CODE No.: 23PA101001 SOP-BPH & MPH-23

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

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

PHARMACEUTICAL ANALYSIS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define redox reaction.	2 Marks	L1	CO2
	b)	What is Oxidation reaction.	2 Marks	L1	CO2
	c)	What is Reduction reaction.	2 Marks	L1	CO2
	d)	Define Dichrometry.	2 Marks	L1	CO2
	e)	Define Cerimetry.	2 Marks	L1	CO2
	f)	What is Accuracy?	2 Marks	L1	CO1
	g)	What is Precision?	2 Marks	L1	CO1
	h)	What is Pharmacopoeia?	2 Marks	L1	CO2
	i)	Define Impurity?	2 Marks	L1	CO1
	j)	What is Limit test?	2 Marks	L1	CO1

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Define Error and classify different types of Errors.	5 Marks	L1	CO1
	b)	Define impurity and write a note on Sources of impurities.	5 Marks	L1	CO1
3.	a)	Write the Procedure involved in preparation and standardization of Potassium Permaganate.	5 Marks	L1	CO1
	b)	Write the different methods for expressing concentration.	5 Marks	L1	CO1
4.	a)	Explain in detail about acid base titrations ?	5 Marks	L1	CO2
	b)	To estimate the Sodium benzoate by non aqueous titration ?	5 Marks	L1	CO2

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain different techniques in Pharmaceutical Analysis.	5 Marks	L1	CO1
6.	Explain different concentration expression methods.	5 Marks	L1	CO1
7.	Write a brief note on different methods to helpful for to minimizing errors.	5 Marks	L6	CO1
8.	Write a note on Acidimetric titrations.	5 Marks	L6	CO2
9.	Write a note on Alkalimetry titrations.	5 Marks	L6	CO2
10	Explain about neutralization curves.	5 Marks	L1	CO2
11.	Explain in detail about Diazotization titration reaction.	5 Marks	L1	CO3
12.	Explain about estimation of sodium chloride by Precipitation titration.	5 Marks	L1	CO2
13.	Write the principle and applications of redox reactions.	5 Marks	L6	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

PAHARMACEUTICAL INORGANIC CHEMISTRY

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the Composition of barium sulphate reagent.	2 Marks	L6	CO1
	b)	Write the importance of limit test.	2 Marks	L6	CO1
	c)	Define the terms hypotonic and hypertonic.	2 Marks	L1	CO2
	d)	Define the term acidifying agent.	2 Marks	L1	CO3
	e)	Classify extra and intracellular electrolytes with examples.	2 Marks	L2	CO2
	f)	Define haematinics with example.	2 Marks	L1	CO4
	g)	Define the expectorants with example.	2 Marks	L1	CO4
	h)	Explain the role of dilute nitric acid in the limit test of Chloride.	2 Marks	L1	CO1
	i)	Write the composition of ORS.	2 Marks	L6	CO2
	j)	Explain about the alpha, beta and gamma rays.	2 Marks	L1	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Write the principle and procedure involved in the Limit test of Chloride and Sulphate.	10 Marks	L6	CO1
3.	Write the clinical applications of radiopharmaceuticals.	10 Marks	L6	CO5
4.	Define and classify antacid and give the method of preparation and assay for sodium bicarbonate.	10 Marks	L1	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write the preparation, properties and assay for ferrous sulphate.	5 Marks	L6	CO3
6.	Classify dental products and add a note on role of fluoride in preventing dental caries.	5 Marks	L2	CO2
7.	Define the antimicrobial agents. Write the principle involved in the preparation and assay of hydrogen peroxide.	5 Marks	L1	CO3
8.	Explain the precautions to be taken during storage and handling of radiopharmaceuticals.	5 Marks	L1	CO5
9.	Write the procedure and principle with reactions for the limit test for iron.	5 Marks	L6	CO1
10	Write the principle and medicinal uses of chlorinated lime.	5 Marks	L6	CO3
11.	Write a note on various electrolytes used in replacement therapy.	5 Marks	L6	CO2
12.	Explain the preparation and principle involved in the assay of copper sulphate.	5 Marks	L1	CO4
13.	Explain various methods for adjusting isotonicity.	5 Marks	L1	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

HUMAN ANATOMY AND PHYSIOLOGY-I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Classify the six most important life processes in the human body.	2 Marks	L1	CO1
	b)	Define the receptor, control center, and effector in the feed-back system.	2 Marks	L1	CO1
	c)	Sketch a neatly labeled diagram of eye.	2 Marks	L3	CO2
	d)	Write a note on sternum.	2 Marks	L2	CO2
	e)	Draw a neat labeled diagram of spleen.	2 Marks	L2	CO3
	f)	What precautions must be taken before giving a blood transfusion.	2 Marks	L1	CO3
	g)	Draw a neat labeled diagram of Nerve cell.	2 Marks	L3	CO4
	h)	Enlist the names of spinal nerves.	2 Marks	L1	CO4
	i)	Describe the structure myocardium.	2 Marks	L1	CO5
	j)	Which blood vessels deliver blood to the right and left atria.	2 Marks	L5	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.		Elaborate the anatomy and physiology of connective tissue and nervous tissue.	10 Marks	L1	CO1
3.		Describe the anatomy and physiology of the axial and appendicular skeletal system.	10 Marks	L1	CO2
4.	a)	Describe the following terms. Blood grouping.	5 Marks	L1	CO3
	b)	Blood transfusion.	5 Marks	L1	CO3

PART - C

Answer any SEVEN Questions.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write a note on extracellular fluid.	5 Marks	L6	CO3
6.	Explain anatomy and physiology of ear.	5 Marks	L1	CO4
7.	Describe the function of Cranial nerves.	5 Marks	L1	CO4
8.	Classify of bones with examples and write a note on bone functions	5 Marks	L2	CO2
9.	Describe the anatomy and physiology of the nose.	5 Marks	L1	CO2
10	Write a note on lymphatic circulation.	5 Marks	L6	CO3
11.	Explain the systemic blood circulation and cardiac circulation.	5 Marks	L1	CO5
12.	Explain the conductive zones of the heart and cardiac output.	5 Marks	L1	CO5
13.	Write the structure, location and functions of cell junctions.	5 Marks	L2	CO1

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

PHARMACEUTICS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define pharmacopeia. List out the National pharmacopeias.	2 Marks	L1	CO1
	b)	Define Lotions and Liniments.	2 Marks	L1	CO3
	c)	Define prescription and what does "Rx" symbol represents.	2 Marks	L1	CO1
	d)	Define freezing point and isotonicity.	2 Marks	L1	CO2
	e)	Explain the role of glycerin in throat paints.	2 Marks	L2	CO3
	f)	Explain flocculated and deflocculated suspensions.	2 Marks	L2	CO3
	g)	Define suppositories. Enlist various suppository bases.	2 Marks	L1	CO4
	h)	Explain the classification of ointment bases with examples.	2 Marks	L2	CO5
	i)	Explain the methods of preparation of ointments.	2 Marks	L2	CO5
	j)	Define incompatibility. List out types of incompatibility.	2 Marks	L1	CO4

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Define prescription. Explain different parts of prescription.	3 Marks	L1	CO1
	b)	Explain in detail about parts of prescription with prescription model.	7 Marks	L2	CO1
3.	a)	Discuss about the various methods of preparation of emulsions.	5 Marks	L2	CO3
	b)	Summarize the stability of emulsions.	5 Marks	L2	CO3
4.	a)	Explain in detail about different methods of preparation of suppositories.	5 Marks	L2	CO4
	b)	Explain the evaluation tests for suppositories.	5 Marks	L2	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.		Explain history of pharmacy.	5 Marks	L2	CO1
6.		Define and classify powders. Add a note on bulk and divided powders.	5 Marks	L2	CO2
7.	a)	Explain about pastes.	2 Marks	L2	CO5
	b)	Describe the preparation methods for ointments.	3 Marks	L2	CO5
8.		Explain the formulation of syrups.	5 Marks	L2	CO3
9.		Summarize the evaluation of suspensions.	5 Marks	L2	CO3
10		Explain methods of preparation of suppositories.	5 Marks	L2	CO4
11.		Classify the types of incompatibility. Explain different types of physical incompatibilities.	5 Marks	L2	CO4
12.		Explain about dusting powders.	5 Marks	L2	CO2
13.		Describe the errors in prescription.	5 Marks	L2	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

COMMUNICATION SKILLS

Time: 3 hours **Max. Marks: 35**

PART - A

Answer any ONE Question.

1 x 10 = 10 Marks

1.	How does body language play an important role in communication?	10 Marks	L1	CO1
2	What is face-to-face communication? List out the advantages and disadvantages.	10 Marks	L1	CO2

PART - B

Answer any FIVE Questions.

5 x 5 = 25 Marks

3.	Discuss the importance of presentation skills.	5 Marks	L2	CO4
4.	Identify the techniques of delivery during a presentation.	5 Marks	L3	CO4
5.	Mention the skills to be followed throughout an interview.	5 Marks	L1	CO4
6.	Write about the significance of presentation skills.	5 Marks	L1	CO4
7.	List out the Don’ts of Group Discussion.	5 Marks	L1	CO5
8.	Discuss group discussion in your own words.	5 Marks	L2	CO5
9.	Mention the different types of group discussion.	5 Marks	L1	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

REMEDIAL MATHEMATICS

Time: 3 hours **Max. Marks: 35**

PART - A

Answer any ONE Question

1 x 10 = 10 Marks

1.	i) Determine the derivative of $f(x)=e^3x.\sin(2x)$. Simplify the expression. ii) Find the derivative of the given function $g(x)=\sin(2x).\cos(3x)$ by using the chain rule.	10 Marks	L2	CO2
2	Find the derivative of the parametric equations $x=3t^2$ and $y=2t+1$ with respect to t.	10 Marks	L2	CO3

PART - B

Answer any FIVE Questions.

5 x 5 = 25 Marks

3.	Calculate the determinant of a 3X3 matrix given by $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$.	5 Marks	L2	CO1
4.	Define matrix addition and matrix multiplication. Given matrices $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $Q = \begin{bmatrix} 5 & 6 \\ 7 & 4 \end{bmatrix}$ compute P+Q and P·Q.	5 Marks	L2	CO1
5.	i) Discuss the properties of an identity matrix and explain its role in matrix multiplication. ii) For a square matrix A, find the characteristic equation $\det(A-\lambda I)=0$. Determine the eigenvalues for the matrix: $A = \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$ Apply Cayley–Hamilton theorem to express A^2 in terms of A.	5 Marks	L2	CO1
6.	Find the derivative of $g(x)=\ln(4x).\cos(x)$. Simplify the result.	5 Marks	L2	CO3
7.	Given two points A(3,4) and B(−1,2), find the distance between them. Also, determine the midpoint of the line segment joining these points.	5 Marks	L2	CO4
8.	Solve the system of differential equations: $\frac{dx}{dt} = -x + 2y$ *and* $\frac{dy}{dt} = 3x - y$ with initial conditions x(0)=−1 and y(0)=3.	5 Marks	L3	CO5
9.	Using Laplace transform, solve: $dy/dt+2y = e^{-t}$, $y(0)= 0$.	5 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations, May - 2025

COMPUTER COMMUNICATIONS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the difference between Half duplex and Full duplex transmission modes?	2 Marks	L1	CO1
	b)	Why are protocols needed?	2 Marks	L1	CO1
	c)	Define the concept of encapsulation in the OSI model.	2 Marks	L1	CO1
	d)	List the functions of transport layer.	2 Marks	L1	CO1
	e)	Define Analog and Digital signal?	2 Marks	L1	CO3
	f)	What is the relationship between period and frequency?	2 Marks	L1	CO3
	g)	List three techniques of digital-to-digital conversion.	2 Marks	L1	CO2
	h)	Define block coding and give its purpose.	2 Marks	L1	CO2
	i)	Explain how FHSS achieves bandwidth spreading.	2 Marks	L1	CO4
	j)	How is the preamble field is different from the SFD field?	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 Local Area Networks (LANs) and how do they function within confined spaces like offices or homes? Describe their main benefits, components, and basic protocols for enabling effective data sharing and communication. Provide concise examples to support your explanation.	8 Marks	L2	CO1
	b)	Illustrate the Key aspects of fundamental characteristics of data communication and provide clear examples to each characteristic.	8 Marks	L2	CO1
		(OR)			
3.		With neat diagrams discuss various network topologies and their merits and demerits.	16 Marks	L2	CO1

MODULE-II

4.	a)	Compare and contrast the characteristics of physical addresses and port addresses in networking.	8 Marks	L2	CO1
	b)	Explain the functions of session layer and application layer in brief.	8 Marks	L2	CO1
		(OR)			
5.		Describe in detail about the functions of the following layers of the OSI model: Network layer, transport layer.	16 Marks	L3	CO1

MODULE-III

6.	a)	What is the difference between analog and digital data? Give an example of each.	8 Marks	L2	CO3
	b)	Analyze the causes and effects of transmission impairment in data communication. How can transmission impairment be measured and quantified?	8 Marks	L2	CO3

(OR)

7.	a)	What are the advantages and disadvantages of using analog and digital signals for data transmission?	8 Marks	L2	CO3
	b)	How can you determine the frequency of a periodic signal? Illustrate it.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the principles of amplitude modulation its generation and detection.	8 Marks	L2	CO2
	b)	Compare analog and digital modulation.	8 Marks	L2	CO2

(OR)

9.		Explain what line coding is and how it helps in converting digital data into digital signals.	16 Marks	L2	CO2

MODULE-V

10.	a)	Describe how frequency division multiplexing (FDM) works in digital communications, enabling multiple signals to share one channel efficiently. Then, outline the methods used to separate these signals at the receiving end.	10 Marks	L2	CO4
	b)	Four data channels (digital) each transmitting at 1 Mbps use a satellite channel of 1 MHz. Design an appropriate configuration using FDM.	6 Marks	L2	CO4

(OR)

11.	a)	How does wavelength division multiplexing (WDM) and de-multiplexing process work in computer communication and why is it important? Give a simple example to illustrate.	8 Marks	L3	CO4
	b)	Discuss the principles of synchronous time division multiplexing (TDM) and how does it allocate time slots for multiple signals efficiently?	8 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations, May – 2025

DATA STRUCTURES

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is a linked list?	2 Marks	L1	CO1
	b)	Define doubly linked list.	2 Marks	L1	CO1
	c)	Define circular queue	2 Marks	L1	CO1
	d)	What are the applications of queue?	2 Marks	L1	CO1
	e)	Define tree– traversal and mention the type of traversals.	2 Marks	L1	CO2
	f)	What is AVL Tree?	2 Marks	L1	CO2
	g)	Compare quick sort and merge sort.	2 Marks	L2	CO3
	h)	Define Searching.	2 Marks	L1	CO3
	i)	What are the two traversal strategies used in traversing a graph?	2 Marks	L1	CO2
	j)	Define hashing.	2 Marks	L1	CO2

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain different Linear data structures with ADTs.	8 Marks	L2	CO1
	b)	Explain different Non-Linear data structures with ADTs.	8 Marks	L2	CO1

(OR)

3.	a)	Explain the insertion operation at different positions in Doubly Linked List with an example	8 Marks	L3	CO1
	b)	Write a program to perform insert and display operation on doubly linked list.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain linked list implementation of stacks ADT.	8 Marks	L2	CO1
	b)	Write a program to implement Queues using arrays.	8 Marks	L2	CO1

(OR)

5.	a)	Write the algorithm for converting postfix expression to infix expression?	8 Marks	L2	CO1
	b)	Write an algorithm for Circular Queue ADTs using arrays.	8 Marks	L2	CO1

MODULE-III

6.	a)	Write an algorithm to insert and delete the elements in the Binary Search tree.	8 Marks	L2	CO2
	b)	Differentiate Tree, Binary Tree and Binary Search Tree.	8 Marks	L2	CO2

(OR)

7.	a)	Describe about AVL Trees and its Rotations.	8 Marks	L2	CO2
	b)	Construct a AVL tree for the following element 15,18,20,21,28,23,30,26	8 Marks	L3	CO2

MODULE-IV

8.	a)	Write the algorithm to perform Linear Search with an example	8 Marks	L2	CO3
	b)	Write an algorithm to implement Shell sort with suitable example.	8 Marks	L2	CO3

(OR)

9.	a)	Write the algorithm to perform Binary Search with an example	8 Marks	L2	CO3
	b)	Write an algorithm to implement Quick sort with suitable example.	8 Marks	L2	CO3

MODULE-V

10.	a)	What is minimum –cost spanning tree? Discuss Prim's algorithm with example.	8 Marks	L2	CO2
	b)	Describe the chaining collision resolution techniques in detail with an example.	8 Marks	L2	CO2

(OR)

11.	a)	Define graph. Explain various operations on graphs.	8 Marks	L2	CO2
	b)	What is hash function. Explain the characteristics of good hashing.	8 Marks	L2	CO2



