samples using interpolation? 8 Marks L4 CO4 PO2
b) Determine the Nyquist rate for the following signals. 6 Marks L4 CO4 PO4
i) $\sin c^2(200t)$ and ii) $\sin c^2(200t) + \sin c(200t)$.

UNIT-V

9. a) State and prove time differentiation property of Laplace transform and apply the same to the signal $te^{-at} u(t)$. 7 Marks L2 CO5 PO4
b) Find the transfer function and impulse response of a causal LTI system described by the differential equation. 7 Marks L3 CO5 PO5
$$\frac{d^2 y(t)}{dt^2} + 2 \frac{dy(t)}{dt} + y(t) = \frac{dx(t)}{dt} - 2x(t).$$

(OR)

- 10 a) State and prove convolution and linearity property of z transform 6 Marks L2 CO5 PO2
b) Determine the z transform and the ROC of the signal 8 Marks L2 CO5 PO4
 $x(n) = a^n u[n] - a^n u[n-1].$
 $y(n) = 2\delta(n+2) + 3\delta(n) - 5\delta(n-1).$



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 conversions. 9 Marks L2 CO1 PO1
 i) $(41.6875)_{10}$ to binary.
 ii) $(1001001.011)_2$ to decimal.
 iii) Find the 9's Complement of number $(25.639)_{10}$.
 iv) Subtract 111001 from 101011 using 2's complement.
- b) A receiver with even parity Hamming code is received the data as 1110110. Determine the correct code. 5 Marks L2 CO1 PO1

(OR)

2. Simplify the following Boolean expressions using Boolean algebra: 14 Marks L2 CO1 PO2
- i) $AB + AB'C(B'C' + C) + (AC)'$
 ii) $ABC'D' + ABC'D + ABCD' + ABCD$
 iii) $AB + ABC' + A'BC + ABC$
 iv) $ABCD + ABCD' + A'BCD + A'BCD'$

UNIT-II

3. a) Simplify the Boolean function using K-map. 9 Marks L4 CO1 PO1
 i) $F(A,B,C,D) = A'B'C' + B'CD' + A'BCD' + AB'C'$
 ii) $F(W,X,Y,Z) = \sum_m(0,6,8,13,14) + \sum_d(2,4,10)$
- b) Explain the concept of Exclusive-OR function in detail. 5 Marks L1 CO1 PO1

(OR)

4. Simplify the Boolean function using the tabulation method. 14 Marks L4 CO1 PO1
 $F(A,B,C,D) = \sum_m(0,1,2,8,10,11,14,15)$.

UNIT-III

5. a) Implement 4-bit adder subtractor and explain its operation. 7 Marks L3 CO2 PO3
 b) Realize the following Boolean expression using a 8×1 multiplexer. $F = A'B'C + A'BC' + AB'C + ABC$. 7 Marks L3 CO2 PO3

(OR)

6. a) Implement a Full adder with a decoder and two OR-Gates. 7 Marks L2 CO2 PO4
 b) Design a 3-bit magnitude comparator circuit. 7 Marks L4 CO2 PO3

UNIT-IV

7. a) Convert SR Flip-Flop to JK Flip-Flop. 7 Marks L2 CO2 PO2
 b) Design a counter with the following repeated binary sequence: 0,1,2,4,6. Use D Flip-Flops. 7 Marks L4 CO2 PO7

(OR)

8. a) Explain how a race-around problem is eliminated in JK flip-flop. 7 Marks L2 CO2 PO2
 b) Design a modulo-12 up synchronous counter using T flip-flops. 7 Marks L4 CO2 PO6

UNIT-V

9. a) Implement the following function using PLA 11 Marks L4 CO4 PO3
A (x,y,z)= $\Sigma m(1,2,4,6)$
B (x,y,z)= $\Sigma m(0,1,6,7)$
C (x,y,z)= $\Sigma m(2,6)$.
- b) Define Hazard and classify the types of hazards. 3 Marks L1 CO3 PO1
- (OR)**
- 10 Reduce the number of states in the state table listed below using 14 Marks L4 CO3 PO4
implication table.

Present State	Next State		Output	
	x = 0	x = 1	x = 0	x = 1
a	f	b	0	0
b	d	c	0	0
c	f	e	0	0
d	g	a	1	0
e	d	c	0	0
f	f	b	1	1
g	g	h	0	1
h	g	a	1	0



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**COMPUTER ORGANIZATION**

[Computer Science and Engineering, Computer Science and Systems Engineering,
Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering
(Artificial Intelligence and Machine Learning), 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) | Perform the following arithmetic operations in binary using sign-magnitude representation.
i) $(+6)_{10} + (-13)_{10}$ ii) $(-6)_{10} - (+13)_{10}$ | 7 Marks | L3 | CO1 | PO2 |
| | b) | Draw flowchart and explain Booth's algorithm for multiplication of signed 2's complement numbers. | 7 Marks | L2 | CO1 | PO1 |

(OR)

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|----|----|------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) | Design a 4-bit combinational circuit which performs bitwise OR, AND, XOR, NOT logical operations. | 7 Marks | L4 | CO3 | PO3 |
| | b) | Draw one stage of 4-bit Arithmetic and Logic Unit (ALU) and discuss its operation with the help of the function table. | 7 Marks | L4 | CO3 | PO3 |

UNIT-II

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | Explain about the register and immediate addressing modes with examples. | 7 Marks | L2 | CO2 | PO1 |
| | b) | What is a machine instruction format? What are the generic fields in a machine instruction format? | 7 Marks | L2 | CO2 | PO1 |

(OR)

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|----|----|------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Design the common bus system that connects all the basic computer registers and memory. Analyze how the data is transferred. | 8 Marks | L4 | CO3 | PO3 |
| | b) | Draw and explain the flowchart for basic instruction cycle. | 6 Marks | L2 | CO2 | PO1 |

UNIT-III

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) | Differentiate between Isolated I/O and Memory Mapped I/O techniques. | 7 Marks | L2 | CO2 | PO2 |
| | b) | A DMA module is transferring characters to main memory from an external device transmitting at 9600 bits per second (bps). The processor can fetch instructions at the rate of 1 MIPS. By how much will the processor be slowed down due to the DMA activity? | 7 Marks | L3 | CO4 | PO1 |

(OR)

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|----|----|------------------------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) | Draw the logic of micro programmed sequencer for control memory and explain. | 7 Marks | L2 | CO2 | PO1 |
| | b) | Define interrupt. How does the processor services interrupt? | 7 Marks | L2 | CO2 | PO1 |

UNIT-IV

- | | | | | | | |
|----|----|--------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Design a 4M x 1 memory system using 1M x 1 RAM chips. | 7 Marks | L4 | CO3 | PO3 |
| | b) | Discuss in detail the nonvolatile solid-state memory technologies. | 7 Marks | L2 | CO4 | PO1 |

(OR)

8. a) Explain fully associative cache mapping technique with a neat sketch. 7 Marks L3 CO2 PO1
- b) How does the newer nonvolatile solid-State memory technologies – STT-RAM, PCRAM, ReRAM fit into the traditional memory hierarchy? Compare their characteristics in terms of their speed, storage capabilities, and their candidature for replacement of traditional memories. 7 Marks L2 CO2 PO1

UNIT-V

9. a) Compare the SIMD array processors and attached array processors. 7 Marks L3 CO2 PO2
- b) What are the different types of pipeline conflicts? Discuss in detail the resource conflicts and possible solutions. 7 Marks L3 CO2 PO1

(OR)

- 10 a) Discuss in detail the hardware performance issues in multicore computers. 7 Marks L2 CO2 PO1
- b) Discuss in detail the Flynn's Classification of computers. 7 Marks L2 CO2 PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 and Machine Learning),
 Computer Science and Engineering (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) | What is Data Structure and Applications of Data Structures in Real time Computations. | 7 Marks | L2 | CO1 | PO1
PO2 |
| | b) | List the importance of Linear Data Structure in detail. | 7 Marks | L2 | CO1 | PO1
PO2 |

(OR)

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|----|----|-----------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 2. | a) | Differentiate Symptotic and Asymptotic Complexity. Examine the Asymptotic time Complexity to find the element in the Linked List. | 7 Marks | L3 | CO1 | PO1
PO2 |
| | b) | Explain the traversal paths performed in Doubly Linked Lists. | 7 Marks | L2 | CO1 | PO1
PO2 |

UNIT-II

- | | | | | | | |
|----|----|------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 3. | a) | What are the main differences between Linked List and Linear Array? | 7 Marks | L2 | CO1 | PO1
PO2
PO3 |
| | b) | What is “divide and conquer” approach? Write steps for Merge sort algorithm. | 7 Marks | L2 | CO4 | PO1
PO2
PO3 |

(OR)

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|----|----|----------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 4. | a) | Explain the parsing of arithmetic expression for the following Post fix notation AB-CDE + / F + *. | 7 Marks | L3 | CO1 | PO1
PO2
PO3 |
| | b) | Describe the routines in circular queues. | 7 Marks | L2 | CO1 | PO1
PO2
PO3 |

UNIT-III

- | | | | | | | |
|----|----|------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 5. | a) | Explain the types of binary search tree and how binary tree works with an example. | 7 Marks | L3 | CO2 | PO1
PO2
PO3 |
| | b) | Explain AVL Tree rotations and operations with an example. | 7 Marks | L3 | CO2 | PO1
PO2
PO3 |

(OR)

- | | | | | | | |
|----|----|---------------------------------------------------------------------------------------------------------|---------|----|-----|-------------------|
| 6. | a) | Explain the process of finding maximum and minimum element in binary tree without using stack or queue. | 7 Marks | L2 | CO4 | PO1
PO2
PO3 |
| | b) | What are the constraints need ed for Red Black Tree. | 7 Marks | L2 | CO2 | PO1
PO2
PO3 |

UNIT-IV

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 7. | a) | Explain Linear search Time and Space complexity in the context of Best, Average and Worst-Case scenario. | 7 Marks | L2 | CO3 | PO1
PO2 |
| | b) | Explain the working of Shell sort algorithm with the following unsorted array of elements 33,31,40,8,12,17,25,42. | 7 Marks | L3 | CO3 | PO1
PO2 |

(OR)

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|----|----|-----------------------------------------------------------------------------------------------------------------|---------|----|-----|------------|
| 8. | a) | Explain Quick sort algorithm and complexity analysis in the context of Best and Worst cases scenario. | 7 Marks | L2 | CO3 | PO1
PO2 |
| | b) | Explain the advantages of Heap sort and discuss about its complexity analysis in Best and Worst cases scenario. | 7 Marks | L2 | CO3 | PO1
PO2 |

UNIT-V

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------|---------|----|-----|------------|
| 9. | a) | How graphs are related to memory of computer and how they are represented, Justify. | 7 Marks | L4 | CO4 | PO1
PO2 |
| | b) | Point out the Pros and Cons of Breadth first search and Depth first search. | 7 Marks | L3 | CO2 | PO1
PO2 |

(OR)

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|----|----|-------------------------------------------------------------------------------------|---------|----|-----|------------|
| 10 | a) | What is separate chaining and elevate the characteristics of using Hash functions. | 7 Marks | L2 | CO2 | PO1
PO2 |
| | b) | Differentiate the application of Random and Non-Random keys for Quick computations. | 7 Marks | L2 | CO2 | PO1
PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**PYTHON PROGRAMMING**

[Computer Science and 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) Describe the concept of identifiers explain with examples. | 7 Marks | L2 | CO1 | PO1 |
| | b) Explain operators available in python. | 7 Marks | L5 | CO1 | PO1 |

(OR)

- | | | | | | |
|----|---------------------------------------------------|---------|----|-----|-----|
| 2. | a) Describe input and output functions in python. | 7 Marks | L1 | CO1 | PO1 |
| | b) Write short notes on Tokens of python. | 7 Marks | L5 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Write syntax of if-else statement with example script. | 7 Marks | L5 | CO1 | PO2 |
| | b) Implement python script to find the largest of given three numbers and display them in Descending order. | 7 Marks | L3 | CO1 | PO2 |

(OR)

- | | | | | | |
|----|---------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) Write Syntax of for loop with example script. | 7 Marks | L2 | CO1 | PO2 |
| | b) Develop a python script to find sum of digits of a given number. | 7 Marks | L1 | CO1 | PO2 |

UNIT-III

- | | | | | | |
|----|-------------------------------------|---------|----|-----|-----|
| 5. | a) Write short notes on tuples. | 7 Marks | L5 | CO1 | PO5 |
| | b) List and explain set operations. | 7 Marks | L3 | CO1 | PO5 |

(OR)

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|----|------------------------------------------------------------|---------|----|-----|-----|
| 6. | a) Implement python script to sort elements using lambdas. | 7 Marks | L3 | CO1 | PO2 |
| | b) What are the quantifiers in regular expressios. | 7 Marks | L1 | CO2 | PO3 |

UNIT-IV

- | | | | | | |
|----|------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Develop a python script to implement Towers of Hanoi problem. | 7 Marks | L5 | CO3 | PO3 |
| | b) Explain the concept of Default arguments with an example. | 7 Marks | L2 | CO3 | PO3 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) Discuss about variable scope and lifetime. | 7 Marks | L4 | CO3 | PO4 |
| | b) Implement python script to find number of occurrences of a word in a given file. | 7 Marks | L1 | CO4 | PO5 |

UNIT-V

- | | | | | | |
|----|-----------------------------------------------------------|---------|----|-----|-----|
| 9. | a) Discuss about features of Object-oriented programming. | 7 Marks | L1 | CO5 | PO5 |
| | b) Write about inheritance. | 7 Marks | L5 | CO5 | PO4 |

(OR)

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|----|--------------------------------------------------------|---------|----|-----|-----|
| 10 | a) What is an Exception? How do you handle Exceptions? | 7 Marks | L1 | CO5 | PO5 |
| | b) Elaborate about Asser statement. | 7 Marks | L4 | CO5 | PO5 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, July – 2023**TRANSDUCERS IN 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) Classify transducers with suitable examples. | 7 Marks | L1 | CO1 | PO1 |
| | b) Define Accuracy, Sensitivity and Precision. | 7 Marks | L1 | CO1 | PO1 |
| (OR) | | | | | |
| 2. | a) Explain about different types of Errors. | 7 Marks | L2 | CO1 | PO2 |
| | b) Explain about Dynamic characteristics of a Transducers. | 7 Marks | L1 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|-------------|------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 3. | a) Explain working principle of
i) Piezo electric Transducers
ii) Piezo Resistive Transducers. | 7 Marks | L2 | CO2 | PO2 |
| | b) Explain about Capacitive Sensors. | 7 Marks | L2 | CO2 | PO2 |
| (OR) | | | | | |
| 4. | Draw and explain about LVDT. What causes residual voltage to occur? | 14 Marks | L4 | CO2 | PO4 |

UNIT-III

- | | | | | | |
|-------------|--------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | What is the need of lead wire compensation? How it is to be done in RTD? What is self heating effect in RTD? | 14 Marks | L1 | CO3 | PO1 |
| (OR) | | | | | |
| 6. | a) Explain the working of thermistor with neat sketch. | 7 Marks | L2 | CO3 | PO2 |
| | b) Explain about thermo electric effects. | 7 Marks | L3 | CO3 | PO3 |

UNIT-IV

- | | | | | | |
|-------------|-----------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Explain about load cell method and strain gage method. | 7 Marks | L2 | CO4 | PO2 |
| | b) Explain about Tachometers. | 7 Marks | L2 | CO4 | PO2 |
| (OR) | | | | | |
| 8. | a) Explain about Potentiometric type. | 7 Marks | L2 | CO4 | PO2 |
| | b) Explain about velocity sensors. | 7 Marks | L2 | CO4 | PO2 |

UNIT-V

- | | | | | | |
|-------------|------------------------------------------|---------|----|-----|-----|
| 9. | a) Explain the principles of Gyroscopes. | 7 Marks | L3 | CO4 | PO3 |
| | b) Explain about vibration sensors. | 7 Marks | L1 | CO4 | PO1 |
| (OR) | | | | | |
| 10. | a) Explain about Resonant sensors. | 7 Marks | L1 | CO4 | PO1 |
| | b) Explain about SMART sensors. | 7 Marks | L4 | CO4 | PO4 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, July – 2023**SOFTWARE ENGINEERING****[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 is meant by “Software Myth”? Discuss on various types of software myths and the true aspects of these myths. | 7 Marks | L2 | CO1 | PO1 |
| | b) Explain in detail the spiral model. | 7 Marks | L1 | CO1 | PO2 |
| (OR) | | | | | |
| 2. | a) Define Software Engineering? Explain it with the help of layered Technology? | 7 Marks | L1 | CO1 | PO2 |
| | b) Define Agility? List out Agile principles. | 7 Marks | L1 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|-------------|-------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) What are functional requirements of software? Discuss in detail? | 7 Marks | L2 | CO2 | PO2 |
| | b) Draw the use cases for Library system and Interaction diagram for ATM with drawl. | 7 Marks | L3 | CO2 | PO3 |
| (OR) | | | | | |
| 4. | a) Elaborate on Software Requirement Document in details? | 7 Marks | L2 | CO2 | PO2 |
| | b) List out generic elements in requirements models and Draw use case diagram and activity diagram for safe home. | 7 Marks | L3 | CO2 | PO3 |

UNIT-III

- | | | | | | |
|-------------|--------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) List out the characteristics of well-formed Design. | 7 Marks | L2 | CO3 | PO2 |
| | b) Illustrate Call and Return Architecture style with neat sketch. | 7 Marks | L2 | CO3 | PO3 |
| (OR) | | | | | |
| 6. | a) Explain in detail Data Design elements in Design Model. | 7 Marks | L2 | CO3 | PO2 |
| | b) Briefly explain the web engineering project metrics. | 7 Marks | L2 | CO3 | PO3 |

UNIT-IV

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|-------------|---------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Define “Software Testing”. Give few generic characteristics of it. | 7 Marks | L3 | CO4 | PO1 |
| | b) Explain Integration Testing in detail. | 7 Marks | L1 | CO4 | PO2 |
| (OR) | | | | | |
| 8. | a) Explain in detail the Testing Strategy of Unit Testing? | 7 Marks | L1 | CO4 | PO1 |
| | b) Illustrate the Debugging Process in detail with the help of a diagram. | 7 Marks | L3 | CO4 | PO2 |

UNIT-V

- | | | | | | |
|-------------|--------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) Write short notes on “Reactive vs. Proactive risk strategies. | 7 Marks | L1 | CO5 | PO1 |
| | b) Define software Reliability? Explain measures of software reliability and availability? | 7 Marks | L2 | CO5 | PO3 |
| (OR) | | | | | |
| 10 | a) Explain in detail the RMMM Plan. | 7 Marks | L2 | CO5 | PO1 |
| | b) List out Software Reengineering Activities and explain in detail. | 7 Marks | L2 | CO5 | PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**OPERATING SYSTEMS**

[Information Technology, Computer Science and Systems Engineering,
Computer Science and Business Systems, Computer Science and Engineering (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) Consider the following set of processes, with the length of the CPU burst time given in milliseconds: 8 Marks L3 CO1 PO3

Process	Burst Time	Priority
P1	2	2
P2	1	1
P3	8	4
P4	4	2
P5	5	3

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0. Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum =).