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations, May 2025

PYTHON PROGRAMMING

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are tokens in Python? Name the different types of tokens.	2 Marks	L1	CO1
	b)	How comments are specified in Python? Give example.	2 Marks	L1	CO1
	c)	Explain the syntax of **while** loop in Python with an example?	2 Marks	L2	CO2
	d)	What is the use of the **pass** statement in Python.	2 Marks	L1	CO2
	e)	Which method can you use to search for an element in a tuple?	2 Marks	L1	CO3
	f)	What is a regular expression in Python?	2 Marks	L1	CO3
	g)	How do you define and call a function in Python?	2 Marks	L1	CO4
	h)	What are the different types of files in Python?	2 Marks	L1	CO4
	i)	What is polymorphism, and how is it implemented in Python?	2 Marks	L1	CO5
	j)	What does the try block do in exception handling?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is Python? Explain the advantages of Python.	8 Marks	L2	CO1
	b)	What are Python identifiers? What rules must be followed while naming identifiers?	8 Marks	L2	CO1
		(OR)			
3.	a)	What are the various types of operators in Python? Explain each with examples.	8 Marks	L2	CO1
	b)	Develop a program to illustrate the use of different arithmetic operations on numbers in python.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the working of the if-else statement in Python. How is it used for decision-making?	8 Marks	L2	CO2
	b)	Develop a Python program that takes user input and checks if the number is positive, negative, or zero using if-else statements.	8 Marks	L3	CO2
		(OR)			
5.	a)	How does the continue statement work in Python loops? Explain with a use case.	8 Marks	L2	CO2
	b)	Write a Python program to print all the numbers from 1 to 20, except the number 13, using the continue statement.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain list comprehensions and how they differ from regular loops. Illustrate with examples.	8 Marks	L2	CO3
	b)	Write a Python program to create a list of numbers. The program should filter and create a new list containing only numbers that are multiples of 3 and 5 using list comprehension.	8 Marks	L3	CO3
		(OR)			
7.	a)	How are sets created in Python and what are the key differences between sets and other data structures like lists and dictionaries?	8 Marks	L2	CO3
	b)	Write a Python script to perform Union and Intersection operations on Sets.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Describe the concept of scope and lifetime of variables in Python. How do local and global variables differ? Provide examples.	8 Marks	L2	CO4
	b)	Write a Python program that demonstrates the use of local and global variables.	8 Marks	L3	CO4
		(OR)			
9.	a)	What are generators in Python? How do they differ from regular functions in terms of state and performance?	8 Marks	L2	CO4
	b)	Construct a program in Python that uses a generator to yield a sequence of numbers from 1 to n. The program should allow the user to specify the value of n and display the generated sequence.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the principles of Object-Oriented Programming (OOP) with examples.	8 Marks	L2	CO5
	b)	Explain various types of Inheritance in Python with examples.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the types of errors in a Python program and their differences.	8 Marks	L2	CO5
	b)	Construct a Python program to handle division by zero exception.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B C A II Semester (MBU-22) Regular Examinations, May – 2025

NUMERICAL ANALYSIS, PROBABILITY AND STATISTICS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Find the lower and upper limits of the root of $x^4 - 4x - 9 = 0$.	2 Marks	L2	CO1
	b)	Define Backward difference operator.	2 Marks	L1	CO1
	c)	Give the assumptions of Newton's Forward difference formula.	2 Marks	L1	CO1
	d)	Give Simpson's 1/3 Rule Formula.	2 Marks	L1	CO1
	e)	Define continuous random variable.	2 Marks	L1	CO2
	f)	Define Marginal probability function.	2 Marks	L1	CO2
	g)	If $f(x) = x^4 - x - 9 = 0$, then find first and second derivatives of f(x).	2 Marks	L2	CO1
	h)	Define Normal distribution.	2 Marks	L1	CO3
	i)	Give any two examples for Positive and Negative Correlated variables .	2 Marks	L1	CO4
	j)	Write the following system of equations in the form of AX =B, $10x + 2y + z = 9; 2x + 20y - 2z = -44; -2x + 3y + 10z = 22.$	2 Marks	L1	CO4

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Find a real root of $x + \log_{10} x - 2 = 0;$ using Regula-Falsi Method.	8 Marks	L3	CO1
	b)	Find a real root of $x^3-x-11=0$ using bisection method in 6 stages.	8 Marks	L4	CO1

(OR)

3.	a)	Find the root of the equation $e^x \sin x = 1,$ using Newton Raphson method.	8 Marks	L3	CO1
	b)	Solve the system of equations using Gauss Jacobi Method. $3X + Y + 2Z = 3; \quad 2X - 3Y - Z = -3; \quad X + 2Y + Z = 4;$	8 Marks	L4	CO1

MODULE-II

4.	a)	Use Lagrange formula and estimate f(x) when x =16	8 Marks	L3	CO1

x	2	5	9	15	22	30
$f(x)$	8	14	22	34	48	64

	b)	Using Simpson's $\frac{3}{8}$ rule, evaluate $\int_0^{1.8} x^3 dx$ by dividing the range in to 9 Equal parts.	8 Marks	L4	CO1

(OR)

5. a) Using Newton's divided difference formula find the values of *f(2)* and *f(8)* from the following table. — 8 Marks — L3 — CO1

x :	4	5	7	10	11	13
f(x)	48	100	294	900	1210	2028

b) Find the first and second derivatives of the function tabulated at the point X= 1.5 — 8 Marks — L4 — CO1

X :	1.5	2.0	2.5	3.0	3.5	4.0
Y :	3.375	7.0	13.625	24.0	38.875	59.0

MODULE-III

6. a) The probability distribution of a variate X is — 8 Marks — L3 — CO2

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

Find: i) K ii) Mean iii) Variance

b) If X is a continuous random variable and K is a constant, then prove that — 8 Marks — L2 — CO2

i) Var(X + K) = Var (X) ii) Var (KX) = K^2 Var (X).

(OR)

7. a) Find mean and variance for the following discrete distribution. — 8 Marks — L4 — CO2

X	-3	-2	-1	0	1	2	3
P(X)	K	0.1	K	0.2	2K	0.4	2K

b) State and Prove the Multiplication theorem of mathematical Expectation — 8 Marks — L2 — CO2

MODULE-IV

8. a) If the probability that an individual suffers a bad reaction from a certain injection is 0.001, determine the probability that out of 2000 individuals exactly 3 ii) more than 2 individuals iii) none iv) more than one individual suffer a bad reaction. — 8 Marks — L3 — CO3

b) One fifth percent of the blades produced by a blade manufacturing factory turnout to be defective. The blades are supplied in packets of 10. Use Poisson distribution to calculate the approximate number of packets containing i) No defective blade ii) One defective blade in a consignment of 10000. — 8 Marks — L3 — CO3

(OR)

9. a) If X is a normally distributed with mean 70 and standard deviation 16, find : — 8 Marks — L3 — CO3

i) P(38 ≤ X ≤ 46) ii) $P(8_2 \le X \le 94)$ iii) P(62 ≤ X ≤ 86).

b) In a Poisson distribution $P(X = 2) = \frac{4}{5}P(X = 3)$ Fit a Poisson distribution and hence Calculate: — 8 Marks — L2 — CO3

i) P(2 ≤ X ≤ 6) ii) P(X ≤ 4) iii) P(2 < X ≤ 5).

MODULE-V

10. a) Compute the coefficient of correlation and the two lines of regression for the following data. 8 Marks L3 CO4

Price X:	14	16	17	18	19	20	21	22	23
Demand Y:	84	78	70	75	66	67	62	58	60

b) Find the rank correlation for the following data. 8 Marks L3 CO4

X	56	42	72	36	63	47	55	49	38	42	68	60
Y	147	125	160	118	149	128	150	145	115	140	152	155

(OR)

11. a) Find the Correlation for the following data. 8 Marks L3 CO4

X	36	32	30	38	46	38	34	36	40	44	48	50
Y	46	42	50	48	56	52	54	42	48	46	56	58

b) Estimate the blood pressure (B.P) of a women of age 45 years from the following data which shows the ages X and systolic B.P. (Y) of 12 women. Also test whether the two variables ages X and B.P. (Y) correlated? 8 Marks L4 CO4

Age(X)	56	42	72	36	63	47	55	49	38	42	68	60
B.P.(Y)	147	125	160	118	149	128	150	145	115	140	152	155

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH-23) Supplementary Examinations, May – 2025

HUMAN ANATOMY AND PHYSIOLOGY-I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write a note on Basic life processes.	2 Marks	L6	CO1
	b)	Draw a neat labeled diagram of Skin.	2 Marks	L4	CO2
	c)	Enlist the bones of skull.	2 Marks	L4	CO2
	d)	Short notes on Rh Factor.	2 Marks	L6	CO3
	e)	Give a note on origin and functions of Olfactory nerve.	2 Marks	L6	CO4
	f)	Draw a neat labeled diagram of Cell.	2 Marks	L4	CO1
	g)	Short notes on heart beat.	2 Marks	L2	CO5
	h)	Write a note on Blood vessels.	2 Marks	L6	CO4
	i)	Define mydriatic and miosis.	2 Marks	L1	CO3
	j)	Short notes on disorders of heart.	2 Marks	L6	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Explain the Classification of tissues, structure, location and functions of epithelial and nervous tissue.	10 Marks	L1	CO1
3.	Elaborate the anatomy and physiology of Heart.	10 Marks	L1	CO5
4.	Describe the mechanisms of coagulation and write a note composition and functions of blood.	10 Marks	L1	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain the cycles of Cell division.	5 Marks	L1	CO1
6.	Describe the anatomy and physiology of lymphatic organs.	5 Marks	L1	CO3
7.	Discuss the structure and functions of sympathetic and parasympathetic nervous system.	5 Marks	L1	CO4
8.	Explain the structure and functions of Eye.	5 Marks	L1	CO4
9.	Explain the elements of conduction system of heart and cardiac output.	5 Marks	L1	CO5
10	Explain the ABO Blood grouping system and their significance.	5 Marks	L1	CO3
11.	How are connective tissues classified? Explain functions of the various types of cell in connective tissue.	5 Marks	L2	CO2
12.	Explain the Homeostasis with examples.	5 Marks	L1	CO1
13.	Draw a neat labeled diagram of bone and write a note on types of bones.	5 Marks	L4	CO2

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May – 2025

ENVIRONMENTAL STUDIES

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the main component of natural gas?	2 Marks	L1	CO1
	b)	Write a Short note on coal gas ?	2 Marks	L1	CO1
	c)	What is the first step in municipal wastewater treatment?	2 Marks	L1	CO2
	d)	Mention one method used to remove hardness from water.	2 Marks	L1	CO2
	e)	List two common fertilizers used in modern agriculture.	2 Marks	L1	CO3
	f)	Mention one harmful effect of pesticides.	2 Marks	L1	CO3
	g)	What is the ozone layer?	2 Marks	L1	CO4
	h)	Define rainwater harvesting.	2 Marks	L1	CO4
	i)	What is the main goal of green technology?	2 Marks	L1	CO5
	j)	Mention one way green computing saves energy.	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.	Compare natural gas, coal gas, and biogas. Explain their formation, uses, and environmental impact.	16 Marks	L3	CO1
	(OR)			
3.	How do solar cells work? What are the advantages and disadvantages of solar energy?	16 Marks	L2	CO1

MODULE-II

4.	Describe hardness of water. Explain its causes, effects, and methods to remove hardness.	16 Marks	L2	CO2
	(OR)			
5.	What is potable water? What are its sources, key characteristics, and the methods used for its purification.	16 Marks	L1	CO2

MODULE-III

6.	What is radiation pollution? Discuss its sources, harmful effects, and control measures. Also, explain nuclear hazards with examples.	16 Marks	L2	CO3
	(OR)			
7.	What is environmental pollution? Explain its different types, causes, and general measures for controlling it.	16 Marks	L2	CO3

MODULE-IV

8.	Explain nuclear accidents. Discuss their causes, major disasters in history, and safety measures to prevent them.	16 Marks	L2	CO4
	(OR)			
9.	What is global warming? Discuss its causes, effects, and the measures that can be taken to control it.	16 Marks	L2	CO4

MODULE-V

10.	What is green computing? What are its benefits, challenges, and strategies for implementation.	16 Marks	L1	CO5
	(OR)			
11.	Explain green manufacturing systems. Discuss their role in reducing environmental impact and promoting sustainability.	16 Marks	L2	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May – 2025

PRINCIPLES OF BANKING AND INSURANCE

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name the central bank of India.	2 Marks	L1	CO1
	b)	What is meant by the evolution of banking?	2 Marks	L1	CO1
	c)	Name any one recent measure taken to manage NPAs.	2 Marks	L1	CO2
	d)	Write any 4 difference between secured and unsecured advances?	2 Marks	L1	CO2
	e)	Write any 4 difference between a debit card and a credit card?	2 Marks	L1	CO3
	f)	Mention one risk associated with E-Banking.	2 Marks	L1	CO3
	g)	What is meant by nomination in life insurance?	2 Marks	L1	CO4
	h)	What is an assignment in life insurance?	2 Marks	L1	CO4
	i)	What is the procedure for taking a fire insurance policy?	2 Marks	L1	CO5
	j)	What is the procedure for taking a health insurance policy?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	Differentiate between a central bank and a commercial bank.	16 Marks	L3	CO1

(OR)

3.	Discuss the various types of commercial banks in India and their functions.	16 Marks	L2	CO1

MODULE-II

4.	Describe the impact of NPAs on the banking industry and the overall economy. Suggest effective ways to reduce NPAs.	16 Marks	L2	CO2

(OR)

5.	What are the key principles of sound lending in banking? Explain their significance in effective loan management.	16 Marks	L2	CO2

MODULE-III

6.	Describe the concept of Tele Banking and its benefits. How has it changed customer interaction with banks?	16 Marks	L2	CO3

(OR)

7.	Define E-Banking. How does it function, and why is it important in today's banking industry?	16 Marks	L1	CO3

MODULE-IV

8.	What is the procedure for obtaining a life insurance policy. What is the significance of nomination and assignment in life insurance?	16 Marks	L1	CO4

(OR)

9.	What is the role of the Insurance Regulatory and Development Authority (IRDA)? Explain its key functions in the insurance sector.	16 Marks	L2	CO4

MODULE-V

10.	Describe health insurance and its benefits. What is the process of obtaining a health insurance policy?	16 Marks	L2	CO5
	(OR)			
11.	Define general insurance. How does it help in managing financial risks and uncertainties?	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May – 2025

FINANCIAL ACCOUNTING-I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is Consignment?	2 Marks	L1	CO1
	b)	List parties involved in consignment.	2 Marks	L1	CO1
	c)	What do you mean by Hire vendor?	2 Marks	L1	CO2
	d)	Define installment purchase system.	2 Marks	L1	CO2
	e)	Define Sinking fund.	2 Marks	L1	CO3
	f)	What is Reserve?	2 Marks	L1	CO3
	g)	Define Partnership.	2 Marks	L1	CO4
	h)	What is partnership deed?	2 Marks	L1	CO4
	i)	What is retirement of a partner?	2 Marks	L1	CO5
	j)	What is dissolution of a firm?	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 Consignment. Explain the features of Consignment.	8 Marks	L2	CO1
	b)	Distinguish between the consignment and sale.	8 Marks	L3	CO1

(OR)

3.		Bharath Gupta of Madras consigned 120 Units @ 750/- each to Rakesh of Bangalore. Bharath Gupta spent transportation and insurance expenses amounting to Rs. 6,400/-. Rakesh sent Rs. 18,000/- as advance payment against the consignment. Bharath Gupta received an account sales from Rakesh containing the following information: i) Warehouse expenses Rs. 2,200/- and Transportation expenses Rs. 1,200/-. ii) Commission charge at 10% on Gross sales. iii) Gross sales of Rs. 1,20,000/-. Bharath Gupta received a bank remittance for the balance due from Rakesh. Prepare necessary ledger accounts in the books of both parties.	16 Marks	L4	CO1

MODULE-II

4.	a)	Define the Joint Venture. Explain the features of Joint Venture.	10 Marks	L2	CO2
	b)	Draw a neat proforma of Joint Venture Account.	6 Marks	L2	CO2

(OR)

5. Gopal and Bhaskar to start a joint venture business of Assembling unit to share profits and losses equally. Gopal provides the raw material at mutually agreed value of Rs. 1,30,000/-. He spent expenses amounted to Rs. 8,400/-. Bhaskar spent further expenses cartage and storage Rs. 9,600/- and receives cash for sales amounting to Rs. 1,00,000/-. He also takes overheads to the value of Rs. 13,000/- for his personal use. At the end Gopal takes over the balance of stock for his personal use Rs14,000/- . you are require to prepare joint venture and co-venturers accounts. — 16 Marks — L4 — CO2

MODULE-III

6. What is Reserve? Explain the need and importance of the Reserve — 16 Marks — L2 — CO3

(OR)

7. On 01.01.2014, B Sen had the following balances: Sundry Debtors 1,20,000 and Provision for Doubtful Debts Rs.6,000.
During the year ending 31.12.2014, B Sen sold goods on credit amounting to Rs. 15,00,000. During the year customers returned goods of Rs. 5,000, while the firm collected in cash from debtors Rs.12,00,000, allowed discounts of Rs.2,000 and received acceptance (B/R) amounting to Rs.2,00,000. The firm could not collect Rs. 5,000 from Debtors and had to write off the amount. It was decided to maintain provision for doubtful debts @ 5% on Debtors as on 31.12.2014. You are required to show Sundry Debtors and Provision for Doubtful Debts Accounts — 16 Marks — L4 — CO3

MODULE-IV

8. A and B sharing profits in the ratio of 3:1. Their balance sheet as on 31st December 2023 is as under: — 16 Marks — L4 — CO4

Liabilities	Rs.	Assets	Rs.
Creditors	37,500	Cash at bank	22,500
General	4,000	Bills Receivables	3,000
Reserve		Stock	20,000
Capital :	30,000	Debtors	16,000
A	16,000	Furniture	1,000
B		Buildings	25,000
	87,500		**87,500**

On 1st January 2024 they admit C as a new partner on the following arrangement:

i) C to bring Rs. 10,000 as capital for 1/5 share of profit.
ii) The new firm to have goodwill Rs. 10,000. C's Share of goodwill is to be adjusted through capital account.
iii) Stock and furniture to be reduced by 10%, a provision of 5% on debtors for doubtful debts to be created.
iv) Buildings to be appreciated at 20%.