- b) Enumerate the significance of System calls in Operating System with its types. 6 Marks L2 CO1 PO1

(OR)

2. a) Discuss in detail about the two models of Inter Process Communication. 7 Marks L1 CO1 PO2

- b) Differentiate single threaded and multi-threaded processes. Summarize the issues in implementing multithreading. 7 Marks L4 CO1 PO1

UNIT-II

3. a) Write the syntax and specify the need of monitors. Discuss the ways of resuming a process in a monitor. 7 Marks L2 CO2 PO5

- b) How semaphores can be used in Mutual Exclusion – Justify. Propose a solution for implementing mutual exclusion for the producer and consumer processes in Bounded Buffer Problem. 7 Marks L4 CO2 PO2

(OR)

4. a) With suitable example, explain the way of detecting dead lock in a system having several instances of a resource type. 7 Marks L2 CO3 PO1

- b) Describe about the conventions followed in creating Resource Allocation Graph and its role in avoiding deadlock with suitable illustrations. 7 Marks L3 CO3 PO3

UNIT-III

5. a) Given memory partitions of 100 KB, 500 KB, 200 KB, 300 KB, and 600 KB (in order), how would first fit, best fit, and worst fit algorithm place processes of size 212 KB, 417 KB, 112 KB, and 426 KB (in order)? Which algorithm makes the most efficient use of memory? 7 Marks L3 CO4 PO2

- b) With a neat sketch, explain how logical address is translated into physical address using paging mechanism. 7 Marks L2 CO4 PO3

(OR)

6. a) Why are Segmentation and Paging sometimes combined into one scheme? Explain them in detail with an example. 7 Marks L2 CO4 PO2
- b) Examine situations under which the least frequently used (LFU) page replacement algorithm generates fewer page faults than the least recently used (LRU) page replacement algorithm. Also discuss under what circumstance the opposite holds good. 7 Marks L4 CO4 PO3

UNIT-IV

7. a) Explain tree-structured and acyclic graph schemes for defining the logical structure of a directory. 7 Marks L2 CO5 PO2
- b) Elucidate various file allocation techniques in detail with their relative advantages and disadvantages. 7 Marks L3 CO5 PO1

(OR)

8. a) Explain in brief about File control block with a neat sketch. 7 Marks L2 CO5 PO4
- b) Explain how I/O related portions of the kernel are structured in software layers. 7 Marks L2 CO5 PO4

UNIT-V

9. a) Explain the implementation of access matrix to establish protection. 7 Marks L2 CO6 PO1
- b) Discuss about domain of protection in operating system and illustrate the same with reference to UNIX operating system. 7 Marks L2 CO6 PO4

(OR)

10. a) Differentiate program threats and system threats with examples. 7 Marks L4 CO6 PO2
- b) Discuss about the threat monitoring activities carried out in operating system. 7 Marks L2 CO6 PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) List out different services of operating system and explain each service. 7 Marks L2 CO1 PO1
- b) What are the advantages of inter-process communication? How communication takes place in a shared – memory environment? Explain. 7 Marks L2 CO1 PO2

(OR)

2. a) List and explain system calls. 7 Marks L1 CO1 PO1
- b) Draw And Explain How CPU Switches From One Process (P_0) To Another Process (P_1)? 7 Marks L2 CO1 PO2

UNIT-II

3. a) Elaborate the four necessary conditions to represent Deadlock Prevention. 7 Marks L2 CO2 PO2
- b) Explain Peterson's solution to critical section problem. 7 Marks L3 CO1 PO2

(OR)

4. a) What is a critical section problem? Give the condition that a solution to the critical section problem must satisfy. 7 Marks L2 CO1 PO1
- b) Discuss about semaphore usage and implementation. 7 Marks L3 CO1 PO2

UNIT-III

5. Consider the following page-reference string: 14 Marks L3 CO3 PO3
0,1, 3, 6, 2, 4, 5, 2, 5, 0, 3, 1, 2, 5, 4, 1, 0.
How many page faults would occur for the LRU, FIFO and optimal replacement algorithms, assuming 4 frames? Remember that all frames are initially empty, so your first unique pages will all cost one fault for each. Also, compute Hit ratio of each algorithm.

(OR)

6. a) Illustrate contiguous memory allocation concept. 7 Marks L1 CO3 PO1
- b) Discuss about thrashing concept with an example. 7 Marks L2 CO3 PO2

UNIT-IV

7. a) Discuss various methods to implement directory in file management. 7 Marks L2 CO4 PO1
- b) Illustrate the concept of File-system implementation. 7 Marks L2 CO4 PO2

(OR)

8. a) Explain in detail about different file allocation methods. 7 Marks L1 CO4 PO1
- b) Discuss about Kernel I/O Subsystem. 7 Marks L2 CO4 PO1

UNIT-V

9. a) What is access matrix? What are various methods to implement it? 9 Marks L3 CO5 PO3
- b) Explain Capability-Based Protection system. 5 Marks L1 CO5 PO1

(OR)

10. a) Discuss program threats, system and network threats of operating system in detail. 10 Marks L3 CO5 PO2
- b) Write about asymmetric Encryption. 4 Marks L1 CO5 PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, July – 2023**COMPUTER NETWORKS****[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) Discuss the Classification of interconnected processors by scale. | 7 Marks | L2 | CO1 | PO1 |
| | b) Illustrate the TCP/IP reference model. | 7 Marks | L4 | CO1 | PO2 |
| (OR) | | | | | |
| 2. | a) What are the advantages of fiber optics over copper as a transmission medium? Is there any downside of using fiber optics over copper? | 7 Marks | L3 | CO1 | PO2 |
| | b) Compare and contrast Circuit switching and Packet switching. | 7 Marks | L2 | CO1 | PO1 |

UNIT-II

- | | | | | | |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Explain the functions of a Data link layer. | 7 Marks | L2 | CO2 | PO1 |
| | b) Sixteen-bit messages are transmitted using a Hamming code. How many check bits are needed to ensure that the receiver can detect and correct single-bit errors? Show the bit pattern transmitted for the message 1101001100110101. Assume that even parity is used in the Hamming code. | 7 Marks | L4 | CO2 | PO3 |
| (OR) | | | | | |
| 4. | a) Illustrate the Architecture of classic Ethernet. | 7 Marks | L3 | CO2 | PO2 |
| | b) Explain in detail which device is used in each layer. | 7 Marks | L2 | CO2 | PO2 |

UNIT-III

- | | | | | | |
|-------------|----------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Differentiate datagram network and virtual-circuit network. | 7 Marks | L2 | CO3 | PO2 |
| | b) What is Count-to-Infinity Problem? Explain with an example. | 7 Marks | L3 | CO3 | PO1 |
| (OR) | | | | | |
| 6. | a) Discuss in detail Traffic Throttling. | 7 Marks | L2 | CO3 | PO1 |
| | b) List out the major goals of IPV 6. | 7 Marks | L2 | CO3 | PO1 |

UNIT-IV

- | | | | | | |
|-------------|------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Explain the Steps involved in making a remote procedure call. | 7 Marks | L2 | CO4 | PO2 |
| | b) What is a jitter? Differentiate High jitter and Low jitter. | 7 Marks | L3 | CO4 | PO1 |
| (OR) | | | | | |
| 8. | a) Discuss the TCP Segment Header. | 7 Marks | L2 | CO4 | PO1 |
| | b) What is Silly window syndrome? Explain in detail. | 7 Marks | L3 | CO4 | PO2 |

UNIT-V

- | | | | | | |
|-------------|--------------------------------------------------------------------------------|---------|----|-----|-----|
| 9. | a) List out the principal DNS resource record types. | 7 Marks | L2 | CO5 | PO2 |
| | b) Explain the Architecture of the email system. | 7 Marks | L2 | CO5 | PO2 |
| (OR) | | | | | |
| 10 | a) Discuss a multithreaded Web server with a front end and processing modules. | 7 Marks | L3 | CO5 | PO1 |
| | b) Explain in detail HTTP Connections. | 7 Marks | L2 | CO5 | PO2 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

CONTROL SYSTEMS

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

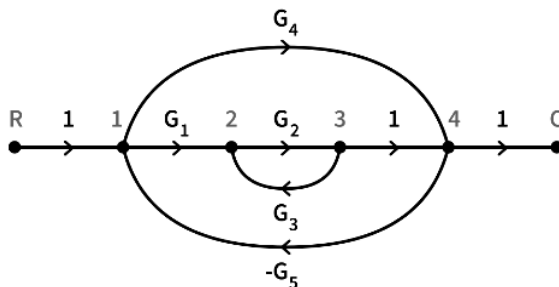
Time: 3 hours

Max. Marks: 70

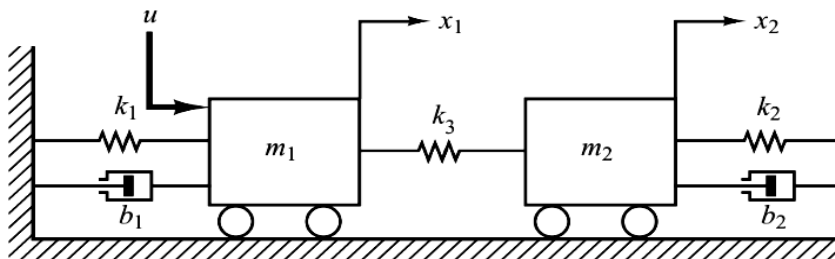
**Answer One Question from each Unit
All questions carry equal marks**

UNIT-I

1. a) Derive the transfer function for the signal flow graph shown below using signal flow graph. 7 Marks L3 CO1 PO2



- b) Explain Force-voltage and force-current analogy in detail. 7 Marks L2 CO1 PO1
- (OR)**
2. Write the equations governing the system given below and derive the transfer function of it. 14 Marks L3 CO1 PO5



UNIT-II

3. a) Write a short note on standard test signals. 7 Marks L1 CO2 PO1
- b) An open loop transfer function of a unity feedback system is given below. Evaluate the first three coefficients of error series and steady state for the input $r(t)=(8t^2)/2$. 7 Marks L3 CO2 PO2

$$G(s) = \frac{9}{(s + 1)}$$

(OR)

4. a) What are the effects of P, PI and PID controllers on the time response of a system? 7 Marks L2 CO2 PO1
- b) For the system having closed loop transfer function given below. 7 Marks L3 CO2 PO2
- $$\frac{C(s)}{R(s)} = \frac{4}{s^2 + 2s + 4}$$
- Determine the time response specifications for a unit step input.