Give the necessary ledger accounts and balance sheet.

(OR)

9. A, B and C is a firm sharing profit and losses in the ratios of 2:2:1. Their balance sheet as on 31st march 2024 is as below: 16 Marks L4 CO4

Liabilities	Rs.	Assets	Rs.
Creditors	25,700	Land & Buildings	50,000
Outstanding	3,000	Furniture	13,000
liabilities	13,000	Stock of good	23,500
General Reserve		Sundry debtors	11,000
Capital :	24,000	Cash in hand	280
A	24,000	Cash at bank	1,920
B	10,000		
C	**99,700**		**99,700**

The partners have agreed to take D as a partner with effect from 1st April 2024 on the following terms:

i) D Shall bring Rs.10,000 towards his capital.
ii) The value of stock should be increased by Rs 5,000.
iii) The furniture depreciated by 10%.
iv) Provision for bad and doubtful debts should be provided at 10% of the debtors.
v) The value of land and buildings should be enhanced by 20%.
vi) The value of the goodwill be fixed at Rs. 30,000.
vii) General reserve will be transferred to the partners' capital a/cs.
viii) The new profit-sharing ratio shall be A:5/5, B:5/15, C:3/15 and D:2/15.

The outstanding liabilities include Rs. 1,000 due to E which has been paid by A. Necessary entries were not made in the books.

MODULE-V

10. A, B and C are partners sharing profits and losses as to 2:2:1. Balance sheet on 31st Dec., 2023 is as follows: 16 Marks L4 CO5

Liabilities	Rs.	Assets		Rs.
Creditors	2,000	Cash		2,000
Capital :		Sundry debtors	1,300	
A	5,000	Less: Pro. For bad debts	300	1,000
B	2,000	Stock		2,000
C	1,000	Furniture		5,000
	10,000			**10,000**

They decide to go out of business. Following are the amounts realized: Furniture Rs.4,500, stock Rs.2,260, debtors Rs.900, creditors paid completely Rs.1,900, Expenses realization Rs.60 and close the accounts

(OR)

11. Raju and Rani were partners, sharing profits and losses as to two thirds and one third respectively. On 1st January 2024 they dissolved partnership. Their books at that date show the following. 16 Marks L4 CO5

Book Debts Rs.70,000, stock Rs.34,000, investments Rs.18,000, goodwill Rs.40,000, trade furniture Rs.8,800, bank overdraft Rs.3,120, sundry creditors Rs.48,880 and capitals: A Rs.80,000 and B Rs.40,000. The stock realized 75 per cent of its book value, and the book debts Rs. 55,600. Trade furniture was sold for Rs10,000. Goodwill provides unrealizable. Investments were taken over by Rama for Rs. 24,000. Prepare realization account, capital account and cash account.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May – 2025

DATA ANALYSIS USING SPREAD SHEET

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the difference between a single-level sort and a multi-level sort in Excel?	2 Marks	L1	CO1
	b)	How do you sort a list using a custom sort in Excel?	2 Marks	L1	CO1
	c)	What is the Slicer Tool and how do you use it in a PivotTable?	2 Marks	L1	CO2
	d)	What are the different types of PivotTable calculations available in Excel?	2 Marks	L1	CO2
	e)	What is data consolidation, and how do you perform it across multiple worksheets in Excel?	2 Marks	L1	CO3
	f)	How can Name Ranges improve the clarity and readability of Excel formulas?	2 Marks	L1	CO3
	g)	How can the SEARCH() function be used to find specific text within a string?	2 Marks	L1	CO4
	h)	What is the CONCATENATE() function used for in Excel?	2 Marks	L1	CO4
	i)	Explain the concept of Depreciation in financial analysis and how Excel handles it.	2 Marks	L1	CO5
	j)	How does the Simple Interest (SI) calculation work in Excel?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain how Excel's COUNT(), AVERAGE() and SUM() functions can be used to analyze data.	8 Marks	L2	CO1
	b)	How can you use the Freeze Panes tool in Excel to make large datasets easier to navigate?	8 Marks	L1	CO1

(OR)

3.	a)	Describe the process of using custom functions to automate repetitive tasks in Excel.	8 Marks	L2	CO1
	b)	What role does the AVERAGE() function play in data analysis in Excel? Provide an example.	8 Marks	L1	CO1

MODULE-II

4.	a)	Discuss how to use PivotTables for financial data analysis.	8 Marks	L2	CO2
	b)	Explain how PivotTables can be used for time-series data analysis and trend identification.	8 Marks	L2	CO2

(OR)

5.	a)	How can you use PivotTables to compare different sets of data	8 Marks	L1	CO2

over time or across categories?.

	b)	Describe the importance of mastering PivotTables in Excel for advanced data analysis.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss how the grouping feature in Excel helps organize large datasets for better analysis and reporting.	8 Marks	L2	CO3
	b)	Provide a comprehensive guide on how to use the SUMIF() and COUNTIF() functions for data analysis in business settings.	8 Marks	L2	CO3

(OR)

7.	a)	How can you clean up error messages in Excel reports using the IFERROR() function?	8 Marks	L2	CO3
	b)	How do Excel's Name Ranges improve the readability and efficiency of complex formulas? Provide examples.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the usage of the CONCATENATE() function in Excel and its role in combining text from different cells.	8 Marks	L2	CO4
	b)	Describe the importance of data validation when using functions like VLOOKUP() and INDEX() to prevent errors.	8 Marks	L2	CO4

(OR)

9.	a)	Provide an example where you can use the MID() function to extract specific text from a cell, and explain its practical applications.	8 Marks	L2	CO4
	b)	How can you use the joining function to join values across multiple columns and rows for effective reporting?	8 Marks	L2	CO4

MODULE-V

10.	a)	How does the COUNT() function in Excel help with data analysis, particularly for large datasets with missing or duplicate data?	8 Marks	L3	CO5
	b)	Describe how the AVERAGE() function is used to analyze large datasets, and explain why it is an important tool in data analysis.	8 Marks	L2	CO5

(OR)

11.	a)	How can Excel's Statistical Functions be used to determine the central tendency of a dataset, and what are the differences between MEDIAN() and AVERAGE()?	8 Marks	L2	CO5
	b)	Explain how Excel's COUNTIF() function can be used to count specific occurrences in a dataset based on criteria.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May – 2025

BUSINESS COMMUNICATION
(Computer Applications)

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define business communication.	2 Marks	L2	CO1
	b)	What are religious barriers in communication?	2 Marks	L1	CO1
	c)	Name two psychological barriers to communication.	2 Marks	L1	CO2
	d)	What is the purpose of a sales letter?	2 Marks	L2	CO2
	e)	List two types of reports.	2 Marks	L1	CO3
	f)	What is the importance of visual aids in presentations?	2 Marks	L1	CO3
	g)	Define memorandum.	2 Marks	L2	CO4
	h)	What is the difference between agenda and minutes?	2 Marks	L1	CO4
	i)	What is the role of instant messaging in business?	2 Marks	L1	CO5
	j)	What are the key components of a resume?	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 cultural barriers to effective communication and suggest ways to overcome them.	8 Marks	L3	CO1
	b)	Define communication and explain the characteristics of effective communication.	8 Marks	L2	CO1

(OR)

3.	a)	Explain the organizational barriers to communication and suggest remedies.	8 Marks	L4	CO1
	b)	Draft a letter sending quotations for office supplies.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write a job application letter for the position of HR Executive.	8 Marks	L2	CO2
	b)	Write a social correspondence letter inviting a friend to a business event.	8 Marks	L2	CO2

(OR)

5.	a)	Explain the process of writing minutes of a meeting.	8 Marks	L2	CO2
	b)	Draft a resume to apply for the post of Business Analyst.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss the key characteristics of an effective business report.	8 Marks	L4	CO3
	b)	Define a business report and explain its importance in organizational decision-making.	8 Marks	L3	CO3

(OR)

7.	a)	What are the main objectives of writing a business report? Discuss with examples.	8 Marks	L2	CO3
	b)	Outline the essential components of a formal business report and explain the purpose of each section.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the importance of using clear and concise language in business communication. Provide examples to support your answer.	8 Marks	L2	CO4
	b)	Explain the steps involved in preparing a PowerPoint presentation.	8 Marks	L3	CO4

(OR)

9.	a)	Discuss how effective business language can enhance professional relationships and improve workplace productivity.	8 Marks	L4	CO4
	b)	Identify 10 commonly misspelled words in English and provide their correct spellings. Explain why these words are often misspelled.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the advantages and disadvantages of using email as a primary mode of business communication. Provide examples to support your answer.	8 Marks	L4	CO5
	b)	Explain how businesses can leverage social media for brand promotion and engagement.	8 Marks	L2	CO5

(OR)

11.	a)	How has instant messaging (e.g., Slack, WhatsApp for Business) transformed workplace communication?	8 Marks	L4	CO5
	b)	Explain how video conferencing enhances collaboration in global business environments.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2025

PROFESSIONAL ETHICS AND HUMAN VALUES

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention the key areas of applied ethics.	2 Marks	L1	CO1
	b)	Define moral autonomy.	2 Marks	L1	CO1
	c)	What is moral leadership?	2 Marks	L1	CO2
	d)	What is Professional responsibility?	2 Marks	L1	CO2
	e)	Name a few roles of code.	2 Marks	L1	CO3
	f)	What is a regulated society?	2 Marks	L1	CO3
	g)	What is collective bargaining?	2 Marks	L1	CO4
	h)	What is confidentiality?	2 Marks	L1	CO4
	i)	Salient categories of unethical practices	2 Marks	L1	CO5
	j)	What do you mean by professional ethics?	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 Consensus and Controversy.	8 Marks	L2	CO1
	b)	Discuss variety of moral issues.	8 Marks	L2	CO1
		(OR)			
3.	a)	Name three types of inquiry and explain them briefly.	8 Marks	L2	CO1
	b)	Explain Carol Gilligan's theory on moral autonomy.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is integrity? How integrity is related to professionals?	8 Marks	L2	CO2
	b)	"Living peacefully" How it can be achieved?	8 Marks	L2	CO2
		(OR)			
5.	a)	Briefly discuss the use of ethical theories.	8 Marks	L2	CO2
	b)	Discuss the theories on virtues and ideals	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain with the help of examples that engineers would learn not only from their earlier design and operating results but also from those of other engineers.	8 Marks	L2	CO3
	b)	Engineering is an experimentation-Discuss.	8 Marks	L2	CO3
		(OR)			
7.	a)	What are the roles played by codes?	8 Marks	L2	CO3
	b)	Briefly describe the limitations of codes.	8 Marks	L2	CO3

MODULE-IV

8.	a)	"Professional rights can lead to conflicts of interest". Explain.	8 Marks	L2	CO4
	b)	What is the importance of loyalty and collegiality in teamwork?	8 Marks	L2	CO4
		(OR)			
9.	a)	What is reverse discrimination?	8 Marks	L2	CO4
	b)	Explain confidentiality.	8 Marks	L2	CO4

MODULE-V

10.	a)	Comment on Profession-in the light of comprehensive human goal.	8 Marks	L2	CO5
	b)	Discuss briefly the criteria for the evaluation of holistic technology. Support your answer with an example.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain Holistic Technology.	8 Marks	L2	CO5
	b)	What do you mean by Universal human order? What are its implications?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com II Semester (MBU-22) Regular Examinations, May – 2025

LEGAL ASPECTS OF BUSINESS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define capacity to contract	2 Marks	L1	CO1
	b)	List out the objectives of breach of contract.	2 Marks	L1	CO1
	c)	What is authority by an agent?	2 Marks	L1	CO2
	d)	Write about third party.	2 Marks	L1	CO2
	e)	Define sale.	2 Marks	L1	CO3
	f)	List out the features of sale	2 Marks	L1	CO3
	g)	Define management	2 Marks	L1	CO4
	h)	List out the duties of director	2 Marks	L1	CO4
	i)	Define consumer protection act	2 Marks	L1	CO5
	j)	Write about consumer protection council	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	What are the circumstances take place in Discharge of contract? Explain	16 Marks	L2	CO1
	(OR)			
3.	Outline the different laws relating to the damages.	16 Marks	L2	CO1

MODULE-II

4.	What are the duties of the principal? Explain	16 Marks	L2	CO2
	(OR)			
5.	How do measure the agency role in contract? Explain.	16 Marks	L2	CO2

MODULE-III

6.	Explain the contracts-cost insurance freight.	16 Marks	L2	CO3
	(OR)			
7.	What are the rights of an unpaid seller? Explain.	16 Marks	L2	CO3

MODULE-IV

8.	What are the reasons behind winding up of a company? Explain.	16 Marks	L2	CO4
	(OR)			
9.	Define management. Explain the features of management.	16 Marks	L2	CO4

MODULE-V

10.	Define cyber crime. Explain the features of cyber crime.	16 Marks	L2	CO5
	(OR)			
11.	What is the meaning of cyber crime? Explain the various types of cyber crimes.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2025

FUNDAMENTALS OF BUSINESS STATISTICS

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 scope of statistics.	2 Marks	L1	CO1
	b)	Write the limitations of statistics.	2 Marks	L1	CO1
	c)	Write the merits of median.	2 Marks	L1	CO2
	d)	Find the mean for the following data: 10,12,15,17,19,18,27,30.	2 Marks	L1	CO2
	e)	Define skewness	2 Marks	L1	CO3
	f)	Define range.	2 Marks	L1	CO3
	g)	Write the uses of correlation.	2 Marks	L1	CO4
	h)	Define Rank correlation.	2 Marks	L1	CO4
	i)	Define level of significance.	2 Marks	L1	CO5
	j)	Define type-I and type-II error.	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 difference between primary data and secondary data.	8 Marks	L3	CO1
	b)	Expalin the types of table.	8 Marks	L3	CO1

(OR)

3.	a)	Prepare a blank table to show the exports of three companies A, B, C to five countries U.K., U.S.A, U.S.S.R, France and Austrila, in each of the years 1995 to 1999.	8 Marks	L1	CO1
	b)	Explain different types of classification.	8 Marks	L3	CO1

MODULE-II

4.	a)	Compute the average wage rate of factory workers using data given in table	8 Marks	L1	CO2

Wage Rate	50-70	70-90	90-110	110-130	130-150
No. of Workers	10	20	25	35	9

	b)	Calculate the median for the following distribution	8 Marks	L3	CO2

Class	20-40	40-60	60-80	80-100	100-120
Frequency	4	6	10	12	8

(OR)

5.		Calculate Geometric mean and Harmonic mean for the following distribution	16 Marks	L3	CO2

Class	10-20	20-30	30-40	40-50	50-60
Frequency	6	20	44	26	3

MODULE-III

6.	a)	Find the mean deviation for the given data: 12,15,14,18,20,25,32	8 Marks	L3	CO3
	b)	Calculate the variance for the given data: 10,15,17,14,22,25,16.	8 Marks	L1	CO3

(OR)

7. Calculate Quartile deviation for a frequency distribution — 16 Marks — L3 — CO3

Class	0-4	4-8	8-12	12-16	16-20
Frequency	8	12	24	36	18

MODULE-IV

8. Calculate correlation coefficient for the following data — 16 Marks — L3 — CO4

X	1	5	7	8	10	14
Y	12	15	17	18	17	20

(OR)

9.	a)	Explain the types of correlation	6 Marks	L1	CO4
	b)	From the following data, compute the spearman's rank correlation	10 Marks	L3	CO4

X	82	68	75	61	68	73	85	68
Y	81	71	71	68	62	69	80	70

MODULE-V

10.	a)	Explain the procedure of tests of significance for difference of two means in case of small samples.	8 Marks	L3	CO5
	b)	The mean weekly sales of soap bars in departmental stores was 146.3 bars per store. After an advertising campaign the mean weekly sales in 22 stores for a typical week increased to 153.7 and showed a S.D. of 17.2. Was the advertising campaign successful?	8 Marks	L1	CO5

(OR)

11. A medical researcher claims that the variance of the heart rates (in beats per minute) of smokers is greater than the variance of heart rates of people who do not smoke. Samples from two groups are selected and the data is given below. Using = 0.05, test whether there is enough evidence to support the claim. — 16 Marks — L3 — CO5

Smokers	Non Smokers
$n_1 = 25$	$n_2 = 18$
$s_1^2 = 18$	$s_2^2 = 36$



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2025

BASICS OF FINANCIAL MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define financial management.	2 Marks	L1	CO1
	b)	Explain about Time value of money	2 Marks	L1	CO1
	c)	Elaborate sources of finance	2 Marks	L1	CO2
	d)	Write a short note on Operating Leverage.	2 Marks	L1	CO2
	e)	How to compose Capital Structure?	2 Marks	L1	CO3
	f)	Describe the term over capitalization.	2 Marks	L1	CO3
	g)	Define working capital.	2 Marks	L1	CO4
	h)	Explain about IRR.	2 Marks	L1	CO4
	i)	Define dividend.	2 Marks	L1	CO5
	j)	What is dividend payout ratio?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Elaborate the nature and scope of Financial management.	16 Marks	L2	CO1
	(OR)			
3.	Describe the two widely discussed objectives of financial management.	8 Marks	L1	CO1
	Discuss agency problem arising from the relationship between managers and shareholders.	8 Marks	L1	CO1

MODULE-II

4.	ABC Company is considering raising funds through debt and equity. The company's cost of debt is 6% and its tax rate is 30%. The cost of equity is estimated at 10%. If the company's target capital structure consists of 40% debt and 60% equity, calculate the weighted average cost of capital (WACC).	16 Marks	L4	CO2
	(OR)			
5.	A company is willing to issue 2,000 8% debentures of Rs. 100 each for which the company will have to incur the following expenses. Underwriting commission 2%, brokerage 1%, Printing and other expenses Rs. 2,000. Find out the cost of debt capital.	16 Marks	L4	CO2

MODULE-III

6.	Explain the major theories of capital structure.	16 Marks	L4	CO3
	(OR)			
7.	Discuss Modigliani & Miller theorem (with and without taxes).	16 Marks	L4	CO3

MODULE-IV

8. Discuss about significance of working capital management . 16 Marks L4 CO4

(OR)

9. Calculate for Accounting Rate of Return 16 Marks L2 CO4

Particulars	Investment A	Investment B
Initial Investment	Rs.400000	Rs500000
Useful Life	5 years	5 Years
Estimated annual profit	Rs. 70,000	Rs. 90,000

i) Compute the **ARR** for both investments.
ii) Recommend which investment should be chosen based on the ARR method.

MODULE-V

10. "The following financial details are available for XYZ Ltd.: Return on Investment (R): **10%;**Earnings per Share (E): **40.Using** Gordon's Model**, determine the value of the company's shares under the following scenarios**: 16 Marks L2 CO5

Scenario	Dividend payout ratio	Retention Ratio	Cost of Equity
A	20%	80%	20%
B	40%	60%	18%
C	60%	40%	16%

Calculate the value of shares of each case

(OR)

11. Discuss about relevance theories impact on dividend decisions. 16 Marks L4 CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2025

OPERATIONS MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How has operations management evolved over time?	2 Marks	L1	CO1
	b)	Mention any two strategic decisions in operations management.	2 Marks	L1	CO1
	c)	Sketch two types of plant layout.	2 Marks	L1	CO2
	d)	What are the advantages of a good plant layout?	2 Marks	L1	CO2
	e)	Mention any two factors influencing long-term capacity planning.	2 Marks	L1	CO3
	f)	What is capacity timing?	2 Marks	L1	CO3
	g)	What is ERP?	2 Marks	L1	CO4
	h)	Define the KANBAN system.	2 Marks	L1	CO4
	i)	What are the differences between PERT and CPM?	2 Marks	L1	CO5
	j)	What is meant by project crashing?	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)	"Operation strategy as a competitive weapon"- Justify with suitable explanation and specific example.	8 Marks	L2	CO1
	b)	How is the product different from the services? Explain.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain why operations management is considered essential for businesses.	8 Marks	L2	CO1
	b)	Illustrate the productivity concepts with examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Why do different industries require different types of plant layouts? Explain.	8 Marks	L2	CO2
	b)	Why is selecting the right plant location critical for a business?	8 Marks	L2	CO2
		(OR)			
5.	a)	Why do organizations conduct feasibility studies before finalizing a plant location? Discuss with a suitable example.	8 Marks	L2	CO2
	b)	Why do organizations adopt productive maintenance instead of reactive maintenance?	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain different factors that influence capacity planning decisions.	8 Marks	L2	CO3
	b)	Discuss how technology, automation, and AI influence modern capacity planning.	8 Marks	L2	CO3

(OR)

7.	a)	What is bottleneck analysis, and how can businesses use it to improve production efficiency?	8 Marks	L2	CO3
	b)	How does capacity expansion affect cost efficiency and operational flexibility? Provide real-world examples.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the concept of the KANBAN system and how it facilitates inventory control.	8 Marks	L2	CO4
	b)	Describe the principles of Lean operations and how they help reduce waste in manufacturing.	8 Marks	L2	CO4

(OR)

9.	a)	Explain the Just-in-Time (JIT) approach and its impact on cost reduction and efficiency.	8 Marks	L2	CO4
	b)	Describe the role of automation in modern materials handling systems.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the differences between CPM and PERT, highlighting their specific applications.	8 Marks	L2	CO5
	b)	Explain the significance of project network diagrams in project management with a suitable example.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss the concept of project crashing and how it helps in reducing project duration.	8 Marks	L2	CO5
	b)	Explain cost analysis in project management and how it impacts decision-making.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2025

ORGANIZATIONAL BEHAVIOUR

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define individual roles in an organization.	2 Marks	L1	CO1
	b)	What is the importance of perception in teamwork?	2 Marks	L1	CO1
	c)	What is the difference between values and attitudes?	2 Marks	L1	CO2
	d)	What is the importance of personality.	2 Marks	L1	CO2
	e)	Define the Johari Window model.	2 Marks	L1	CO3
	f)	Explain the concept of participative leadership.	2 Marks	L1	CO3
	g)	Mention two types of stress experienced by employees.	2 Marks	L1	CO4
	h)	What is meant by preventive stress management?	2 Marks	L1	CO4
	i)	Mention two objectives of OD.	2 Marks	L1	CO5
	j)	What is meant by resistance to 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.	Discuss the linkages between organizational behavior and other social sciences.	16 Marks	L2	CO1
	(OR)			
3	Explain the importance and advantages of Organizational Behavior.	16 Marks	L2	CO1

MODULE-II

4	Define personality and explain its importance in organizational behavior.	16 Marks	L2	CO2
	(OR)			
5	Explain the determinants of Personality with suitable examples.	16 Marks	L2	CO2

MODULE-III

6	What are the major challenges faced by leaders in handling workgroups?	16 Marks	L2	CO3
	(OR)			
7	Discuss the concept of group dynamics and its importance in organizations.	16 Marks	L2	CO3

MODULE-IV

8	Discuss the preventive measures organizations can take to reduce workplace stress.	16 Marks	L2	CO4
	(OR)			
9	Explain how mediation and arbitration help in resolving conflicts in organizations.	16 Marks	L2	CO4

MODULE-V

10	Define Communication. Explain the advantages of effective communication.	16 Marks	L2	CO5
	(OR)			
11	What are the key challenges in implementing OD interventions?	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA II Semester (MBU-22) Regular Examinations, May – 2025

BASICS OF COMPUTERS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Differentiate between RAM and ROM.	2 Marks	L1	CO1
	b)	What is the role of a motherboard in a computer?	2 Marks	L1	CO1
	c)	How can you add page numbers to a Word document?	2 Marks	L1	CO1
	d)	How do you save a document in MS Word?	2 Marks	L1	CO1
	e)	What is a chart in MS Excel, and how is it useful?	2 Marks	L1	CO1
	f)	How do you insert a new worksheet in an Excel workbook?	2 Marks	L3	CO2
	g)	How do you import data into MS Access?	2 Marks	L2	CO2
	h)	What is a report in MS Access, and what is its use?	2 Marks	L3	CO2
	i)	What is an email, and how is it sent?	2 Marks	L3	CO2
	j)	Define the term “IP address.”	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.	Elaborate on the difference between RAM and ROM, and their significance.	16 Marks	L1	CO1
	(OR)			
3.	Explain the major components of a computer system and their functions.	16 Marks	L2	CO1

MODULE-II

4.	Explain the uses of MS Word in both professional and personal contexts.	16 Marks	L3	CO2
	(OR)			
5.	Explain the process of using the “Find and Replace” feature in a large document.	16 Marks	L4	CO2

MODULE-III

6.	Explain the basic structure of an Excel workbook and how it is organized.	16 Marks	L1	CO1
	(OR)			
7.	Explain the AutoSum function and its applications in Excel calculations.	16 Marks	L2	CO1

MODULE-IV

8.	Discuss the advantages of using MS Access for small and medium-sized businesses.	16 Marks	L1	CO1
	(OR)			
9.	What is a database, and how does MS Access assist in managing it?	16 Marks	L2	CO1

MODULE-V

10.	Explain how the internet works and its key components.	16 Marks	L1	CO1
	(OR)			
11.	Discuss the difference between the World Wide Web (WWW) and the internet.	16 Marks	L2	CO1



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations, April – 2025

CORPORATE ACCOUNTING

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write about valuation of shares.	2 Marks	L1	CO1
	b)	What is net assets method?	2 Marks	L1	CO1
	c)	What is loss?	2 Marks	L1	CO2
	d)	Write about loss prior to incorporation.	2 Marks	L1	CO2
	e)	List out the methods of amalgamation.	2 Marks	L1	CO3
	f)	Write about external reconstruction.	2 Marks	L1	CO3
	g)	List out the capital reduction processor.	2 Marks	L1	CO4
	h)	Write about reducing share capital.	2 Marks	L1	CO4
	i)	List out the modes of winding up of a company.	2 Marks	L1	CO5
	j)	Write about final statement of liquidator	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Distinguish between net assets method and market value of share.	16 Marks	L2	CO1

(OR)

3.	Define share. Explain the various categorius of shares under any organization.	16 Marks	L2	CO1

MODULE-II

4.	Subhash ltd was incorporated on 1st july 2022 and received its certificate of commencement of business on 1st august 2022. the company bought the business of M/s small &co with effect from 1st march 2022. from the following figures relating to the year ending february 2023 find out the profits available fro dividends. i) Sales for the year were Rs.6,00,000 out of which sales upto 1st july were Rs.2,50,000 ii) Gross profit for the year was Rs.1,80,000© the expenses debited to the profit and loss account were	16 Marks	L4	CO2

Particulars	Rs	Particulars	Rs
Rent	9,000	Advertising	18,000
Salaries	15,000	sationery and printing	3,600
Directors fees	4,800	commission on sales	6,000
Interest on debentures	5,000	Bad debts(Rs.500 relate	
Audit fees	1,500	to created prior to	
Discount on sales	3,600	incorporation)	1500
Depreciation	24,000		

(OR)

5.	Ankitha ltd was incorporated on 1st july 2022 and received its certificate of commencement of business on 1st august 2022. the company bought the business of M/s small &co with effect from 1st march 2022. from the following figures relating to the year ending february 2023 find out the profits available fro dividends. (a). Sales for the year were Rs.6,00,000 out of which sales upto 1st july were Rs.2,50,000(b). Gross profit for the year was Rs.1,80,000© the expenses debited to the profit and loss account were	16 Marks	L4	CO2

Particulars	Rs	Particulars	Rs
Rent	9,000	Advertising	18,000
Salaries	15,000	sationery and printing	3,600
Directors fees	4,800	commission on sales	6,000
Interest on debentures	5,000	Bad debts(Rs.500 relate to created prior to incorporation)	1500
Audit fees	1,500		
Discount on sales	3,600	interest on vendor on purchase consideration up to 1st sep 2022	3000
Depreciation	24,000		
General expenses	4,800		

MODULE-III

6.	Explain various types of amalgamation.	16 Marks	L2	CO3

(OR)

7.	Explain the differences between pooling of interest method and purchase method.	16 Marks	L2	CO3

MODULE-IV

8.	Explain the various provisions of capital reduction as given in the companies act 2013.	16 Marks	L2	CO4

(OR)

9.	Explain the procedure for reducing share capital.	16 Marks	L2	CO4

MODULE-V

10.	Explain preferntial creditors as given under companies act.	16 Marks	L2	CO5

(OR)

11.	How the liquidators remuneration was calculated?	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations, April – 2025

MANAGEMENT ACCOUNTING

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Management Accounting.	2 Marks	L1	CO1
	b)	Define financial accounting.	2 Marks	L1	CO1
	c)	Name any two liquidity ratios.	2 Marks	L1	CO2
	d)	What is the profitability ratio?	2 Marks	L1	CO2
	e)	List out the application of funds.	2 Marks	L1	CO3
	f)	What is funds from operations?	2 Marks	L1	CO3
	g)	List out the operating activities.	2 Marks	L1	CO4
	h)	Define interim dividend.	2 Marks	L1	CO4
	i)	Define sales budget.	2 Marks	L1	CO5
	j)	What is cash budget?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.		Discuss the Advantages and Limitations of Management Accounting.	16 Marks	L2	CO1

(OR)

3.		What is Management Accounting? State the objectives of Management Accounting.	16 Marks	L2	CO1

MODULE-II

4.	a)	Discuss about the turnover ratios.	8 Marks	L2	CO2
	b)	From the following information you are required to prepare Current Ratio.	8 Marks	L4	CO2

Particulars	Rs	Particulars	Rs.
Inventory	60,000	Trade receivables:	
Trade payables:		Sundry debtors	70,000
Sundry creditors	20,000	Bills receivable	30,000
Bills payables	15,000	Outstanding exp	7,000
Cash and cash	20,000	Bank overdraft	25,000
equivalence	10,000	Debentures	75,000
Other current assets	1,00,00	Short term	18,000
Land and buildings	0	provisions	
Goodwill	50,000		

(OR)

5. The following figures relate to the liabilities of a company. 16 Marks L4 CO2

Particulars	Rs.
50,000 equity shares of Rs.10/- fully paid	5,00,000
20,000 9% preference shares of Rs. 10/-	2,00,000
General reserve	50,000
Securities premium reserve	25,000
Balance of profit and loss	1,25,000
7.5% debentures	1,40,000
Mortgage loans	60,000
Sundry creditors	1,29,000
Bills payable	74,500
	13,03,500

Find out funded debt to total capitalization ratio and comment on this ratio

MODULE-III

6. From the following balance sheet of Mr. A, prepare a schedule of changes in working capital and a funds flow statement: 16 Marks L4 CO3

Liabilities	2020(s.)	2021(rs.)	assets	2020(rs.)	2021(rs.)
Capital	63,000	1,00,000	Cash	15,000	20,000
Long-term borrowings	50,000	60,000	Debtors	30,000	28,000
Trade creditors	42,000	39,000	Stock-in-trade		
Bank Overdraft	35,000	25,000	Land and buildings	55,000	72,000
Outstanding expenses	5,000	6,000	Furniture	80,000	1,00,000
				15,000	10,000
	1,95,000	**2,30,000**		**1,95,000**	**2,30,000**

(OR)

7. From the following particulars, prepare funds flow statement: 16 Marks L4 CO3

particulars	Jan.1 (Rs.)	Dec.31 (Rs.)
Cash	2,000	1,800
Debtors	17,500	19,200
Stock	12,500	11,000
Land	10,000	15,000
Buildings	25,000	27,000
Machinery	40,000	43,000
	1,07,000	**1,17,500**
Creditors	18,000	20,500
Bank loan (long term)	15,000	22,500
Capital	74,000	74,500
	1,07,000	**1,17,500**

MODULE-IV

8. Calculate cash flow from operating activities from the following information: 16 Marks L4 CO4

Particulars	31st march, 2021, Rs.	31st march, 2020, Rs.
Surplus., balance in the statement of	4,00,000	3,00,000
p & s	2,00,000	1,50,000
Trade receivables	80,000	1,00,000
Trade payables	1,70,000	1,80,000
Inventories	1,30,000	1,10,000
Depreciation	10,000	15,000
Prepaid rent	30,000	25,000
Outstanding expenses	20,000	30,000
goodwill		

(OR)

9. From the following extracts of the balance sheet and additional information, you are required to calculate net profit before tax and extraordinary items. 16 Marks L4 CO4

particulars	31st march, 2021 Rs.	31st march, 2020 Rs.
Equity and liabilities		
Equity share capital	4,00,000	4,00,000
8% redeemable preference share capital	3,00,000	3,00,000
Surplus,i.e., balance in the statement of	2,50,000	2,00,000
profit and loss	5,000	-
Dividend payable		

Note: The proposed-on equity share capital for the years ended 31st march,2020 and 2021 was rs.40,000 and rs.60,000 respectively.
An interim dividend of rs.30,000 was paid during the year ended 31st march,2021

MODULE-V

10. The following information at 50% capacity is given. Prepare a flexible budget and forecast the profit or loss at 60%, 70%, and 90% capacity. 16 Marks L4 CO5

Particulars	Expenses at 50% capacity (Rs)
Fixed expenses:	
Salaries	50,000
Rent and rates	40,000
Depreciation	60,000
Administrative expenses	70,000
Variable expenses:	
Materials	2,00,000
Labour	2,50,000
Others	40,000
Semi-variable expenses:	
Repairs	1,00,000
Indirect labour	1,50,000
others	90,000

It is estimated that fixed expenses will remain constant at all capacities. Semi-variable expenses will not change between 45% and 60% capacity, will rise by 10% between 60% and 75% capacity, a further increase of 5% when capacity crosses 75%.