UNIT-III

5. a) Apply RH criterion for the equation to determine the stability $2s^5+8s^4+12s^3+20s^2+16s+16=0$. 7 Marks L3 CO3 PO4
 b) Explain the effect of adding poles and zeros on the root locus of a system. 7 Marks L2 CO3 PO4

(OR)

6. Consider that for the system with transfer function given below we have to sketch the root locus and predict its stability. 14 Marks L3 CO3 PO3

$$G(s)H(s) = \frac{K}{s(s^2 + 2s + 2)}$$

UNIT-IV

7. a) Write down the procedure for designing lag compensator using bode plot. 7 Marks L2 CO4 PO1
 b) What are frequency domain specifications? Define each of them and explain in detail with the help of necessary diagrams. 7 Marks L2 CO4 PO1

(OR)

8. Calculate the phase margin and gain margin of the system whose open-loop transfer function is given below using bode plot. 14 Marks L3 CO4 PO2

$$G(s) = \frac{20(s + 20)}{s(2s + 1)(s + 40)}$$

UNIT-V

9. a) Determine the controllability of the system given below. 7 Marks L3 CO5 PO2

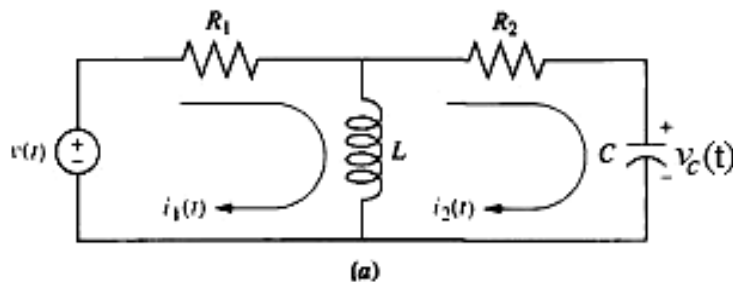
$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \\ \dot{x}_3 \end{bmatrix} = \begin{bmatrix} 0 & 1 & -2 \\ 3 & -4 & 5 \\ -6 & 7 & 8 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} + \begin{bmatrix} 0 & -1 \\ 2 & -3 \\ 4 & 5 \end{bmatrix} u$$

- b) Obtain the state space representation of the following transfer function. 7 Marks L3 CO5 PO2

$$G(s) = \frac{s^2 + 2s + 3}{s^3 + 5s^2 + 3s + 2}$$

(OR)

- 10 a) Define state transition matrix and list its properties. 7 Marks L1 CO5 PO2
 b) Obtain the transfer function of the electrical system given below. 7 Marks L3 CO5 PO2



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 and explain the operation of Bistable Multivibrator. | 10 Marks | L4 | CO1 | PO1 |
| | b) List out the Applications PLL. | 4 Marks | L1 | CO1 | PO1 |
| (OR) | | | | | |
| 2. | a) Explain the operation of RC Phase shift oscillator. | 7 Marks | L3 | CO1 | PO2 |
| | b) Design square wave generator with 50% duty cycle. | 7 Marks | L3 | CO2 | PO3 |

UNIT-II

- | | | | | | |
|-------------|-----------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) Explain in detailed about dual slope ADC and demonstrate it with example. | 7 Marks | L3 | CO3 | PO3 |
| | b) Explain in detailed about Counter type ADC and demonstrate it with example. | 7 Marks | L3 | CO3 | PO3 |
| (OR) | | | | | |
| 4. | a) Discuss about the design consideration of Inverted R-2R ladder DAC and explain about advantages and disadvantages of it. | 7 Marks | L3 | CO3 | PO2 |
| | b) Explain in detailed about Parallel comparator type ADC and demonstrate it with example. | 7 Marks | L2 | CO3 | PO3 |

UNIT-III

- | | | | | | |
|-------------|--------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 5. | a) Explain the features of behavioral modelling of Verilog language. | 7 Marks | L2 | CO4 | PO3 |
| | b) Write the Verilog code for full subtractor in behavioral modelling. | 7 Marks | L2 | CO4 | PO3 |
| (OR) | | | | | |
| 6. | Explain different modelling styles in Verilog coding with an example program for each modelling style. | 14 Marks | L2 | CO4 | PO3 |

UNIT-IV

- | | | | | | |
|-------------|--------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 7. | Explain the operation of 3x8 Decoder using 74x139 IC and design using logic gates and also write the Verilog code. | 14 Marks | L3 | CO5 | PO3 |
| (OR) | | | | | |
| 8. | Design and explain the operation of 374x151 multiplexer and also write the Verilog code. | 14 Marks | L3 | CO5 | PO3 |

UNIT-V

- | | | | | | |
|-------------|----------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | Explain the operation of 74x163,74x169 counters with help of Verilog code. | 14 Marks | L3 | CO5 | PO3 |
| (OR) | | | | | |
| 10 | Explain the operations of Ring and Johnson counter with help Verilog code. | 14 Marks | L3 | CO4 | PO3 |

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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

THEORY OF COMPUTATION

[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

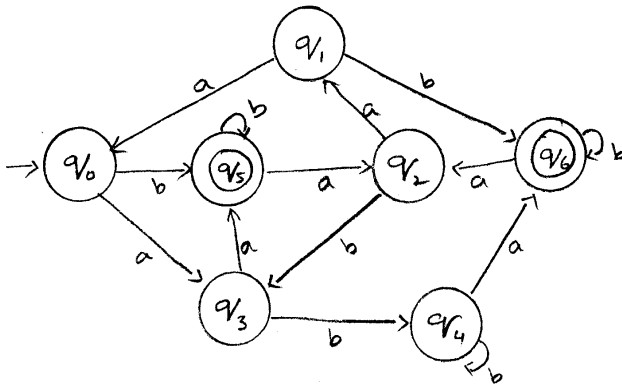
- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 1. | a) | Write short notes on applications 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) | Let L be a set accepted by a NFA then show that there exists a DFA that accepts L. | 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

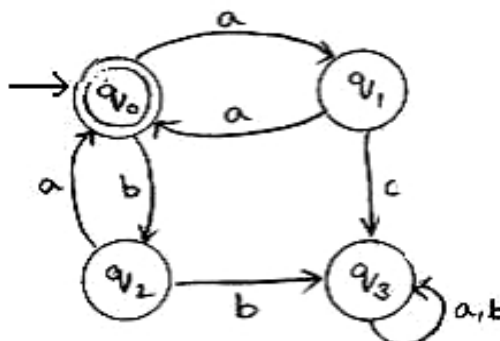
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|----|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | Minimize the Finite automation given below and show both the given and the reduced one are equivalent. | 7 Marks | L3 | CO2 | PO2 |
|----|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|-----|



- | | | | | | |
|----|------------------------------------------------------------------------------|---------|----|-----|-----|
| b) | Construct a regular expression for the set of all the strings ends with 001. | 7 Marks | L3 | CO2 | PO3 |
|----|------------------------------------------------------------------------------|---------|----|-----|-----|

(OR)

- | | | | | | | |
|----|----|--------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Describe the closure properties of regular languages. | 7 Marks | L2 | CO3 | PO1 |
| | b) | Construct the regular expression accepted by following finite automaton: | 7 Marks | L4 | CO3 | PO3 |



UNIT-III

5. a) Obtain CFG for balanced set of parenthesis. 7 Marks L3 CO4 PO4
b) Simplify the grammar G. 7 Marks L3 CO4 PO4
 $S \rightarrow AB$
 $A \rightarrow a$
 $B \rightarrow b$
 $B \rightarrow C$
 $E \rightarrow c^{\wedge}$
- (OR)**
6. Convert the following grammar to Greibach normal form. 14 Marks L3 CO4 PO4
 $S \rightarrow ABA \rightarrow BS|b$
 $B \rightarrow SB|a$

UNIT-IV

7. a) Prove that the given Language $L = \{a^m b^n \mid m, n \geq 1\}$ is not a regular. 7 Marks L2 CO2 PO2
b) Show that the language $L_1 = \{0^n 1^m \mid n=m \text{ and } n \geq 1\}$ is deterministic context free language. 7 Marks L4 CO6 PO2
- (OR)**
8. a) Design a PDA for accepting a language $\{a^n b^{2n} \mid n \geq 1\}$. 7 Marks L4 CO6 PO4
b) Construct PDA for the given CFG, and test whether 0104 is acceptable by this PDA. 7 Marks L4 CO6 PO3
 $S \rightarrow 0BB.$
 $B \rightarrow 0S \mid 1S \mid 0.$

UNIT-V

9. a) Define Turing machine and explain its model. 7 Marks L2 CO5 PO1
b) Design Turing machine for the language $L = \{w \in \{a,b,c\}^* \mid w \text{ contains equal number of } a\text{'s, } b\text{'s and } c\text{'s}\}$. 7 Marks L4 CO5 PO3
- (OR)**
10. Design Turing machine for the following:
 i) That computes ones complement of a binary number. 7 Marks L4 CO5 PO3
 ii) That shifts the input string, over the alphabet $(0,1)$ by one position right by inserting '#' as the first character. 7 Marks L4 CO5 PO4