Capacity	Sales (Rs.)
60%	11,00,000
70%	13,00,000
90%	15,00,000

(OR)

11. The cost of an article at a capacity level of 10,000 units is given under A below. For a variation in capacity above or below this level, the individual expenses vary as indicated in B below: 16 Marks L4 CO5

Particulars	A (Rs.)	B
Materials	50,000	100% varying
Labour	30,000	100% varying
Power	3,000	80% varying
Repair and maintenance	3,500	80% varying
Stores	2,000	100% varying
Inspection	800	25% varying
Depreciation	10,000	100% varying
Administration overhead	3,600	25% varying
Selling overhead	4,500	50% varying
Total	**1,07,400**	
Cost per unit	**10.74**	

You are required to prepare a flexible budget at production levels of 8,000 and 12,000 units.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations, April – 2025

MANAGEMENT OF FINANCIAL SERVICES

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Financial system.	2 Marks	L1	CO1
	b)	Discuss about Treasury Bills (T-Bills).	2 Marks	L1	CO1
	c)	What is a Mutual Fund? Give an example.	2 Marks	L1	CO2
	d)	Explain the Secondary market.	2 Marks	L2	CO2
	e)	What is a Book Building?	2 Marks	L1	CO3
	f)	Define Price Rigging.	2 Marks	L1	CO3
	g)	Explain the concept of Factoring .	2 Marks	L2	CO4
	h)	Discuss Housing Finance.	2 Marks	L2	CO4
	i)	Define the concept of Private Placement.	2 Marks	L1	CO5
	j)	Discuss underwriting services.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	What is the role of the Reserve Bank of India (RBI)? Describe the main functions of the RBI	16 Marks	L1	CO1

(OR)

3.	What is a financial system? Describe its key components and explain their significance to the economy.	16 Marks	L1	CO1

MODULE-II

4.	Explain the structure of public and private sector banks in India. Compare their performance in terms of growth, profitability, and customer service.	16 Marks	L1	CO2

(OR)

5.	Define mutual funds. Discuss their framework, categories, and benefits for retail investors.	16 Marks	L1	CO2

MODULE-III

6.	a)	Explain the role and functions of SEBI in detail.	8 Marks	L1	CO3
	b)	Distinguish between Primary and secondary markets.	8 Marks	L1	CO3

(OR)

7.	Write short notes on the following i) Book Building ii) Insider Trading iii) Buyback of shares iv) Price – rigging v) Lock in Period	16 Marks	L1	CO3

MODULE-IV

8.	a)	Define Leasing. Explain the different types of leasing.	8 Marks	L1	CO4
	b)	Is Factoring a fee-based service analysis.	8 Marks	L1	CO4
		(OR)			
9.	a)	How can venture capitalists finance new ideas? - Discuss.	8 Marks	L1	CO4
	b)	What is Housing Finance? Explain the significance of Housing Finance.	8 Marks	L1	CO4

MODULE-V

10.	a)	The scope of merchant banking is great in India. Discuss	8 Marks	L1	CO5
	b)	What are the challenges faced by the Investment bankers	8 Marks	L1	CO5
		(OR)			
11.	a)	Briefly discuss the various rating agencies functioning in the Indian capital market.	8 Marks	L1	CO5
	b)	Explain the challenges faced by investment banker	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations, April – 2025

COMPUTERISED ACCOUNTING WITH TALLY

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out to the accounting concepts.	2 Marks	L1	CO1
	b)	Discuss about zoho books Accounting software.	2 Marks	L1	CO1
	c)	Narrate the versions of Tally.	2 Marks	L1	CO2
	d)	How to create a stock items in Tally ERP 9.0?	2 Marks	L1	CO2
	e)	What is the procedure of Configuration in Tally ERP9.0?	2 Marks	L1	CO3
	f)	What is the procedure of Print of inventory reports?	2 Marks	L1	CO3
	g)	How to create TDS Ledgers in Tally?	2 Marks	L1	CO4
	h)	How to enter TDS on advance payment in Tally?	2 Marks	L1	CO4
	i)	How Enable Payroll statutory features?	2 Marks	L1	CO5
	j)	How to create a payroll vouchers in Tally?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Define computerized Accounting. Explain its advantages and disadvantages.	16 Marks	L2	CO1
	(OR)			
3.	What is Accounting? Explain the concepts and conventions of Accounting.	16 Marks	L2	CO1

MODULE-II

4.	Discuss about voucher Entry in Tally.	16 Marks	L2	CO2
	(OR)			
5.	Discuss about Tally Accounting Masters.	16 Marks	L2	CO2

MODULE-III

6.	Explain the Inventory Configuration in Tally.	16 Marks	L2	CO3
	(OR)			
7.	Explain the various types of vouchers in Tally.	16 Marks	L2	CO3

MODULE-IV

8.	How to create ledgers for entering TDS transactions in Tally.	16 Marks	L2	CO4
	(OR)			
9.	Explain to the following TDS Reports: i) Computation ii) Challan Reconciliation iii) Return iv) E-Return.	16 Marks	L2	CO4

MODULE-V

10.	Explain the procedure of enabling payroll in Tally.	16 Marks	L2	CO5
	(OR)			
11.	How to create payroll masters in Tally? Discuss.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations, April – 2025

BANKING AND INSURANCE

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Commercial Bank.	2 Marks	L1	CO1
	b)	State the Structure of Commercial Banks in India.	2 Marks	L1	CO1
	c)	Define secured Loan.	2 Marks	L1	CO2
	d)	Write a short note on NPA'S.	2 Marks	L1	CO2
	e)	What is the B2B (Business-to- Business) model in e-commerce?	2 Marks	L1	CO3
	f)	Expand RTGS.	2 Marks	L1	CO3
	g)	Write a short note on Importance of Life Insurance Policies.	2 Marks	L1	CO4
	h)	List any two main key elements of insurance?	2 Marks	L1	CO4
	i)	Write a short note on Importance of General Insurance.	2 Marks	L1	CO5
	j)	What is the procedure for taking Health Insurance Policy?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Explain the primary and secondary functions of banks. How do these functions contribute to the smooth functioning of the financial system?	16 Marks	L2	CO1

(OR)

3.	Describe the key functions of the Reserve Bank of India (RBI) and explain how it serves as the guardian of the Indian banking system.	16 Marks	L2	CO1

MODULE-II

4.	Discuss the nature of the debtor-creditor relationship between a bank and its customers.	16 Marks	L2	CO2

(OR)

5.	What is the Process of Payment and Collection of Cheques in Banking?	16 Marks	L1	CO2

MODULE-III

6.	Describe the various types of electronic payment systems and explain how each one works.	16 Marks	L2	CO3

(OR)

7.	What is Online Banking? Explain the various online banking services available to customers.	16 Marks	L2	CO3

MODULE-IV

8.	What are the main components of an insurance policy?	16 Marks	L1	CO4

(OR)

9.	What does the principle of indemnity mean in insurance, and why is it significant?	16 Marks	L1	CO4

MODULE-V

10.	Explain the roles of key insurance players in India.	16 Marks	L2	CO5
	(OR)			
11.	Discuss the importance of LIC in the Indian insurance industry.	16 Marks	L2	CO5



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BBA IV Semester (MBU-22) Regular Examinations, April – 2025

ENTREPRENEURSHIP DEVELOPMENT

[Management]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Who is social entrepreneur? Explain.	2 Marks	L1	CO1
	b)	Define inherited entrepreneur.	2 Marks	L1	CO1
	c)	List out the objectives of IFCI	2 Marks	L1	CO2
	d)	Write a note on NSIC	2 Marks	L1	CO2
	e)	List out the steps in BPM.	2 Marks	L1	CO3
	f)	Write the disadvantages of business angel financing	2 Marks	L1	CO3
	g)	What is meant by financial Budgeting?	2 Marks	L1	CO4
	h)	What is meant by layout?	2 Marks	L1	CO4
	i)	Write the traits of women entrepreneurship	2 Marks	L1	CO5
	j)	Define Self-employed entrepreneurs	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.	Examine the importance of entrepreneurship.	16 Marks	L1	CO1
	(OR)			
3.	Analyze and explain the primary functions of entrepreneurship.	16 Marks	L1	CO1

MODULE-II

4.	Discuss the functions of SIDO.	16 Marks	L2	CO2
	(OR)			
5.	Analyze the different institutional support provided to entrepreneurs.	16 Marks	L1	CO2

MODULE-III

6.	Explain in detail about objectives of SHG.	16 Marks	L2	CO3
	(OR)			
7.	Outline steps involved in creating a business venture.	16 Marks	L1	CO3

MODULE-IV

8.	How to write business plan? Explain.	16 Marks	L1	CO4
	(OR)			
9.	Outline the financial plan for new business.	16 Marks	L1	CO4

MODULE-V

10.	How is the Indian consortium of women entrepreneurs contributing to the women empowerment? Explain.	16 Marks	L2	CO5
	(OR)			
11.	Discuss the need of women entrepreneurship in India.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations, April – 2025

INTRODUCTION TO FINANCIAL TECHNOLOGY

[Management]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Financial analytics.	2 Marks	L1	CO1
	b)	Write about Data Analysis.	2 Marks	L1	CO1
	c)	Define linear regression.	2 Marks	L2	CO2
	d)	Tell about Multinominal regression.	2 Marks	L2	CO2
	e)	Uses of Digital Finance.	2 Marks	L2	CO3
	f)	What are various applications in Fintech?	2 Marks	L1	CO3
	g)	What is RegTech Ecosystem?	2 Marks	L2	CO4
	h)	Benefits of AI in Finance.	2 Marks	L1	CO4
	i)	Define Data in Financial Services.	2 Marks	L1	CO5
	j)	Define about GDPR.	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 scope and importance of financial analytics in company financial evolution?	8 Marks	L2	CO1
	b)	Write a short note on recent trends in financial analytics	8 Marks	L1	CO1
		(OR)			
3.	a)	Tell about Business intelligence and how it will useful in Data Analysis	8 Marks	L2	CO1
	b)	How did you develop Spread Sheet Analysis using Financial Statement analysis?	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the importance of data preparation in predictive analysis?	8 Marks	L2	CO2
	b)	Demonstrate Regression Analysis Model and explain its types	8 Marks	L2	CO2
		(OR)			
5.	a)	Summarize the concept of Logistic Regression Analysis with suitable examples	8 Marks	L3	CO2
	b)	Tell about various Applications in Predictive analytics	8 Marks	L3	CO2

MODULE-III

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

(OR)

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

MODULE-IV

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

(OR)

9.	a)	Define what a regulatory sandbox is and outline its primary objectives	8 Marks	L2	CO4
	b)	Discuss the potential benefits and risks of using AI algorithms in financial markets?	8 Marks	L2	CO4

MODULE-V

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

(OR)

11.	a)	Discuss the key principles of GDPR and explain how they guide the processing of personal data.	8 Marks	L2	CO5
	b)	Explain the concept of predictive analytics in financial services.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations, April – 2025

BUSINESS LAW

[Management]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the legality of object consideration?	2 Marks	L1	CO1
	b)	How does the contract get discharged by performance?	2 Marks	L1	CO1
	c)	State essentials of the doctrine of caveat emptor	2 Marks	L1	CO1
	d)	Who is unpaid seller explain?	2 Marks	L1	CO1
	e)	Why is partnership necessary?	2 Marks	L1	CO1
	f)	Who is a Dormant Partner?	2 Marks	L1	CO1
	g)	State the contents of the Prospectus. (Any 4)	2 Marks	L1	CO1
	h)	Explain Effect of incorporation.	2 Marks	L1	CO1
	i)	Explain briefly National Commission.	2 Marks	L1	CO1
	j)	Distinguish between Environment and Environmental Law	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 is meant by Free Consent? Explain the factors affecting Free Consent.	8 Marks	L2	CO1
	b)	Differentiate bailment and agency with examples.	8 Marks	L2	CO1
		(OR)			
3.	a)	What are the essential features of Contract of guarantee? Explain with an example	8 Marks	L2	CO1
	b)	Explain about the duties of the principal towards his agent.	8 Marks	L2	CO1

MODULE-II

4.	a)	Who prepares an airway bill? What is the minimum liability of a carrier by air?	8 Marks	L2	CO2
	b)	State the respective Rights, Duties and Liabilities of Common carriers and Private carriers.	8 Marks	L2	CO2
		(OR)			
5.	a)	What is the conditions and types of conditions? Differentiate between condition and warranty.	8 Marks	L2	CO2
	b)	Explain the transfer of property doctrine of caveat emptor with an example.	8 Marks	L2	CO2

MODULE-III

6.	a)	The sharing of profits is only a prima facie evidence of partnership". Comment.	8 Marks	L2	CO3
	b)	Discuss in brief various modes of dissolution of firm under Indian Partnership Act, 1932.	8 Marks	L2	CO3
		(OR)			
7.	a)	Distinguish Partnership from: i) Joint Hindu family business ii) Joint Stock Company, iii) Co-ownership	8 Marks	L2	CO3
	b)	Can a minor be admitted to a partnership? If so what are the rules governing his/her rights and liabilities during minority?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Mention different kinds of Companies. Explain about any four companies.	8 Marks	L2	CO4
	b)	Write short notes: i) Conversion of a public company into a private company ii) Small company	8 Marks	L2	CO4
		(OR)			
9.	a)	Describe the documentary requirements for incorporation of a joint stock company	8 Marks	L2	CO4
	b)	Distinguish a Company from Ordinary Partnership Firm	8 Marks	L2	CO4

MODULE-V

10.	a)	How do you file a complaint regarding a defect in any goods and what is the procedure of hearing?	8 Marks	L2	CO5
	b)	Enumerate the general environmental regulations in force in India and discuss their subject-matters.	8 Marks	L2	CO5
		(OR)			
11.	a)	Give a summarized view of the Consumer Protection Act 1986.	8 Marks	L2	CO5
	b)	Describe the legislations in force that seek to provide protection to wildlife and forests.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations, April – 2025

STRATEGIC MANAGEMENT

[Management]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write the full form of SWOT and define it with examples.	2 Marks	L1	CO1
	b)	Differentiate between Mission and Vision statement.	2 Marks	L1	CO1
	c)	Define Experience Curve.	2 Marks	L1	CO2
	d)	List the advantages of BCG Matrix.	2 Marks	L1	CO2
	e)	Name the four types of strategy alternatives.	2 Marks	L1	CO3
	f)	Define the concept of combination strategy.	2 Marks	L1	CO3
	g)	Define offensive strategy and provide a brief example.	2 Marks	L1	CO4
	h)	Differentiate between vertical and horizontal strategies.	2 Marks	L1	CO4
	i)	Define strategic control in the context of strategic management.	2 Marks	L1	CO5
	j)	Briefly describe benchmarking and its role in evaluating performance.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Explain the concept of core competence and its relevance to competitive advantage.	16 Marks	L2	CO1
	(OR)			
3.	Explain the concept Value Chain Analysis and its significance.	16 Marks	L2	CO1

MODULE-II

4.	Porter's five forces model is an effective tool for attaining competitive advantage. Justify this statement.	16 Marks	L2	CO2
	(OR)			
5.	Briefly explain how the SWOT analysis and TOWS matrix are used in a newly budding organization.	16 Marks	L2	CO2

MODULE-III

6.	a)	Analyze the implications of stability strategy in strategic management.	8 Marks	L3	CO3
	b)	List the advantages of Growth strategy.	8 Marks	L2	CO3
		(OR)			
7.		Explain the Strategic Alternatives with examples.	16 Marks	L2	CO3

MODULE-IV

8.	Compare and contrast vertical and horizontal strategies with real-world examples.	16 Marks	L2	CO4
	(OR)			
9.	Elaborate on the importance of defensive strategy in mitigating competitive threats.	16 Marks	L2	CO4

MODULE-V

10.	Explain the role of the strategist in strategy evaluation and control.	16 Marks	L2	CO5
	(OR)			
11.	Explain the significance of benchmarking as a tool for continuous improvement in strategic management.	16 Marks	L2	CO5

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BBA IV Semester (MBU-22) Regular Examinations, April – 2025

CONSUMER BEHAVIOUR

[Management]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

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

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the nature of Consumer Behaviour.	8 Marks	L2	CO1
	b)	Explain the characteristics of Consumer Behaviour.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe the Scope and applications of Consumer Behaviour.	8 Marks	L2	CO1
	b)	Discuss the importance of consumer behaviour.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the factors that influence the consumer behaviour.	8 Marks	L2	CO2
	b)	What is opinion leadership and explain its characteristics.	8 Marks	L1	CO2
		(OR)			
5.		What is Group and classify its types with an example?	16 Marks	L2	CO2

MODULE-III

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

MODULE-IV

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

MODULE-V

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



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BBA IV Semester (MBU-22) Regular Examinations, April – 2025

PERFORMANCE MANAGEMENT

[Management]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define the term Performance	2 Marks	L1	CO1
	b)	What is Performance Management?	2 Marks	L1	CO1
	c)	Define job description.	2 Marks	L1	CO2
	d)	Define Performance.	2 Marks	L1	CO2
	e)	Define the term "360-degree feedback" in the context of performance appraisal	2 Marks	L1	CO3
	f)	Outline two advantages and two disadvantages of using the graphic rating scale method in performance appraisal.	2 Marks	L1	CO3
	g)	List out the performance management skills in HRM	2 Marks	L1	CO4
	h)	Define Employee Development	2 Marks	L1	CO4
	i)	What is bench marking?	2 Marks	L1	CO5
	j)	State three advantages of bench marking	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.	Define Performance Management. Explain the scope and significance of Performance Management.	16 Marks	L2	CO1
	(OR)			
3	What is performance management? Explain the advantages and importance of performance management.	16 Marks	L2	CO1

MODULE-II

4	Define Job description. Explain the components of Job description.	16 Marks	L2	CO2
	(OR)			
5	Compare and contrast the different approaches to measuring employee performance. Which approach is most effective in a dynamic work environment?	16 Marks	L2	CO2

MODULE-III

6	Define Fringe benefits. Explain different types of fringe benefits and its advantages.	16 Marks	L2	CO3
	(OR)			
7	Explain the methods of salary and wage fixation.	16 Marks	L2	CO3

MODULE-IV

8	What is employee assessment system? Explain the advantages of the employee assessment system.	16 Marks	L2	CO4
	(OR)			
9	What are the essential skills required for effective performance management? Discuss how these skills contribute to improving employee performance and organizational outcomes.	16 Marks	L2	CO4

MODULE-V

10	Discuss the role of Six Sigma in enhancing quality management within an organization.	16 Marks	L2	CO5
	(OR)			
11	Explain the concept of benchmarking and discuss its significance in improving organizational performance. Provide examples of different types of benchmarking.	16 Marks	L2	CO5



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations, April – 2025

RELATIONAL DATABASE MANAGEMENT SYSTEMS

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is DBMS? What are the objectives of DBMS?	2 Marks	L1	CO1
	b)	Define an Entity and Entity set?	2 Marks	L1	CO1
	c)	Define Primary key and Foreign key?	2 Marks	L1	CO2
	d)	Define an Attribute? Mention types of attributes?	2 Marks	L1	CO2
	e)	Define SQL?Name the commands of SQL?	2 Marks	L1	CO3
	f)	Name the Aggregate functions in SQL?	2 Marks	L1	CO3
	g)	Define PL/SQL? What are the Data types of PL/SQL?	2 Marks	L1	CO4
	h)	Define normalization? What are the types of normal forms?	2 Marks	L1	CO4
	i)	DefineTransaction?What are the properties of Transaction Dbms?	2 Marks	L1	CO5
	j)	What is meant by Lock based protocol?name the types of Lock based protocols in DBMS?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is DBMS? Explain the Structure and objectives of DBMS**.**	8 Marks	L2	CO1
	b)	Explain Purpose of DBMS. Also explain advantages and disadvantages of DBMS	8 Marks	L2	CO1

(OR)

3.	a)	What is Data abstraction?Explain Levels of abstraction in dbms.	8 Marks	L2	CO1
	b)	What is Evolution of data models?Explain types of data models in detail.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain about SQL commands with syntax and example.	8 Marks	L2	CO2
	b)	Define DBA. Explain types of DBA's in detail.	8 Marks	L2	CO2

(OR)

5.	a)	Define Data integrity. Explain different types of integrity constraints in relational Data model.	8 Marks	L2	CO2
	b)	What is Select command? Explain various Clauses in Sql.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the concept of aggregate operators in SQL.	8 Marks	L2	CO3
	b)	What is Trigger? Explain about types of Triggers in SQL.	8 Marks	L2	CO3

(OR)

7.	a)	Define PL/SQL Block. Write a program to perform sum of two numbers by using PL/SQL block?.	8 Marks	L2	CO3
	b)	What is Cursor? Explain various types of cursors in PL/SQL in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Construct Fibonacci series program by using PL/SQL block.	8 Marks	L4	CO4
	b)	Differentiate between triggers and cursors.	8 Marks	L3	CO4

(OR)

9.	a)	Explain the concept of Transactions in SQL in detail.	8 Marks	L2	CO4
	b)	What is functional dependency? Explain different types of functional dependencies in DBMS.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is Normalization process? Explain any three types of Normal forms in DBMS.	8 Marks	L2	CO5
	b)	What is meant by hashed-based indexing and provide an example for each one?	8 Marks	L2	CO5

(OR)

11.	a)	Discuss in briefly about Concurrency control and its types.	8 Marks	L3	CO5
	b)	Discuss in detail about lock-based protocols.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Com IV Semester (MBU-22) Regular Examinations, April – 2025

PYTHON PROGRAMMING

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain any Four features of Python.	2 Marks	L2	CO1
	b)	What is a Keyword? Give examples?	2 Marks	L1	CO1
	c)	What is '**if-elif-else'** statement in Python? Give an example.	2 Marks	L1	CO2
	d)	What is the use of the **pass** statement in Python?	2 Marks	L1	CO2
	e)	How do you create a nested list in Python?	2 Marks	L1	CO3
	f)	How do you create a set in Python?	2 Marks	L1	CO3
	g)	What is the difference between local and global variable scope?	2 Marks	L1	CO4
	h)	What are the different types of files in Python?	2 Marks	L1	CO4
	i)	What is encapsulation in Python, and how is it implemented?	2 Marks	L1	CO5
	j)	How do you define a class in Python?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define Token. Explain various types of tokens used in Python.	8 Marks	L2	CO1
	b)	Explain various Arithmetic and Relational operators used in Python with example programs.	8 Marks	L3	CO1
		(OR)			
3.	a)	What is an Expression? Explain various types of expressions used in Python.	8 Marks	L2	CO1
	b)	Construct a python script to illustrate the use of Relational expressions.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the working mechanism of a **while** loop. Provide examples that demonstrate how the loop functions.	8 Marks	L2	CO2
	b)	Develop a Python program using a **while** loop to calculate the sum of all numbers from 1 to 50.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the role of the **else** statement when used with loops in Python. How does it differ from its use in conditional statements?	8 Marks	L2	CO2
	b)	Develop a Python program that prints numbers starting from 1, and stops printing when the sum of the printed numbers exceeds 50.	8 Marks	L3	CO2

MODULE-III

6.	a)	What are tuples, and how are they created in programming languages like Python? Explain with example.	8 Marks	L2	CO3
	b)	Write a Python script to perform various operations on Tuples like: creation, searching and sorting.	8 Marks	L3	CO3

(OR)

7.	a)	What are regular expressions, and how are they used for pattern matching in programming? Discuss their importance and common applications.	8 Marks	L2	CO3
	b)	Write a Python program using regular expressions to validate email addresses entered by users. The email should follow the standard format: username@domain.extension.	8 Marks	L3	CO3

MODULE-IV

8.	a)	What are lambda functions in Python? How do they differ from regular functions? Provide examples.	8 Marks	L2	CO4
	b)	Develop a Python program to use a lambda function in conjunction with the map() function to convert a list of temperatures in Celsius to Fahrenheit.	8 Marks	L3	CO4

(OR)

9.	a)	Describe the different modes of file operations in Python (read, write, append, etc.). How do you choose the appropriate mode for different tasks?	8 Marks	L2	CO4
	b)	Construct a python script to copy the content of one file into another file.	8 Marks	L3	CO4

MODULE-V

10.	a)	Define Constructor. Explain various types of constructors used in Python.	8 Marks	L2	CO5
	b)	Construct a Python script to illustrate the use of Parameterized Constructor.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the principles of Object-Oriented Programming (OOP) with examples.	8 Marks	L2	CO5
	b)	Explain various types of Inheritance in Python with examples.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

PHARMACEUTICAL ANALYSIS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define redox reaction.	2 Marks	L1	CO2
	b)	What is Oxidation reaction.	2 Marks	L1	CO2
	c)	What is Reduction reaction.	2 Marks	L1	CO2
	d)	Define Dichrometry.	2 Marks	L1	CO2
	e)	Define Cerimetry.	2 Marks	L1	CO2
	f)	What is Accuracy?	2 Marks	L1	CO1
	g)	What is Precision?	2 Marks	L1	CO1
	h)	What is Pharmacopoeia?	2 Marks	L1	CO2
	i)	Define Impurity?	2 Marks	L1	CO1
	j)	What is Limit test?	2 Marks	L1	CO1

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Define Error and classify different types of Errors.	5 Marks	L1	CO1
	b)	Define impurity and write a note on Sources of impurities.	5 Marks	L1	CO1
3.	a)	Write the Procedure involved in preparation and standardization of Potassium Permaganate.	5 Marks	L1	CO1
	b)	Write the different methods for expressing concentration.	5 Marks	L1	CO1
4.	a)	Explain in detail about acid base titrations ?	5 Marks	L1	CO2
	b)	To estimate the Sodium benzoate by non aqueous titration ?	5 Marks	L1	CO2

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain different techniques in Pharmaceutical Analysis.	5 Marks	L1	CO1
6.	Explain different concentration expression methods.	5 Marks	L1	CO1
7.	Write a brief note on different methods to helpful for to minimizing errors.	5 Marks	L6	CO1
8.	Write a note on Acidimetric titrations.	5 Marks	L6	CO2
9.	Write a note on Alkalimetry titrations.	5 Marks	L6	CO2
10	Explain about neutralization curves.	5 Marks	L1	CO2
11.	Explain in detail about Diazotization titration reaction.	5 Marks	L1	CO3
12.	Explain about estimation of sodium chloride by Precipitation titration.	5 Marks	L1	CO2
13.	Write the principle and applications of redox reactions.	5 Marks	L6	CO2

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B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

PAHARMACEUTICAL INORGANIC CHEMISTRY

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the Composition of barium sulphate reagent.	2 Marks	L6	CO1
	b)	Write the importance of limit test.	2 Marks	L6	CO1
	c)	Define the terms hypotonic and hypertonic.	2 Marks	L1	CO2
	d)	Define the term acidifying agent.	2 Marks	L1	CO3
	e)	Classify extra and intracellular electrolytes with examples.	2 Marks	L2	CO2
	f)	Define haematinics with example.	2 Marks	L1	CO4
	g)	Define the expectorants with example.	2 Marks	L1	CO4
	h)	Explain the role of dilute nitric acid in the limit test of Chloride.	2 Marks	L1	CO1
	i)	Write the composition of ORS.	2 Marks	L6	CO2
	j)	Explain about the alpha, beta and gamma rays.	2 Marks	L1	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Write the principle and procedure involved in the Limit test of Chloride and Sulphate.	10 Marks	L6	CO1
3.	Write the clinical applications of radiopharmaceuticals.	10 Marks	L6	CO5
4.	Define and classify antacid and give the method of preparation and assay for sodium bicarbonate.	10 Marks	L1	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write the preparation, properties and assay for ferrous sulphate.	5 Marks	L6	CO3
6.	Classify dental products and add a note on role of fluoride in preventing dental caries.	5 Marks	L2	CO2
7.	Define the antimicrobial agents. Write the principle involved in the preparation and assay of hydrogen peroxide.	5 Marks	L1	CO3
8.	Explain the precautions to be taken during storage and handling of radiopharmaceuticals.	5 Marks	L1	CO5
9.	Write the procedure and principle with reactions for the limit test for iron.	5 Marks	L6	CO1
10	Write the principle and medicinal uses of chlorinated lime.	5 Marks	L6	CO3
11.	Write a note on various electrolytes used in replacement therapy.	5 Marks	L6	CO2
12.	Explain the preparation and principle involved in the assay of copper sulphate.	5 Marks	L1	CO4
13.	Explain various methods for adjusting isotonicity.	5 Marks	L1	CO2

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

HUMAN ANATOMY AND PHYSIOLOGY-I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Classify the six most important life processes in the human body.	2 Marks	L1	CO1
	b)	Define the receptor, control center, and effector in the feed-back system.	2 Marks	L1	CO1
	c)	Sketch a neatly labeled diagram of eye.	2 Marks	L3	CO2
	d)	Write a note on sternum.	2 Marks	L2	CO2
	e)	Draw a neat labeled diagram of spleen.	2 Marks	L2	CO3
	f)	What precautions must be taken before giving a blood transfusion.	2 Marks	L1	CO3
	g)	Draw a neat labeled diagram of Nerve cell.	2 Marks	L3	CO4
	h)	Enlist the names of spinal nerves.	2 Marks	L1	CO4
	i)	Describe the structure myocardium.	2 Marks	L1	CO5
	j)	Which blood vessels deliver blood to the right and left atria.	2 Marks	L5	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.		Elaborate the anatomy and physiology of connective tissue and nervous tissue.	10 Marks	L1	CO1
3.		Describe the anatomy and physiology of the axial and appendicular skeletal system.	10 Marks	L1	CO2
4.	a)	Describe the following terms. Blood grouping.	5 Marks	L1	CO3
	b)	Blood transfusion.	5 Marks	L1	CO3

PART - C

Answer any SEVEN Questions.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write a note on extracellular fluid.	5 Marks	L6	CO3
6.	Explain anatomy and physiology of ear.	5 Marks	L1	CO4
7.	Describe the function of Cranial nerves.	5 Marks	L1	CO4
8.	Classify of bones with examples and write a note on bone functions	5 Marks	L2	CO2
9.	Describe the anatomy and physiology of the nose.	5 Marks	L1	CO2
10	Write a note on lymphatic circulation.	5 Marks	L6	CO3
11.	Explain the systemic blood circulation and cardiac circulation.	5 Marks	L1	CO5
12.	Explain the conductive zones of the heart and cardiac output.	5 Marks	L1	CO5
13.	Write the structure, location and functions of cell junctions.	5 Marks	L2	CO1

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

PHARMACEUTICS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define pharmacopeia. List out the National pharmacopeias.	2 Marks	L1	CO1
	b)	Define Lotions and Liniments.	2 Marks	L1	CO3
	c)	Define prescription and what does "Rx" symbol represents.	2 Marks	L1	CO1
	d)	Define freezing point and isotonicity.	2 Marks	L1	CO2
	e)	Explain the role of glycerin in throat paints.	2 Marks	L2	CO3
	f)	Explain flocculated and deflocculated suspensions.	2 Marks	L2	CO3
	g)	Define suppositories. Enlist various suppository bases.	2 Marks	L1	CO4
	h)	Explain the classification of ointment bases with examples.	2 Marks	L2	CO5
	i)	Explain the methods of preparation of ointments.	2 Marks	L2	CO5
	j)	Define incompatibility. List out types of incompatibility.	2 Marks	L1	CO4

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Define prescription. Explain different parts of prescription.	3 Marks	L1	CO1
	b)	Explain in detail about parts of prescription with prescription model.	7 Marks	L2	CO1
3.	a)	Discuss about the various methods of preparation of emulsions.	5 Marks	L2	CO3
	b)	Summarize the stability of emulsions.	5 Marks	L2	CO3
4.	a)	Explain in detail about different methods of preparation of suppositories.	5 Marks	L2	CO4
	b)	Explain the evaluation tests for suppositories.	5 Marks	L2	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.		Explain history of pharmacy.	5 Marks	L2	CO1
6.		Define and classify powders. Add a note on bulk and divided powders.	5 Marks	L2	CO2
7.	a)	Explain about pastes.	2 Marks	L2	CO5
	b)	Describe the preparation methods for ointments.	3 Marks	L2	CO5
8.		Explain the formulation of syrups.	5 Marks	L2	CO3
9.		Summarize the evaluation of suspensions.	5 Marks	L2	CO3
10		Explain methods of preparation of suppositories.	5 Marks	L2	CO4
11.		Classify the types of incompatibility. Explain different types of physical incompatibilities.	5 Marks	L2	CO4
12.		Explain about dusting powders.	5 Marks	L2	CO2
13.		Describe the errors in prescription.	5 Marks	L2	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

COMMUNICATION SKILLS

Time: 3 hours **Max. Marks: 35**

PART - A

Answer any ONE Question.

1 x 10 = 10 Marks

1.	How does body language play an important role in communication?	10 Marks	L1	CO1
2	What is face-to-face communication? List out the advantages and disadvantages.	10 Marks	L1	CO2

PART - B

Answer any FIVE Questions.

5 x 5 = 25 Marks

3.	Discuss the importance of presentation skills.	5 Marks	L2	CO4
4.	Identify the techniques of delivery during a presentation.	5 Marks	L3	CO4
5.	Mention the skills to be followed throughout an interview.	5 Marks	L1	CO4
6.	Write about the significance of presentation skills.	5 Marks	L1	CO4
7.	List out the Don’ts of Group Discussion.	5 Marks	L1	CO5
8.	Discuss group discussion in your own words.	5 Marks	L2	CO5
9.	Mention the different types of group discussion.	5 Marks	L1	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy I Semester (SOP-BPH & MPH-23) Regular Examinations, April – 2025

REMEDIAL MATHEMATICS

Time: 3 hours **Max. Marks: 35**

PART - A

Answer any ONE Question

1 x 10 = 10 Marks

1.	i) Determine the derivative of $f(x)=e^3x.\sin(2x)$. Simplify the expression. ii) Find the derivative of the given function $g(x)=\sin(2x).\cos(3x)$ by using the chain rule.	10 Marks	L2	CO2
2	Find the derivative of the parametric equations $x=3t^2$ and $y=2t+1$ with respect to t.	10 Marks	L2	CO3

PART - B

Answer any FIVE Questions.