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) | What are the required surveys to select the best alignment for given road? | 7 Marks | L2 | CO1 | PO1
PO5
PO6
PO7 |
| | b) | Design the extra widening required for a pavement of width 7m on a horizontal curve of radius 255 m if the longest wheel base of vehicle expected on the road is 7.0 m. Design speed is 75 kmph. | 7 Marks | L6 | CO2 | PO1
PO2
PO3
PO4
PO8 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----------------------------------------------|
| 2. | a) | Write a short note on Jayakar Committee recommendations. | 7 Marks | L2 | CO1 | PO1 |
| | b) | Design overtaking sight distance for a design speed of 90 kmph. Assume all other required data as per IRC recommendations. | 7 Marks | L6 | CO2 | PO1
PO2
PO3
PO4
PO6
PO7
PO8 |

UNIT-II

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|--------------------------|
| 3. | a) | A two lane road at present carrying a traffic of 1500 CVPD. It is to be strengthen for growing traffic needs, VDF=3.75, rate of growth of traffic 7.5% annum, period of construction is 5 years. The pavement is to be designed for a life of 10 years after completion. Calculate the cumulative standard axles used for design. | 7 Marks | L4 | CO3 | PO1
PO2
PO5
PO8 |
| | b) | Write a short note on Los Angeles abrasion test and its significance. | 7 Marks | L2 | CO1 | PO1
PO5
PO8 |

(OR)

- | | | | | | | |
|----|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|---------------------------------|
| 4. | a) | Write a short note on ductility test on bitumen and its significance. | 7 Marks | L2 | CO1 | PO1
PO2
PO5
PO8 |
| | b) | Properties of soil are as follows:
Passing through 0.074 sieve = 55%, Liquid Limit = 50%
Classify the soil.
Discuss the suitability of soil as subgrade. | 7 Marks | L4 | CO1 | PO1
PO2
PO4
PO5
PO8 |

UNIT-III

5. a) What is the need of spot speed studies discuss briefly? 7 Marks L2 CO4 PO1
b) Briefly discuss the scope of traffic engineering. 7 Marks L4 CO4 PO1
PO2
- (OR)**
6. a) Write a short note on road user characteristics. 7 Marks L2 CO4 PO1
b) Briefly discuss the latest developments in traffic volume data 7 Marks L4 CO4 PO1
collection. PO2
PO5
PO12

UNIT-IV

7. a) Discuss briefly about rail joints with neat sketches. 7 Marks L4 CO5 PO1
PO2
PO10
b) A turnout takes off as a 6° curve with contrary flexure from a BG main line on a 4° curve. The speed on the branch line is restricted to 45 km/hr. Determine the maximum permissible speed on the main line. 7 Marks L4 CO5 PO1
PO2
PO4
- (OR)**
8. a) Briefly discuss the permanent way with a neat sketch. 7 Marks L2 CO5 PO1
PO10
b) Determine the quantity of all the materials required for 5 km track laying for BG. 7 Marks L4 CO5 PO1
PO2
PO4
PO8

UNIT-V

9. a) Write a short note on Airport drainage. 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 45° C during the hottest month of the year. During the same month, the average daily temperature is 33° C. Calculate the airport reference temperature. If the site is at MSL and is having an effective gradient of 0.5%. Calculate the actual length to be provided, if basic runway length is 2000 m. 7 Marks L4 CO6 PO1
PO2
PO4
PO8
- (OR)**
- 10 a) Write a short note on Terminal building and its functions. 7 Marks L2 CO6 PO1
PO8
b) The basic length of runway required for take-off and landing are 2000m and 2400m respectively at the proposed site for an airport situated 450m above MSL. The airport reference temperature is 24° C and the effective gradient along the proposed runway is 0.4%. Calculate the actual length of the runway to be provided. 7 Marks L4 CO6 PO1
PO2
PO4
PO8



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) Enlist various methods of estimating depreciation and explain any one in detail. | 7 Marks | L2 | CO1 | PO1
PO5
PO6 |
| | b) Discuss in details various reasons for replacement of construction equipment. | 7 Marks | L2 | CO1 | PO1
PO5
PO6 |

(OR)

- | | | | | | |
|----|-------------------------------------------------------------------------|---------|----|-----|-------------------|
| 2. | a) State and describe the causes of accidents at the construction site. | 7 Marks | L2 | CO1 | PO1
PO2
PO7 |
| | b) Discuss equipment replacement policy. | 7 Marks | L2 | CO1 | PO1
PO5
PO6 |

UNIT-II

- | | | | | | |
|----|---------------------------------------------------------------------|---------|----|-----|-------------------|
| 3. | a) Write short notes on
i) Crawler tractor ii) Wheel tractor. | 6 Marks | L1 | CO2 | PO1
PO2
PO5 |
| | b) Discuss the different compactors in detail. | 8 Marks | L2 | CO2 | PO1
PO2
PO5 |

(OR)

- | | | | | | |
|----|----------------------------------------------------------------------------|---------|----|-----|-------------------|
| 4. | a) Classify bulldozers. State uses of bulldozers on construction projects. | 6 Marks | L1 | CO2 | PO1
PO2
PO5 |
| | b) Explain about different types of Hauling equipment. | 8 Marks | L2 | CO2 | PO1
PO2
PO5 |

UNIT-III

- | | | | | | |
|----|------------------------------------------------------------------------------------------------------------|---------|----|-----|--------------------|
| 5. | a) Describe about different types of crushers. | 7 Marks | L2 | CO3 | PO1
PO2
PO5 |
| | b) What do you mean by concrete mixer? Explain the different types of concrete mixers and its application. | 7 Marks | L2 | CO3 | PO1
PO5
PO10 |

(OR)

- | | | | | | |
|----|-----------------------------------------------------------|---------|----|-----|-------------------|
| 6. | a) Explain different types of pumps used in construction. | 8 Marks | L2 | CO3 | PO1
PO2
PO5 |
| | b) Write the functions of mobile crane. | 6 Marks | L1 | CO3 | PO1
PO2
PO5 |

UNIT-IV

7. a) Describe about the Architecture and Components of Building Automation System. 7 Marks L2 CO4 PO1
PO2
PO5
PO11
- b) What are the applications of Building Automation System? 7 Marks L1 CO4 PO1
PO2
PO5
PO11
- (OR)**
8. a) What are the uses and benefits of Virtual reality technologies? 7 Marks L1 CO4 PO1
PO2
PO5
PO11
- b) Write short note on Building Information Modeling. 7 Marks L1 CO4 PO1
PO2
PO5
PO11

UNIT-V

9. a) What is the full form of DRONE? What are drones useful for? 7 Marks L1 CO5 PO1
PO2
PO5
PO6
PO11
- b) Describe the need of automation in precast construction industry? 7 Marks L2 CO5 PO1
PO2
PO5
PO6
PO11
- (OR)**
- 10 a) Write about applications of Automated construction and robotics. 7 Marks L1 CO5 PO1
PO2
PO5
PO6
PO11
- b) Describe the challenges in construction robotics. 7 Marks L2 CO5 PO1
PO2
PO5
PO6
PO11



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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. a) Explain important Theories of Elastic failure. 7 Marks L2 CO1 PO1
 b) A cylindrical shaft made of steel of yield strength 690 Mpa is subjected to static loads consisting of bending moment 10 kN-m and torsional moment 30 kN-m. Determine the diameter of shaft using i) Maximum principal stress theory ii) Maximum shear stress theory iii) maximum strain energy theory. Assume factor of safety of 2.3, Take $E = 220 \text{ GPa}$ and Poisson's ratio = 0.23. 7 Marks L3 CO1 PO1 PO2 PO3 PO4

(OR)

2. A steel rod of circular cross section is subjected to an axial load varying from 20 KN to 50 KN and the bending moment varies from 500 N-m to 1000 N-m. Determine the diameter of the rod assuming factor safety as 2.25. Consider $\sigma_u = 560 \text{ MPa}$, $\sigma_y = 320 \text{ MPa}$. Consider Size factor = 0.8, surface finish factor = 0.85, load factor = 1 for both axial and bending, fatigue stress concentration factor = 1.2. 14 Marks L4 CO1 PO1 PO2 PO3 PO4

UNIT-II

3. A line shaft is to transmit 30 kW at 160 r.p.m. It is driven by a motor placed directly under it by means of a belt running on a 1 m diameter pulley keyed to the end of the shaft. The tension in the tight side of the belt is 2.5 times that in the slack side and the centre of the pulley over-hangs 150 mm beyond the centre line of the end bearing. Determine the diameter of the shaft, if the allowable shear stress is 56 MPa and the pulley weighs 1600 N. 14 Marks L3 CO2 PO1 PO2 PO3 PO4

(OR)

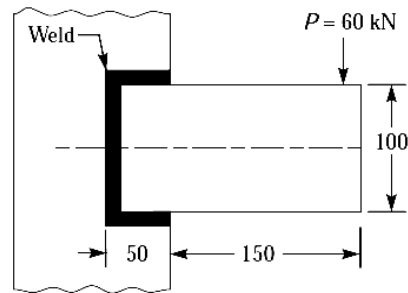
4. Design a compression coupling for a shaft to transmit 1300 N-m. The allowable shear stress for the shaft and key is 40 MPa and the number of bolts connecting the two halves are 4. The permissible tensile stress for the bolts material is 70 MPa. The coefficient of friction between the muff and the shaft surface may be taken as 0.3. 14 Marks L4 CO2 PO1 PO2 PO3 PO4

UNIT-III

5. A steam engine cylinder of size 300 mm × 400 mm operates at 1.5 N/mm² pressure. The cylinder head is connected by means of 8 bolts having yield point stress of 350MPa and endurance limit of 240MPa. The bolts are tightened with an initial preload of 1.8 times the steam lead. The joint is made leak-proof by using soft copper gasket which renders the effect of external load to be half. Determine the size of bolts, if factor of safety is 2 and stress concentration factor is 3. 14 Marks L3 CO3 PO1 PO2 PO3 PO4

(OR)

6. A rectangular steel plate is welded as a cantilever to a vertical column and supports a single concentrated load P , as shown in Figure 1. Determine the weld size if shear stress in the same is not to exceed 140 MPa. 14 Marks L3 CO3 PO1 PO2 PO3 PO4



UNIT-IV

7. Design a suitable journal bearing for a centrifugal pump from the following available data : Load on the bearing = 13.5 kN; Diameter of the journal = 80 mm; Speed = 1440 r.p.m.; Bearing characteristic number at the working temperature (75°C) = 30 ; Permissible bearing pressure intensity = 0.7 N/mm² to 1.4 N/mm²; Average atmospheric temperature = 30°C . Calculate the cooling requirements, if any. 14 Marks L4 CO4 PO1 PO2 PO3 PO4

(OR)

8. A single row deep groove ball bearing has a dynamic load capacity of 40500N and operates on the following work cycle. 14 Marks L3 CO4 PO1 PO2 PO3 PO4
- i) Radial load of 5000N at 500 rpm for 25% of the time
 - ii) Radial load of 10000N at 700 rpm for 50% of the time and
 - iii) Radial load of 7000N at 400 rpm for remaining 25% of time.