5 x 5 = 25 Marks

3.	Calculate the determinant of a 3X3 matrix given by $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$.	5 Marks	L2	CO1
4.	Define matrix addition and matrix multiplication. Given matrices $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $Q = \begin{bmatrix} 5 & 6 \\ 7 & 4 \end{bmatrix}$ compute P+Q and P·Q.	5 Marks	L2	CO1
5.	i) Discuss the properties of an identity matrix and explain its role in matrix multiplication. ii) For a square matrix A, find the characteristic equation $\det(A-\lambda I)=0$. Determine the eigenvalues for the matrix: $A = \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$ Apply Cayley–Hamilton theorem to express A^2 in terms of A.	5 Marks	L2	CO1
6.	Find the derivative of $g(x)=\ln(4x).\cos(x)$. Simplify the result.	5 Marks	L2	CO3
7.	Given two points A(3,4) and B(−1,2), find the distance between them. Also, determine the midpoint of the line segment joining these points.	5 Marks	L2	CO4
8.	Solve the system of differential equations: $\frac{dx}{dt} = -x + 2y$ *and* $\frac{dy}{dt} = 3x - y$ with initial conditions x(0)=−1 and y(0)=3.	5 Marks	L3	CO5
9.	Using Laplace transform, solve: $dy/dt+2y = e^{-t}$, $y(0)= 0$.	5 Marks	L2	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH & MPH-23) Supplementary Examinations, May – 2025

PHARMACEUTICAL ORGANIC CHEMISTRY-I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are Acyclic compounds?	2 Marks	L1	CO1
	b)	What are Heterocyclic compounds give some examples.	2 Marks	L1	CO1
	c)	Explain about root word, prefix and suffix with some examples.	2 Marks	L1	CO2
	d)	Define Structural Isomerism and give it's classification.	2 Marks	L1	CO2
	e)	Draw the structure and uses of Acetone and Vanilin ?	2 Marks	L1	CO2
	f)	What are Nucleophiles?	2 Marks	L1	CO2
	g)	Write the full form of SN^1 and SN^2 reactions.	2 Marks	L1	CO3
	h)	What are Alkyl halides and give its Classification.	2 Marks	L1	CO2
	i)	What is Condensation reaction?	2 Marks	L1	CO2
	j)	Draw the structure and uses of Formaldehyde and Paraldehyde.	2 Marks	L1	CO3

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.		What is Huckle's rule and explain about difference between Aromatic and non aromatic compounds.	10 Marks	L1	CO1
3.	a)	Write about Functional Isomerism with examples.	5 Marks	L1	CO2
	b)	Write about Metamerism with examples.	5 Marks	L1	CO2
4.	a)	Explain SP^2 hybridization in alkenes give some examples.	5 Marks	L1	CO2
	b)	Explain about Markownikoff's orientation in electrophilic addition reaction.	5 Marks	L1	CO2

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain about IUPAC nomenclature with one compound as an example .	5 Marks	L1	CO3
6.	Write about Chain and Positional Isomerism with examples.	5 Marks	L2	CO3
7.	What are Alkanes and Alkenes give some examples?	5 Marks	L1	CO2
8.	Explain about Saytzeffs rule in E1 and E2 reactions.	5 Marks	L2	CO2
9.	Define Dienes and give its classification and Explain about Conjugated dienes.	5 Marks	L1	CO2
10	What are Alcohols and give its classification?	5 Marks	L1	CO2
11.	Write difference between SN^1 and SN^2 reaction.	5 Marks	L1	CO2
12.	Write a note on Electromeric effect.	5 Marks	L1	CO2
13.	Write any one qualitative tests for aldehydes and ketones.	5 Marks	L1	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH & MPH-23) Supplementary Examinations, May – 2025

BIOCHEMISTRY

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain the Allosteric enzyme inhibition .	2 Marks	L2	CO4
	b)	What are Endergonic and Exergonic reactions?	2 Marks	L1	CO1
	c)	Define Congestive Heart Failure.	2 Marks	L1	CO3
	d)	Write about phenylketonuria.	2 Marks	L6	CO3
	e)	What are the types of LDH?	2 Marks	L1	CO4
	f)	Name the types of RNA., Explain its functions.	2 Marks	L2	CO3
	g)	Define Gluconeogenesis	2 Marks	L1	CO2
	h)	Define Oxidative Phosphorylation.	2 Marks	L1	CO1
	i)	Write about Hyperuricemia.	2 Marks	L6	CO2
	j)	Define Enthalpy and Entropy.	2 Marks	L1	CO1

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	a)	Explain the Classification of Carbohydrates.	5 Marks	L2	CO2
	b)	Discuss the Pentose Sugar Pathway with a neat sketch.	5 Marks	L2	CO2
3.	a)	Explain Fatty liver Formation.	3 Marks	L2	CO2
	b)	Explain the biosynthesis of Cholesterol.	7 Marks	L2	CO2
4.	a)	Explain the Catabolism of Purine Nucleotides.	5 Marks	L2	CO3
	b)	Give the synthesis and biological significance of 5H-T.	5 Marks	L6	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write about HMP Shunt.	5 Marks	L6	CO2
6.	Explain in detail about the Watson & crick's model of DNA.	5 Marks	L2	CO3
7.	Explain about the Effect of substate on Enzyme activityor Michaeli's Menton plot.	5 Marks	L2	CO4
8.	Draw a neat sketch of Urea Cycle.	5 Marks	L6	CO2
9	Explain the Hormonal regulation of blood glucose.	5 Marks	L2	CO2
10	Describe the mechanism involved in Electron Transport chain.	5 Marks	L2	CO1
11.	Explain the complex biomolecular formation with it's relevant functions.	5 Marks	L2	CO1
12.	Illustrate the Chemical classification of Aminoacids.	5 Marks	L2	CO2
13.	Explain the conceptsof Hyperbilirubinemia and Jaundice.	5 Marks	L2	CO3

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH & MPH-23) Supplementary Examinations, May – 2025

HUMAN ANATOMY AND PHYSIOLOGY-II

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write a note on Nissal bodies.	2 Marks	L6	CO1
	b)	Define Ganglia, Tract, Nuclei and Synapse.	2 Marks	L1	CO1
	c)	Enlist the Organs of GIT.	2 Marks	L1	CO2
	d)	Write a note on Lamina propia.	2 Marks	L1	CO2
	e)	Enlist hormones involved in menstrual cycle.	2 Marks	L3	CO5
	f)	Describe a note on Reproductive functions of oestrogen.	2 Marks	L1	CO5
	g)	Short notes on disorders of kidney.	2 Marks	L6	CO3
	h)	Define Miturition and Incontinence.	2 Marks	L1	CO3
	i)	Short note on Thyroid stimulating hormone.	2 Marks	L6	CO4
	j)	Short notes on actions of Glucagon.	2 Marks	L6	CO4

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Describe the anatomy and physiology of Large intestine and write a note on Enzymes of Digestive system.	10 Marks	L1	CO2
3.	Draw a neat labeled diagram of Brain and describe the location and functions of Cerebellum and Thalamus.	10 Marks	L1	CO1
4.	Enlist the Endocrine secretion and Explain any one mechanism of Negative feedback and Positive feedback systems of Endocrine system.	10 Marks	L1	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Make a note on Lung Volumes and capacities with graph.	5 Marks	L6	CO3
6.	Explain the types and functions of Brush border enzymes And digestive enzymes.	5 Marks	L1	CO2
7.	Illustrate the parts and functions of Mid brain and Cerebrum.	5 Marks	L1	CO1
8.	Explain the Physiology of Menstruation.	5 Marks	L1	CO5
9.	Describe the role of Pepsin in Protein Digestion.	5 Marks	L1	CO2
10	Describe the Anatomy and Physiology of Lungs, and Alveoli.	5 Marks	L1	CO3
11.	Describe the methods of Artificial respiration and Resuscitation.	5 Marks	L1	CO3
12.	Describe the role of Glucocorticoid and Mineralocorticoids.	5 Marks	L1	CO4
13.	Write a detail note on Neuro peptides and Nitric oxide.	5 Marks	L1	CO1

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy II Semester (SOP-BPH & MPH-23) Supplementary Examinations, May – 2025

PATHOPHYSIOLOGY

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are cardinal signs of inflammation?	2 Marks	L1	CO1
	b)	Complications of Diabetes mellitus.	2 Marks	L1	CO3
	c)	Write the causative agent, mode of transmission of Gonorrhoea.	2 Marks	L1	CO5
	d)	Define Schizophrenia	2 Marks	L1	CO3
	e)	Define Goitre? Mention the clinical symptoms.	2 Marks	L1	CO3
	f)	Define sickle cell anemia and haemolytic anemia	2 Marks	L1	CO3
	g)	Write symptoms of Alzheimer's disease	2 Marks	L1	CO3
	h)	Write the role of calcium in osteoporosis	2 Marks	L1	CO4
	i)	Write the deficiency of factors causing Hemophilia	2 Marks	L1	CO3
	j)	Write few examples of radiation-induced malignancies	2 Marks	L1	CO4

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Explain the etiology, Pathogenesis, and morphology of irreversible cell injury.	10 Marks	L1	CO1
3.	Explain the pathogenesis of Congestive Cardiac Failure.	10 Marks	L1	CO2
4.	Explain the etiology, pathogenesis of Peptic ulcers.	10 Marks	L1	CO3

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write the mechanism of free radicals induced cell injury.	5 Marks	L1	CO1
6.	Explain the pathogenesis and clinical symptoms of COPD.	5 Marks	L2	CO2
7.	Explain the Pathogenesis of Syphilis.	5 Marks	L1	CO3
8.	Explain the types of Hepatitis?	5 Marks	L2	CO4
9.	Write the differences between Rheumatoid arthritis and Gout.	5 Marks	L1	CO4
10	Write briefly about molecular mechanism of cancer.	5 Marks	L1	CO4
11.	Explain the pathogenesis of chronic renal failure.	5 Marks	L1	CO2
12.	Explain the Pathogenesis of Pernicious anemia	5 Marks	L1	CO3
13.	Explain the Pathogenesis of Meningitis	5 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy IV Semester (SOP-BPH & MPH -23) Regular Examinations, May – 2025

PHARMACEUTICAL ORGANIC CHEMISTRY-III

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define diasteroisomerism with examples.	2 Marks	L6	CO1
	b)	Define meso compounds with examples.	2 Marks	L6	CO1
	c)	Define atropisomerism.	2 Marks	L6	CO2
	d)	Write about E & Z isomers.	2 Marks	L6	CO2
	e)	Differentiate between furan and thiophene.	2 Marks	L4	CO3
	f)	Differentiate between furan and pyrrole.	2 Marks	L4	CO3
	g)	Draw the structure of acridine and write medicinal uses.	2 Marks	L4	CO4
	h)	Draw the structure of indole and write medicinal uses.	2 Marks	L4	CO4
	i)	Define wolff kishner reduction.	2 Marks	L6	CO5
	j)	Define oppenauer oxidation reaction.	2 Marks	L6	CO5

PART - B

Answer any TWO Questions.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Define racemic mixture and write about the methods for racemic modification .	10 Marks	L6	CO1
3.	Explain in detail the synthesis methods, reactions and medicinal uses of pyazole.	10 Marks	L5	CO4
4.	Define and write the reaction, mechanism, uses of oppenauer oxidation reaction.	10 Marks	L6	CO5

PART - C

Answer any SEVEN Questions.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Explain in detail the set of rules for R& S, D& L system.	5 Marks	L5	CO1
6.	Eaplain the sterio isomerism in biphenyl compounds.	5 Marks	L5	CO2
7.	Differentiate between sterio specific and sterio selective reactions.	5 Marks	L4	CO2
8.	Explain about any two heterocyclic compounds containing oxygen and nitrogen.	5 Marks	L5	CO3
9.	Explain the aromaticity of thiophene.	5 Marks	L5	CO3
10	Explain in detail the synthesis methods of thiazole.	5 Marks	L5	CO4
11.	Explain in detail the reactions and medicinal uses of imidazole.	5 Marks	L5	CO4
12.	Explain the mechanism of Claisen schimdt rearrangement reaction.	5 Marks	L5	CO5
13.	Explain the synthetic uses of $NaBH_4$ & $LiAlH_4$.	5 Marks	L5	CO5

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B. Pharmacy IV Semester (SOP-BPH & MPH -23) Regular Examinations, May – 2025

MEDICINAL CHEMISTRY-I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define partition coefficient with examples.	2 Marks	L6	CO1
	b)	Define hydrogen bonding with examples.	2 Marks	L6	CO1
	c)	Define sympatholytic drugs with some examples.	2 Marks	L6	CO2
	d)	Write the basic MOA of sympathomimetics.	2 Marks	L6	CO2
	e)	Write the synthesis of carbachol.	2 Marks	L3	CO3
	f)	Write the location of cholinergic receptors.	2 Marks	L6	CO3
	g)	Define antipsychotics and give examples.	2 Marks	L6	CO4
	h)	Define anticonvulsants and give examples.	2 Marks	L6	CO4
	i)	Write the MOA of general anesthetics.	2 Marks	L6	CO5
	j)	Define anti inflammatory agents give examples.	2 Marks	L6	CO5

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Explain phase-I reactions of biotransformation in detail.	10 Marks	L5	CO1
3.	Define cholinomimetics agents, write the classification, location of cholinergic receptors and biosynthesis, catabolism of acetylcholine.	10 Marks	L6	CO3
4.	Define antipsychotics, write classification MOA, SAR, medicinal uses, synthesis of chlorpromazine hydrochloride.	10 Marks	L6	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Define bio-isosterism and explain in detail.	5 Marks	L6	CO1
6.	Define hyrogen bonding and give examples.	5 Marks	L6	CO1
7.	Define β adrenergic blockers and write the synthesis of propranolol.	5 Marks	L6	CO2
8.	Explain the MOA and SAR of sympatholytics.	5 Marks	L5	CO 2
9.	Write the MOA & SAR of ipratropium bromide.	5 Marks	L6	CO3
10	Define cholinolytic agents and write the synthesis of dicycloamine hydrochloride.	5 Marks	L6	CO3
11.	Define anti psychotics, write the MOA, SAR and classification.	5 Marks	L6	CO4
12.	Explain the MOA, SAR, classification of sedatives and hypnotics and their medicinal uses .	5 Marks	L5	CO4
13.	Explain the MOA , medicinal uses of fentanyl citrate.	5 Marks	L5	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy IV Semester (SOP-BPH & MPH -23) Regular Examinations, May – 2025

PHARMACOLOGY-I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name two CNS stimulants and their therapeutic uses.	2 Marks	L2	CO1
	b)	Explain the concept of Tachyphylaxis with an example.	2 Marks	L2	CO1
	c)	List any four types of receptors with examples.	2 Marks	L2	CO4
	d)	Name the phases of clinical trials in drug discovery.	2 Marks	L2	CO5
	e)	What is the role of acetylcholine in Neuro humoral transmission?	2 Marks	L1	CO4
	f)	Define skeletal muscle relaxants with one example.	2 Marks	L1	CO3
	g)	Define general anaesthesia.	2 Marks	L1	CO3
	h)	What is disulfiram? Mention its therapeutic use.	2 Marks	L1	CO3
	i)	Define idiosyncrasy and allergy in pharmacology.	2 Marks	L1	CO1
	j)	Name two types of antidepressants with examples.	2 Marks	L2	CO3

PART - B

Answer any TWO Question.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Describe the pharmacology of opioid analgesics and antagonists, including their classification, mechanisms, clinical uses, and adverse effects.	15 Marks	L2	CO3
3.	Explain the various routes of drug administration. Discuss their advantages and disadvantages with suitable examples.	15 Marks	L2	CO1
4.	Discuss the Neurohumoral transmission in the CNS, emphasizing the role of GABA, glutamate, serotonin, and dopamine.	15 Marks	L2	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Describe the pharmacokinetic process of drug absorption and distribution.	5 Marks	L2	CO1
6.	Discuss the principles and mechanisms of drug action with examples.	5 Marks	L2	CO2
7.	Write a note on neuromuscular blocking agents and their mechanism of action.	5 Marks	L2	CO3
8.	Classify general anaesthetics and describe their mechanism of action.	5 Marks	L4	CO3
9.	Discuss the pharmacological actions and uses of centrally acting muscle relaxants.	5 Marks	L2	CO3
10	Classify antipsychotics and explain their mechanism of action.	5 Marks	L4	CO3
11.	Discuss the pharmacological actions and uses of antidepressants.	5 Marks	L2	CO3
12.	Describe the pharmacology of opioid analgesics, focusing on their clinical uses and adverse effects.	5 Marks	L2	CO4
13.	Discuss the classification and pharmacological actions of local anaesthetic agents.	5 Marks	L2	CO3



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B. Pharmacy IV Semester (SOP-BPH & MPH -23) Regular Examinations, May – 2025

PHYSICAL PHARMACEUTICS - II

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define and classify colloids.	2 Marks	L6	CO1
	b)	Define gold number.	2 Marks	L6	CO1
	c)	Define Rheology. Give any two applications.	2 Marks	L6	CO2
	d)	Define and write Heckel equation.	2 Marks	L6	CO2
	e)	Differentiate between flocculated and deflocculated suspensions.	2 Marks	L3	CO3
	f)	Define microemulsions and multiple emulsions.	2 Marks	L6	CO3
	g)	Define compressibility index.	2 Marks	L6	CO4
	h)	Write packaging arrangement of powders.	2 Marks	L6	CO4
	i)	Write Arrhenius equation and its significance.	2 Marks	L6	CO5
	j)	Enlist different methods of determination of order of reaction.	2 Marks	L6	CO5

PART - B

Answer any TWO Questions.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	Define colloids and Classify and Write Kinetic & electrical properties of colloidal solution in detail.	10 Marks	L6	CO1
3.	Explain shear thickening systems and pseudoplastic flow of Non Newtonian flow of liquids.	10 Marks	L5	CO2
4.	List out method to determine the particle size and write any two methods to determine.	10 Marks	L6	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	Write a note on DLVO theory with energy curves.	5 Marks	L6	CO1
6.	Define viscometer. Explain capillary viscometer.	5 Marks	L6	CO2
7.	Define emulsion. Explain in detail rheological properties of emulsions.	5 Marks	L6	CO3
8.	Define suspensions and discuss formulation parameters of suspension indetail.	5 Marks	L6	CO3
9.	Explain Andreason's pipette method to determine the particle size with the help of neat diagram.	5 Marks	L5	CO4
10	Define zero order reaction with suitable examples. Deduce an equation for the determination of rate constant.	5 Marks	L6	CO5
11.	Define stability studies. Explain in detail how the shelf life of pharmaceutical product is determined.	5 Marks	L6	CO5
12.	Explain the formulation of emulsion by HLB method.	5 Marks	L5	CO3
13.	Define angle of repose. Explain the method to determine the same.	5 Marks	L6	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B. Pharmacy IV Semester (SOP-BPH & MPH -23) Regular Examinations, May – 2025

PHARMACOGNOSY AND PHYTOCHEMISTRY - I

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Give any two applications of tissue culture in pharmacognosy.	2 Marks	L3	CO3
	b)	Define Teratogens.	2 Marks	L1	CO5
	c)	Give Biological source and family of Honey and Chaulmoogra oil.	2 Marks	L3	CO5
	d)	Define the terms Callus and Oraganogenesis.	2 Marks	L1	CO3
	e)	State and explain law of similars.	2 Marks	L1	CO4
	f)	Explain Borntragers test.	2 Marks	L1	CO4
	g)	State your humors of body according to Unani system of Medicine.	2 Marks	L1	CO4
	h)	Define and enlist the Edaphic factors.	2 Marks	L1	CO2
	i)	What is coppicing and felling?	2 Marks	L3	CO2
	j)	What is mutation? Give types.	2 Marks	L3	CO2

PART - B

Answer any TWO Questions.
All Questions Carry Equal Marks

2 x 10 = 20 Marks

2.	What are unorganized drugs? Discuss methods to evaluate unorganized drugs. Write a note on adulteration of crude drugs.	10 Marks	L3	CO1
3.	What are growth regulators? Discuss auxins and cytokinins as plant growth regulation.	10 Marks	L3	CO2
4.	What are Glycosides? Classify Glycosides with examples.	10 Marks	L3	CO4

PART - C

Answer any SEVEN Question.
All Questions Carry Equal Marks

7 x 5 = 35 Marks

5.	What is Quantitative microscopy? Explain Lycopodium spore method in detail with an example.	5 Marks	L3	CO2
6.	Write overview of historical development of Plant tissue culture.	5 Marks	L6	CO3
7.	Write a note on factors affecting cultivation of Crude drugs.	5 Marks	L6	CO2
8.	Explain Panchamahabuta siddanta theory in detail.	5 Marks	L1	CO4
9.	Write the Pharmacognosy of Tragacanth.	5 Marks	L6	CO5
10	Write scope and development of pharmacognosy.	5 Marks	L6	CO1
11.	What are the plant fibres. Write the pharmacognosy of Cotton.	5 Marks	L3	CO5
12.	Define Polyploidy. Write the role of polyploidy in crop imporvement.	5 Marks	L1	CO2
13.	Explain various nutritional requirements of plant tissue culture media.	5 Marks	L1	CO3



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May - 2025

FOOD AND NUTRITION

[Bioinformatics, Biotechnology & Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain the physiological functions of food.	2 Marks	L2	CO1
	b)	How does food contribute to social functions in society?	2 Marks	L1	CO1
	c)	How is the energy content of a food item determined using the bomb calorimeter method?	2 Marks	L1	CO2
	d)	Explain how the Atwater system calculates the energy content of macronutrients in foods.	2 Marks	L2	CO2
	e)	Outline the process of carbohydrate digestion in the digestive system. How are carbohydrates absorbed in the body?	2 Marks	L2	CO3
	f)	Explain the effects of carbohydrate deficiency on the body. What health issues can arise due to insufficient carbohydrate intake?	2 Marks	L2	CO3
	g)	List common dietary sources of proteins.	2 Marks	L1	CO4
	h)	What factors influence the protein requirements of individuals, and how are these requirements determined?	2 Marks	L1	CO4
	i)	What role does vitamin D play in the body?	2 Marks	L1	CO5
	j)	How is the recommended intake of vitamin D determined?	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)	Examine the concept of nutrient density in food. How can choosing nutrient-dense foods contribute to achieving a balanced diet and meeting nutritional needs?	8 Marks	L4	CO1
	b)	Explore the challenges and benefits of vegetarian and vegan diets. How can individuals on plant-based diets ensure they meet their nutritional requirements?	8 Marks	L2	CO1

(OR)

3.	a)	Discuss the impact of cultural and regional dietary patterns on defining a balanced diet. How can dietary guidelines be adapted to diverse cultural practices without compromising nutritional adequacy?	8 Marks	L2	CO1
	b)	Evaluate the role of nutrition education in promoting dietary guidelines. How can educational programs enhance public awareness and understanding of nutritional recommendations?	8 Marks	L5	CO1

MODULE-II

4.	a)	Explain the principles behind the bomb calorimeter method for determining the energy content of foods. How does this method account for the energy released during complete combustion of macronutrients?	8 Marks	L2	CO2

	b)	Compare and contrast the joule and calorie as units of energy. Discuss the advantages and limitations of each unit in the context of nutritional science.	8 Marks	L2	CO2
		(OR)			
5.	a)	Examine the limitations of the Atwater system for estimating the energy content of foods. How does it account for variations in nutrient absorption and utilization among individuals?	8 Marks	L4	CO2
	b)	Explore the role of indirect calorimetry in measuring energy expenditure. How does this method provide insights into the substrate utilization and metabolic efficiency of an individual during rest and physical activity?	8 Marks	L2	CO2
		MODULE-III			
6.	a)	Discuss the dietary sources of carbohydrates and their varying nutritional profiles. What are the recommended daily intake and dietary requirements for carbohydrates for different populations and age groups?	8 Marks	L2	CO3
	b)	Define dietary fiber and elaborate on its chemical composition. How does the body process and utilize soluble and insoluble fiber differently?	8 Marks	L1	CO3
		(OR)			
7.	a)	Explain the different types of dietary fiber, including soluble and insoluble fiber. How does each type contribute to digestive health, and what are their respective roles in preventing chronic diseases?	8 Marks	L2	CO3
	b)	Explore the broader health benefits of adequate fiber intake. How does fiber contribute to cardiovascular health, weight management, and the prevention of gastrointestinal disorders?	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Discuss the impact of different types of lipids on cardiovascular health. How do saturated fats, unsaturated fats, and trans fats influence cholesterol levels and heart disease risk?	8 Marks	L2	CO4
	b)	Discuss the diverse functions of lipids in the human body, including their role in cell structure, hormone production, insulation, and as carriers for fat-soluble vitamins.	8 Marks	L2	CO4
		(OR)			
9.	a)	Examine the nutritional value of lipids, considering their role as a concentrated energy source, structural components, and their involvement in various physiological processes.	8 Marks	L4	CO4
	b)	Discuss the principles of mutual supplementation and amino acid supplementation in enhancing protein quality. Provide examples of food combinations that complement each other in terms of amino acid profiles.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Examine the differences between preformed vitamin A and provitamin A carotenoids in terms of dietary sources and bioavailability.	8 Marks	L4	CO5
	b)	Explain in detail about the fat soluble vitamins and its funtions	8 Marks	L4	CO5
		(OR)			
11.	a)	Examine the potential interactions between vitamin E and other antioxidants in maintaining overall cellular health.	8 Marks	L4	CO5
	b)	Discuss the different forms of vitamin K, their dietary sources, and their respective contributions to health	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

INTRODUCTION TO BIOINFORMATICS

[Bioinformatics]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is database?	2 Marks	L1	CO1
	b)	Recall the use of Ligand explorer.	2 Marks	L1	CO1
	c)	Compare Primary and Secondary database.	2 Marks	L1	CO2
	d)	What is NCBI?	2 Marks	L1	CO2
	e)	Name the database for genome data.	2 Marks	L1	CO3
	f)	Find the file formats regularly used in database searching.	2 Marks	L1	CO3
	g)	How CINEMA is useful in Multiple sequence alignment?	2 Marks	L1	CO4
	h)	Recall Heuristic methods.	2 Marks	L1	CO4
	i)	List the Commercial packages.	2 Marks	L1	CO4
	j)	Show the structure display program from SPDB.	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)	Justify Bioinformatics is an interdisciplinary science.	8 Marks	L5	CO1
	b)	List the tools for Structure display and explain.	8 Marks	L2	CO1
		(OR)			
3.	a)	Identify the applications of Bioinformatics.	8 Marks	L3	CO1
	b)	Explain the importance of Chimera.	8 Marks	L2	CO1

MODULE-II

4.	a)	Identify the Secondary Structural databases and explain at least one.	8 Marks	L3	CO2
	b)	Classify the databases and explain with examples.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss Human genome sequencing and its applications.	8 Marks	L6	CO2
	b)	Explain DNA sequence databases.	8 Marks	L2	CO2

MODULE-III

6.	a)	Outline steps in the Nearest Neighbor search.	8 Marks	L2	CO3
	b)	Explain about different types of database file formats.	8 Marks	L2	CO3
		(OR)			
7.	a)	Compare between flat file, relational and object oriented databases.	8 Marks	L5	CO3
	b)	What kind of file format is present in the Genebank? Explain.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Summarize the construction of Phylogenetic tree.	8 Marks	L2	CO4
	b)	Outline Multiple sequence alignment methods.	8 Marks	L2	CO4

(OR)

9.	a)	Identify the Matrices used for Sequence alignment.	8 Marks	L3	CO4
	b)	Justify BLAST is better for protein sequence alignment compared to FASTA.	8 Marks	L5	CO4

MODULE-V

10.	a)	Explain the pros and cons of commercial Bioinformatics packages.	8 Marks	L2	CO4
	b)	Show the importance of Structure visualization tools.	8 Marks	L2	CO4

(OR)

11.	a)	Analyze the importance of Sequence visualization tool(s).	8 Marks	L4	CO4
	b)	Compare PyMol and Rasmol.	8 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May - 2025

BIOPHYSICAL TECHNIQUES

[Bioinformatics, Biotechnology & Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Summarize the net reactions occurring in an Oxygen electrode.	2 Marks	L2	CO1
	b)	How does water's polarity contribute to its role as a biological solvent?	2 Marks	L1	CO1
	c)	Describe the factors that govern the sedimentation of a Macromolecule during centrifugation	2 Marks	L1	CO2
	d)	How does ultra sonication aid in the homogenization of biological samples?	2 Marks	L1	CO2
	e)	How do you visualize separated solutes in Chromatography?	2 Marks	L1	CO3
	f)	Summarize the applications of TLC.	2 Marks	L2	CO3
	g)	Describe the staining method of the macromolecules in electrophoresis.	2 Marks	L1	CO4
	h)	What is the SDS binding capacity to a protein?	2 Marks	L1	CO4
	i)	Explain the phenomenon of radioactivity?	2 Marks	L1	CO5
	j)	Describe the Laws of Light absorption by molecules.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is TDS in water? Show the table of TDS level chart for drinking water.	8 Marks	L3	CO1
	b)	Define buffer capacity of a solution. Classify buffers with suitable examples.	8 Marks	L2	CO1

(OR)

3.	a)	Define electrical conductance of water. What are units of electrical conductance of water?	8 Marks	L1	CO1
	b)	Illustrate the reactions at the Pt- cathode in an oxygen electrode. Explain the applications of Oxygen electrode.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is Svedberg unit? How is Svedberg unit useful in the study of macromolecules?	8 Marks	L1	CO2
	b)	Explain about the sub cellular fractionation using sucrose as a medium for density gradient centrifugation.	8 Marks	L2	CO2

(OR)

5.	a)	Describe the significance of using mortar and pestle for cell homogenization.	8 Marks	L2	CO2
	b)	What are the factors that govern the rate of sedimentation of a particle during centrifugation?	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe the principle and applications of ion exchange chromatography.	8 Marks	L2	CO3
	b)	Describe the separation of Amino acids by paper chromatography.	8 Marks	L2	CO3
		(OR)			
7.	a)	What is exclusion limit of a porous gel? Explain the terms Void volume and Fractionation range.	8 Marks	L1	CO3
	b)	How the molecular weight of a protein is determined using gel filtration chromatography?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the terms: i) molecular sieving and ii) electro endosmosis.	8 Marks	L2	CO4
	b)	Explain the principle and applications of capillary electrophoresis.	8 Marks	L2	CO4
		(OR)			
9.	a)	Describe the terms tracking dye and resolving gel and stacking gel.	8 Marks	L2	CO4
	b)	Explain the method to determine the molecular weight of a pure protein in SDS PAGE.	8 Marks	L2	CO4

MODULE-V

10.	a)	What are the units of radioactivity? Describe the safety measures while working with radioisotopes.	8 Marks	L2	CO5
	b)	Give any four applications of radioisotopes in biology and medicine.	8 Marks	L4	CO5
		(OR)			
11.	a)	Give a brief account of electronic excitation during UV and visible light absorption in molecules.	8 Marks	L2	CO5
	b)	Explain the principle and instrumentation of a UV visible spectrophotometer.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

ENZYMOLOGY

[Biotechnology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define cofactor.	2 Marks	L2	CO1
	b)	Define Prosthetic group.	2 Marks	L3	CO1
	c)	Draw Michaelis menton plot for Unisubstrate reactions.	2 Marks	L1	CO2
	d)	Draw the plot of effect of temperature on enzyme activity.	2 Marks	L2	CO2
	e)	Give examples of Irreversible inhibitors.	2 Marks	L3	CO3
	f)	Give examples of Bisubstrate reaction.	2 Marks	L2	CO3
	g)	Draw structure of NAD+/NADH+ H+.	2 Marks	L1	CO4
	h)	Give examples of coenzymes that catalyse oxidation/ reduction reactions.	2 Marks	L2	CO4
	i)	Give examples of Synzymes.	2 Marks	L3	CO5
	j)	Site directed mutagenesis.	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write the definitions of Coenzyme and Cofactor.	8 Marks	L2	CO1
	b)	Explain the Substrate specificity with suitable examples.	8 Marks	L3	CO1
		(OR)			
3.	a)	Define Zymogen and explain activation of chymotrypsin in detail.	8 Marks	L3	CO1
	b)	Explain Holoenzyme and Apoenzyme with examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain Lineweaver burk equation and its limitations in detail.	8 Marks	L3	CO2
	b)	Derive the michaelis menten equation and add a note on significance of Km and Vmax in the equation.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the significance of the Km and Vmax in Michaelis menten equation.	8 Marks	L2	CO2
	b)	Explain the effect of pH on enzyme activity in detail.	8 Marks	L3	CO2

MODULE-III

6.	a)	Define Inhibitor and explain about irreversible inhibition in detail.	10 Marks	L2	CO3
	b)	Explain the allosteric enzyme inhibition with a suitable example.	6 Marks	L3	CO3
		(OR)			
7.	a)	Explain Ping Pong mechanism in detail.	10 Marks	L2	CO3
	b)	Explain Random order and compulsory order mechanisms of bi substrate reactions in detail.	6 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the mechanism of FAD/FMN in an enzyme catalysed reaction in detail.	8 Marks	L2	CO4
	b)	Write about site directed mutagenesis in detail.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the mechanism of Coenzyme A in an enzyme catalysed reaction in detail.	10 Marks	L2	CO4
	b)	Explain about the chymotrypsin in detail.	6 Marks	L3	CO4

MODULE-V

10.	a)	Explain about covalent modification of chymotrypsin in detail.	8 Marks	L2	CO5
	b)	Explain the Isozymes of Lactate dehydrogenase in detail.	8 Marks	L3	CO5
		(OR)			
11.	a)	Write about KNF model of sigmoidal kinetics in detail.	8 Marks	L3	CO5
	b)	Write about serine protease trypsin in detail.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

BASIC ORGANIC CHEMISTRY

[Bioinformatics, Biotechnology & Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Find the IUPAC name of the compound, CH_3-CH_2-CH_2-OH, CH_3-CO-CH_3?	2 Marks	L1	CO1
	b)	Classify amines based on the number of alkyl groups attached to nitrogen.	2 Marks	L1	CO1
	c)	Recall the Corey-House synthesis.	2 Marks	L1	CO2
	d)	State why are alkanes relatively unreactive.	2 Marks	L1	CO2
	e)	Name the products formed when but-2-ene reacts with HBr.	2 Marks	L1	CO3
	f)	Recall the reaction of ethyne with ammoniacal silver nitrate.	2 Marks	L1	CO3
	g)	Differenciating the difference between benzene and cyclohexane.	2 Marks	L1	CO4
	h)	Define the term delocalization energy.	2 Marks	L1	CO4
	i)	Define conformers.	2 Marks	L1	CO5
	j)	Recall meaning of racemic mixture.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the classification of hydrocarbons with examples.	7 Marks	L2	CO1
	b)	Differentiate carbocations and cabanions and explain their stability order.	9 Marks	L3	CO1
		(OR)			
3.	a)	Explain the mesomeric effect with examples.	8 Marks	L2	CO1
	b)	Discuss the factors affecting the position of equilibrium in keto-enol tautomerism.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the Wurtz-Fitting reaction with a suitable example. How does it differ from the Wurtz reaction?	8 Marks	L2	CO2
	b)	Discuss the physical properties of alkanes and explain the factors influencing them.	8 Marks	L3	CO2
		(OR)			
5.	a)	Elaborate on the Corey-House synthesis of alkanes. Mention its advantages over other methods.	8 Marks	L2	CO2
	b)	Explain the Baeyer's strain theory with examples. Explain its limitations.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss the mechanism of hydroboration-oxidation of alkenes. What is the stereochemistry of the product?	8 Marks	L3	CO3
	b)	Describe the ozonolysis reaction of alkenes. Explain its synthetic utility with suitable examples.	8 Marks	L3	CO3
		(OR)			
7.	a)	Compare the reactions of conjugated dienes with isolated dienes.	8 Marks	L3	CO3
	b)	Describe the mechanism of the Favorskii rearrangement.	8 Marks	L3	CO3

MODULE-IV

8.	a)	State and explain the properties of aromaticity.	8 Marks	L3	CO4
	b)	Explain how aromaticity influences the physical and chemical properties of benzene.	8 Marks	L3	CO4
		(OR)			
9.	a)	Discuss the mechanism of nitration of benzene.	8 Marks	L3	CO4
	b)	Define ortho-, meta-, and para- directing groups with examples.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the concept of plane-polarized light and how it interacts with optically active compounds.	8 Marks	L3	CO5
	b)	Explain the phenomenon of optical isomerism in glyceraldehyde with suitable diagrams.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the E,Z configuration system for alkenes. How is the priority of substituents determined?	8 Marks	L3	CO5
	b)	How can you differentiate between a racemic mixture and a meso compound with examples?	8 Marks	L3	CO5



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

PRINCIPLES OF MICROBIOLOGY

[Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Antibiotic with an example.	2 Marks	L1	CO1
	b)	Define Biogenesis.	2 Marks	L1	CO1
	c)	Define pathogenicity. Name one bacterial pathogen.	2 Marks	L1	CO2
	d)	Define