Calculate the expected life of the bearing in hours.

UNIT-V

9. a) Name different types of springs and give their applications. Distinguish between closely coiled and open coiled helical springs. 7 Marks L2 CO5 PO1 PO2
- b) Design a close coiled helical compression spring for a service load ranging from 2250 N to 2750 N. The axial deflection of the spring for the load range is 6 mm. Assume a spring index of 5. The permissible shear stress intensity is 420 MPa and modulus of rigidity = 84 kN/mm². Neglect the effect of stress concentration. 7 Marks L4 CO5 PO1 PO2 PO3 PO4

(OR)

10. A gear drive is required to transmit a maximum power of 22.5 kW. The velocity ratio is 1:2 and r.p.m. of the pinion is 200. The approximate centre distance between the shafts may be taken as 600 mm. The teeth have 20° stub involute profiles. The static stress for the gear material (which is cast iron) may be taken as 60 MPa and face width as 10 times the module. Find the module, face width and number of teeth on each gear. Check the design for dynamic and wear loads. The deformation or dynamic factor in the Buckingham equation may be taken as 80 and the material combination factor for the wear as 1.4. 14 Marks L4 CO5 PO1 PO2 PO3 PO4



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

OPERATIONS RESEARCH

[Mechanical Engineering]

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. Solve graphically and comment on the solution 14 Marks L4 CO1 PO1 PO2
 Maximize $Z = 20x_1 + 30x_2$
 Subjected to $2x_1 + x_2 \leq 40$
 $4x_1 - x_2 \leq 20$
 $x_1 \geq 30$
 $x_1, x_2 \geq 0$

(OR)

2. Solve the following LPP by using simplex method 14 Marks L3 CO1 PO1 PO2
 Maximize $Z = 2x_1 + 4x_2$
 Subjected to $2x_1 + x_2 \leq 18$
 $3x_1 + 2x_2 \geq 30$
 $x_1 + 2x_2 = 26$
 $x_1, x_2 \geq 0$

UNIT-II

3. Solve the transportation problem 14 Marks L3 CO1 PO1 PO2
- | | | | | | |
|--------|----|----|-----|----|--------|
| | W1 | W2 | W3 | W4 | Supply |
| P1 | 2 | 7 | 4 | 5 | 200 |
| P2 | 6 | 7 | 2 | 2 | 60 |
| P3 | 4 | 4 | 3 | 3 | 140 |
| Demand | 80 | 40 | 120 | 60 | |

(OR)

4. Solve the Assignment Problem for workers (w1 to w4) to Jobs (J1 to J5) (-- indicates not possible) 14 Marks L3 CO1 PO1 PO2
- | | | | | | |
|--|----|----|----|----|----|
| | 9 | 11 | 15 | 10 | 11 |
| | 12 | 9 | -- | 10 | 9 |
| | -- | 11 | 14 | 11 | 7 |
| | 14 | 8 | 12 | 7 | 8 |

UNIT-III

5. Solve the following Game using graphical method. 14 Marks L3 CO2 PO1 PO2
- | | | | |
|--------------|----|--------------|----|
| | | B's Strategy | |
| | | b1 | b2 |
| A's Strategy | a1 | -7 | 6 |
| | a2 | 7 | -4 |
| | a3 | -4 | -2 |
| | a4 | 8 | -6 |

(OR)

6. a) Derive EOQ by assuming suitable assumptions. 7 Marks L2 CO3 PO1
PO2
- b) The annual demand of a product is 24,000 units. The buying cost per order is Rs. 100/- and the estimated cost of carrying one unit in stock for a month is 2%. The normal price of the product is Rs 10/- per unit. However, the supplier offers a discount of 7.5% for an order of at least 3000 units and a discount of 12.5% if an order is for at least 5000 units. Find the most economic purchase quantity per order. 7 Marks L4 CO3 PO1
PO2

UNIT-IV

7. A project Schedule has the following characteristics. Find Critical Path and Project duration and also tabulate all the float values (in days). 14 Marks L3 CO4 PO1
PO2
PO3

Activity	1-2	1-4	1-5	2-3	2-5	2-6	3-6	4-6	4-7	5-6	5-7	6-7
Duration	10	1	5	9	8	10	4	5	4	7	3	8

(OR)

8. The data related to a small project consisting of different activities are given below: 14 Marks L4 CO4 PO1
PO2
PO3

Activity	Normal Duration	Normal cost	Crash Duration	Crash cost
(1,2)	8	100	6	200
(1,3)	4	150	2	350
(2,4)	2	50	1	90
(2,5)	10	100	5	400
(3,4)	5	100	1	200
(4,5)	3	80	1	100

For the above given data draw the network and find the optimum duration and cost.

UNIT-V

9. a) Discuss in detail about the various elements of queuing system. 7 Marks L2 CO5 PO1
PO2
- b) The arrival of cars is Poisson at a mean rate of 6 minutes for car. The length of time each car spends in the car park has negative exponential distribution with a mean 5 minutes for car. A car park contains five cars. How many cars are in the car park on average and what is the probability of a newly arriving customer finding the car park full and having to park his car. 7 Marks L3 CO5 PO1
PO2

(OR)

10. A confectioner sells confectionery items. Past data of demand per week in hundred kilograms with frequency is given below. 14 Marks L4 CO5 PO1
PO2

Demand/week	Frequency
0	2
5	11
10	8
15	21
20	5
25	3

Using the following sequence of random numbers, generate the demand for the next 10 weeks. Also find out the average demand per week.

Random numbers: 35,52,90,13,23,73,34,57,35,83,94,56,67,66,60



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 simple vertical boiler with a neat sketch. 7 Marks L2 CO1 PO1
 b) A Lancashire boiler generates 2400 kg of dry steam per hr at a pressure of 11 bar. The grate area is 3 m² and 900 kg of coal is burnt per m² of grate area per hr. The calorific value of the coal is 33,180 kJ/kg and temperature of feed water is 17°C. Determine:
 i) Actual evaporation / kg of coal.
 ii) Equivalent evaporation from and at 100 °C.
 iii) Efficiency of the boiler.

(OR)

2. a) Discuss boiler efficiency and heat balance sheet. 7 Marks L2 CO1 PO1
 b) The following observations were made in a boiler trial. 7 Marks L3 CO1 PO1
 Coal used = 250 kg of calorific value = 29800 KJ/kg, Water evaporated = 2000 kg, Steam pressure = 11.5 bar, dryness fraction of steam = 0.95 and feed water temperature = 34°C. Calculate:
 i) Equivalent of evaporation.
 ii) Boiler efficiency.

UNIT-II

3. a) Derive an expression for discharge of steam flow through nozzle. 7 Marks L2 CO2 PO1
 b) Dry saturated steam at a pressure of 8 bar with negligible velocity expands isentropic ally in a convergent nozzle to 2 bar and dryness fraction 0.85. Determine the velocity of steam leaving the nozzle. 7 Marks L3 CO2 PO1 PO2

(OR)

4. a) Compare the merits and demerits of surface condenser over jet condenser. 7 Marks L2 CO2 PO1
 b) Vacuum efficiency of condenser is 96%. The temperature of condensate is 40°C. If the barometer reads 752 mm of hg, find the vacuum gauge reading of the condenser. 7 Marks L2 CO2 PO1 PO2

UNIT-III

5. a) Differentiate between impulse and reaction turbines. 7 Marks L1 CO3 PO1
 b) The steam supply to an impulse turbine with a single row of moving blades is 2 kg/sec. The turbine develops 130KW, the blade velocity being 175 m/s. The steam flows from the nozzle with a velocity of 400 m/s and the velocity coefficient of blades is 0.9. Find the nozzle angle, blade angle at entry and exit, if the steam flows axially after passing over the blades. 7 Marks L3 CO3 PO1 PO2 PO3 PO4

(OR)

6. a) What is degree of reaction? Explain with h-s diagram. 7 Marks L3 CO3 PO1
 b) A parson's reaction turbine, while running at 400 rpm consumes 30 tons of steam per hour. The steam at a certain stage is at 1.6 bar with dryness fraction of 0.9 and the stage develops 10KW. The axial velocity of flow is constant and equal to 0.75 of the blade velocities. Find mean diameter of the drum and volume of the steam flowing per second. The blade tip angles at inlet and exit as 35° and 20° respectively. 7 Marks L3 CO3 PO1 PO2 PO3 PO4

UNIT-IV

7. a) List the desirable properties of refrigerants. 7 Marks L3 CO4 PO1 PO2
 b) In a refrigeration plant works on bell Coleman cycle. Air is compressed to 5 bars from 1 bar. Its initial temperature is 10°C after compression the air is cooled up to 20°C in a cooler before expanding back to a pressure of 1 bar. Determine the theoretical COP of the plant and net refrigerating effect. Take $C_p = 1.005\text{ KJ/kg K}$ and $C_v = 0.718\text{ KJ/kg K}$. 7 Marks L3 CO4 PO1 PO2 PO3

(OR)

8. a) Discuss the advantages of vapour absorption refrigeration system over vapour compression refrigeration system. 7 Marks L3 CO4 PO1 PO2
 b) Differentiate between heat engine, refrigerator and heat pump with neat sketch. 7 Marks L3 CO4 PO1 PO2 PO3

UNIT-V

9. a) With the help of psychrometric charts, explain the following process: 7 Marks L3 CO5 PO1
 i) Heating and humidification process.
 ii) Cooling and de humidification.
 b) Atmospheric air with dry bulb temperature of 28°C and a wet bulb temperature of 17°C is cooled to 15°C without changing its moisture content. Find: 7 Marks L3 CO5 PO1 PO2 PO3
 i) Original relative humidity.
 ii) Final relative humidity.
 iii) Final wet bulb temperature.

(OR)

- 10 a) Define the following terms: 7 Marks L3 CO5 PO1 PO2
 i) Specific humidity.
 ii) Absolute humidity.
 iii) Relative humidity.
 b) Draw a neat diagram of air conditioning system required for winter season. Explain the working of different components in the circuit. 7 Marks L3 CO5 PO1 PO2 PO3 PO4



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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 and discuss the chassis types, layouts and structure for rear wheel drive and front wheel drive. 14 Marks L2 CO1 PO1 PO2

(OR)

2. a) Enumerate and discuss the various CI engine injection systems. 7 Marks L2 CO1 PO1 PO2
b) Assess the applications and requirements of turbochargers versus super chargers. 7 Marks L3 CO1 PO1 PO2

UNIT-II

3. Discuss the working of a forced cooling system and state the properties of an anti-freeze liquid. 14 Marks L2 CO2 PO1 PO2

(OR)

4. Using sketch discuss the working of an Electronic Ignition System. 14 Marks L2 CO2 PO1 PO2

UNIT-III

5. Use sketch to explain the Bendix drive mechanism and state the need for the mechanism. 14 Marks L2 CO3 PO1 PO2

(OR)

6. a) Analyze the application/working of Electronic Stability Program (ESP). 7 Marks L3 CO3 PO1 PO2 PO6
b) Assess the need for Traction Control System and explain its working (TCS). 7 Marks L3 CO3 PO1 PO2

UNIT-IV

7. Discuss with relevant sketches the working of synchromesh Gear box and state its advantages over other types of gear box. 14 Marks L2 CO4 PO1 PO2

(OR)

8. a) Using sketch show the toe-in, toe-out, Camber and caster angles 7 Marks L2 CO4 PO1 PO2
b) Discuss using sketch Under steering, over steering and steering ratio. 7 Marks L2 CO4 PO1 PO2

UNIT-V

9. a) Using sketch explain the working of Torsion bar. 7 Marks L2 CO5 PO1 PO2
b) State the advantages of independent suspension and provide list of few vehicle models which use this suspension. 7 Marks L3 CO5 PO1 PO2 PO6

(OR)

10. Using sketch discuss the working of vacuum brake systems. 14 Marks L2 CO5 PO1 PO2



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) Discuss the operation of DPCM transmitter and receiver with neat block diagram. 7 Marks L2 CO1 PO1
- b) Compare Pulse Code Modulation and Delta modulation systems. 7 Marks L4 CO1 PO2

(OR)

2. a) Explain different Quantization Techniques. 7 Marks L2 CO1 PO1
- b) Derive an expression for output Signal to Quantization noise ratio in Pulse Code Modulation system. 7 Marks L3 CO1 PO2

UNIT-II

3. Write short notes on: 14 Marks L2 CO2 PO1
- i) Inter symbol Interference.
- ii) Correlative coding.

(OR)

4. a) Explain the elements of Base band binary PAM system. 7 Marks L2 CO2 PO1
- b) Explain the concept of eye pattern. 7 Marks L2 CO2 PO1

UNIT-III

5. a) Derive an expression for the probability of error in Coherent PSK. 7 Marks L3 CO2 PO2
- b) With a neat block diagram, explain the generation and reception of DPSK signals. 7 Marks L2 CO2 PO1

(OR)

6. a) Sketch the power spectra of BPSK and BFSK and explain briefly. 7 Marks L3 CO2 PO2
- b) Distinguish between ASK, FSK and PSK systems. 7 Marks L4 CO2 PO2

UNIT-IV

7. a) Define mutual information and explain the properties of mutual Information. 7 Marks L2 CO3 PO1
- b) Apply the Huffman coding procedure for the following message ensemble to find the code word: 7 Marks L3 CO3 PO4

Signal	X1	X2	X3	X4	X5	X6	X7
Probability	0.5	0.2	0.1	0.05	0.05	0.05	0.05

(OR)

8. a) Define the following: 7 Marks L1 CO3 PO1
- i) Shanon's source coding theorem
- ii) Channel capacity
- b) A memoryless source emits six messages with probabilities 0.3, 0.25, 0.15, 0.12, 0.1, and 0.08. Determine its average word length, the efficiency, and the redundancy using Huffman code. 7 Marks L3 CO3 PO4

UNIT-V

9. a) Find (7, 4) cyclic codeword generated in Systematic and Non-systematic form when message data D(1011), D(0101) is applied to Cyclic Encoder with generator polynomial of a is $g(x)=1+X+X^3$. 7 Marks L3 CO4 PO3
- b) Discuss the matrix description of linear block codes. 7 Marks L2 CO4 PO2
- (OR)**
- 10 Briefly describe about the Code tree, Trellis and State Diagram for a Convolution Encoder. 14 Marks L3 CO4 PO1



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) | Sketch the circuit diagram of basic DTL NAND gate and explain its operation. | 7 Marks | L2 | CO1 | PO2 |
| | b) | Describe the circuit diagram of 2-input LS-NOR gate and explain its operation. | 7 Marks | L1 | CO1 | PO1 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------|---------|----|-----|-----|
| 2. | a) | Explain in detail about CMOS steady state electrical behavior. | 7 Marks | L1 | CO1 | PO1 |
| | b) | Sketch the basic circuit diagram of the TTL family. Explain its operation. | 7 Marks | L4 | CO1 | PO2 |

UNIT-II

- | | | | | | | |
|----|----|------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) | With neat diagram explain the fabrication process of CMOS using N-well. | 7 Marks | L2 | CO2 | PO1 |
| | b) | Derive an expression for drain current for NMOS in different regions of operation. | 7 Marks | L4 | CO2 | PO2 |

(OR)

- | | | | | | | |
|----|----|--------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 4. | a) | Derive an expression for pull up to pull down ratio for CMOS inverter driven by another CMOS inverter. | 7 Marks | L4 | CO2 | PO1 |
| | b) | Draw the circuit diagram of NMOS inverter with resistive load and explain the operation. | 7 Marks | L1 | CO2 | PO2 |

UNIT-III

- | | | | | | | |
|----|----|-------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) | Design NAND and NOR gates using CMOS and draw stick diagram. | 7 Marks | L4 | CO3 | PO8 |
| | b) | Explain the following:
i) Sheet resistance ii) Delay unit | 7 Marks | L1 | CO3 | PO4 |

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------|---------|----|-----|-----|
| 6. | a) | Explain in detail about Lambda based design rules. | 7 Marks | L2 | CO3 | PO3 |
| | b) | Design CMOS inverter and draw layout diagram. | 7 Marks | L3 | CO3 | PO2 |

UNIT-IV

- | | | | | | | |
|----|----|-----------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) | Implement various logical operations using 1-bit adder element. | 7 Marks | L3 | CO4 | PO4 |
| | b) | Analyze the operation of Manchester carry chain adder element. | 7 Marks | L2 | CO4 | PO8 |

(OR)

- | | | | | | | |
|----|----|------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | What is the disadvantage of Ripple carry adder? How it can be avoided using Carry look a head adder? | 7 Marks | L2 | CO4 | PO1 |
| | b) | Implement 4x1 MUX using pass transistor logic and draw its stick diagram. | 7 Marks | L4 | CO4 | PO4 |

UNIT-V

- | | | | | | | |
|----|----|-----------------------------------------------------------|---------|----|-----|-----|
| 9. | a) | With flow chart explain in detail about VLSI design flow. | 7 Marks | L2 | CO5 | PO1 |
| | b) | Explain about building block architecture of FPGA. | 7 Marks | L1 | CO5 | PO1 |

(OR)

- | | | | | | | |
|-----|----|-------------------------------------------------------------------|---------|----|-----|-----|
| 10. | a) | Explain building block architecture of CPLD. | 7 Marks | L1 | CO5 | PO2 |
| | b) | Outline various routing procedures involved in FPGA interconnect. | 7 Marks | L1 | CO5 | PO2 |



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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**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) 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 |
| (OR) | | | | | |
| 2. | 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 |

UNIT-II

- | | | | | | |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 3. | a) If the 7-bit Hamming code word received by a receiver is 1011011. Assuming the even parity state whether the received code word is correct or wrong. If wrong locate the bit having error. | 7 Marks | L3 | CO3 | PO4 |
| | b) Discuss the design issues of data link layer. | 7 Marks | L1 | CO1 | PO1 |
| (OR) | | | | | |
| 4. | a) Illustrate the flow control mechanism with an example. | 7 Marks | L2 | CO3 | PO2 |
| | b) Write short notes about repeaters, routers and gateways. | 7 Marks | L2 | CO1 | PO1 |

UNIT-III

- | | | | | | |
|-------------|------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 5. | a) Apply shortest-path-routing algorithm to find a shortest path between source and destination with suitable example. | 7 Marks | L3 | CO2 | PO3 |
| | b) Compare distance vector and link state routing protocols. | 7 Marks | L3 | CO2 | PO1 |
| (OR) | | | | | |
| 6. | a) Explain hierarchical routing with an example. | 7 Marks | L3 | CO2 | PO2 |
| | b) Apply CIDR aggregation on the following IP addresses:
150.97.28.0/24,
150.97.29.0/24, and
150.97.30.0/24 | 7 Marks | L3 | CO2 | PO2 |

UNIT-IV

- | | | | | | |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 7. | a) Compare the TCP header and the UDP header. List the fields in the TCP header that are not part of the UDP header. Give the reason for each missing field. | 7 Marks | L2 | CO3 | PO2 |
| | b) With a neat diagram explain Remote Procedure Call. | 7 Marks | L2 | CO3 | PO2 |
| (OR) | | | | | |
| 8. | a) Explain RTP Header format. | 7 Marks | L2 | CO3 | PO2 |
| | b) The following is a dump of a TCP header in hexadecimal format
(0532017 00000001 00000000 500207FF 00000000) ₁₆
i) What is the source port number?
ii) What is the destination port number?
iii) What the sequence number?
iv) What is the acknowledgement number? | 7 Marks | L2 | CO3 | PO1 |

UNIT-V

9. 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
- (OR)**
- 10 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



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023**WEB TECHNOLOGIES****[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) Explain the following HTML elements with examples 7 Marks L2 CO1 PO2
i) Tables ii) Lists iii) Hyperlinks
- b) Create a sample HTML Student Course Registration Form 7 Marks L3 CO1 PO3
example and explain how forms work.

(OR)

2. a) Write an HTML program to display audio and video resources 7 Marks L2 CO1 PO2
with various attributes and their values as examples.
- b) How do you create your class time-table using all HTML table 7 Marks L2 CO1 PO2
tags? Give example.

UNIT-II

3. a) Define CSS. Explain in detail about various types of CSS. 7 Marks L1 CO2 PO1
- b) What is a class selector? Explain various types of selectors in 7 Marks L1 CO2 PO1
CSS with examples.

(OR)

4. a) Discuss Math and String Java script objects with suitable 7 Marks L4 CO2 PO1
examples.
- b) What are JavaScript events? Explain event handler approaches 7 Marks L4 CO2 PO1
and event Handler types.

UNIT-III

5. a) What is responsive design? Explain the four key components that 7 Marks L2 CO3 PO1
make the responsive design work.
- b) How many types of layouts are there in Bootstrap? Explain. 7 Marks L2 CO3 PO2

(OR)

6. a) Enumerate the various contextual classes available for styling the 7 Marks L4 CO3 PO2
panels in Bootstrap.
- b) What is the purpose of Glyphicons and Badges? Explain with 7 Marks L4 CO3 PO2
examples.

UNIT-IV

7. a) Define Array. Briefly explain the Matrix multiplication array 7 Marks L3 CO4 PO2
operations in PHP with two 3X3 input arrays.
- b) Explain the pre-defined and user- defined functions in PHP with 7 Marks L2 CO4 PO1
an example.

(OR)

8. a) Discuss errors and exceptions in PHP with suitable examples. 7 Marks L4 CO4 PO1
- b) Write the PHP code to validate the Phone number. 7 Marks L3 CO4 PO2

UNIT-V

9. a) With syntax and examples, explain PHP classes and objects. 7 Marks L2 CO5 PO2
- b) With suitable PHP scripts, explain reading and writing to a file. 7 Marks L4 CO5 PO1

(OR)

10. a) How do you create a session in PHP? Give example. 7 Marks L4 CO6 PO2
- b) How can you connect to a database in PHP? Show the simple 7 Marks L4 CO6 PO2
database operation using PHP with a proper example.



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations July – 2023

ALGORITHM ANALYSIS

[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. a) Using Recursion Tree method, solve the following recurrence relation. Assume constant time for small values of n.
 $T(n) = 2T(n/10) + T(9n/10) + n$ 6 Marks L3 CO1 PO1
 - b) Write the iterative algorithm for finding the reverse of a given string and analyze its space complexity. 8 Marks L3 CO1 PO2
- (OR)**
2. a) What are the features of an efficient algorithm? Explain with suitable examples. 7 Marks L2 CO1 PO1
 - b) What is time complexity? How to determine time complexity of an algorithm? Illustrate with an example. 7 Marks L2 CO1 PO1

UNIT-II

3. Explain the UNION and FIND operations in the linked-list representation of disjoint sets. Discuss the complexities. 14 Marks L2 CO2 PO1
- (OR)**
4. a) Explain how to find maximum and minimum elements from a list using divide and conquer strategy. 7 Marks L2 CO3 PO3
 - b) What is meant by Divide and Conquer approach? Explain the general method of Divide and Conquer approach. 7 Marks L2 CO3 PO2

UNIT-III

5. a) What is principle of optimality? Explain the characteristics of problems that can be solved using dynamic programming. 7 Marks L2 CO3 PO2
 - b) Given a chain of 4 matrices <A1, A2, A3, A4> with dimensions <5X4>, <4X6>, <6X2> and <2X7> respectively. Using Dynamic programming find the minimum number of scalar multiplications needed and also write the optimal multiplication order. 7 Marks L3 CO3 PO3
- (OR)**
6. a) Give a comparison between dynamic programming and divide and conquer strategies. 7 Marks L4 CO3 PO2
 - b) Write a function to compute lengths of shortest paths between all pairs of nodes for the given adjacency matrix. 7 Marks L3 CO2 PO2

0	6	13
8	0	4
5	∞	0

UNIT-IV

7. a) Write Dijkstra’s Single Source Shortest path algorithm. Analyze the complexity. 7 Marks L2 CO2 PO2
- b) What is the solution generated by Job Sequencing algorithm when n=6 (P1...p6) = (3, 5, 20, 18, 1, 6), and (d1..d6) = (1, 3, 4, 3, 2, 1). 7 Marks L3 CO2 PO2

(OR)

- | | | | | | | |
|----|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 8. | a) | Explain the general method of backtracking strategy. | 7 Marks | L2 | CO3 | PO2 |
| | b) | Write the backtracking algorithm for the sum of subsets problem using the state space tree corresponding to $m = 35$, $w = (20, 18, 15, 12, 10, 7, 5)$. | 7 Marks | L3 | CO3 | PO3 |

UNIT-V

- | | | | | | | |
|----|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|
| 9. | | Draw the portion of the state space tree generated by LCBB for the knapsack instance: $n = 5$, $(p_1, p_2, p_3, p_4, p_5) = (w_1, w_2, w_3, w_4, w_5) = (4, 4, 5, 8, 9)$, and $m = 15$. | 14 Marks | L3 | CO3 | PO3 |
|----|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|-----|-----|

(OR)

- | | | | | | | |
|----|----|----------------------------------------------------------------------------------------------------------|---------|----|-----|-----|
| 10 | a) | What is branch & bound? Explain the role of bounding function in it using LC – search. | 7 Marks | L2 | CO2 | PO2 |
| | b) | a) Write short notes on NP hard and NP-Complete problems.
b) Polynomial time reductions with example. | 7 Marks | L2 | CO4 | PO1 |



SREE VIDYANIKETHAN ENGINEERING COLLEGE

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M.C.A. I Semester (SVEC-20) Supplementary Examinations, July – 2023**COMPUTER NETWORKS**

Time: 3 hours

Max. Marks: 60

**Answer One Question from each Unit
All questions carry equal marks****UNIT-I**

1. a) What is a primitive? List the service primitives for implementing a connection-oriented service. 6 Marks L1 CO1 PO1
- b) Distinguish between coaxial cable and Twisted pair cables in guided transmission media. 6 Marks L3 CO2 PO2

(OR)

2. Demonstrate ISO/OSI reference model with a neat sketch. 12 Marks L2 CO1 PO3

UNIT-II

3. a) Why parity checks and check sum are used? Explain parity checks and check summing methods with an example. 7 Marks L3 CO2 PO1
- b) Compare slotted Aloha and Pure Aloha random access protocols. 5 Marks L3 CO2 PO2

(OR)

4. a) Illustrate the Sliding window protocol using *Go-Back N* and *Selective Repeat* techniques. 7 Marks L3 CO2 PO3
- b) What is the remainder obtained by dividing x^7+x^5+1 by the generator polynomial x^3+1 ? 5 Marks L2 CO2 PO5

UNIT-III

5. a) Describe hierarchical routing with an example. Mention its advantages and disadvantages. 8 Marks L2 CO3 PO1
- b) State the attributes on which networks differ. 4 Marks L2 CO3 PO1

(OR)

6. a) Sketch the IPv4 packet format and explain the importance of IP protocol in the internet. 6 Marks L3 CO3 PO2
- b) Define Congestion. Identify the factors that lead to congestion. 6 Marks L4 CO3 PO4

UNIT-IV

7. Discuss about the elements of Transport protocols. 12 Marks L2 CO3 PO1
- (OR)**
8. a) Discuss the two-army problem. Design the protocol scenarios for releasing a connection with a neat sketch. 7 Marks L2 CO3 PO3
- b) How an error-control and flow control mechanisms can be implemented in transport layer? 5 Marks L2 CO3 PO2

UNIT-V

9. What is DNS? Discuss about the Domain Name System (DNS). 12 Marks L2 CO4 PO2
- (OR)**
10. a) Summarize the complaints associated with an electronic mail in the early days. 6 Marks L3 CO4 PO4
- b) Explain in detail about File Transfer Protocol (FTP). 6 Marks L1 CO4 PO1

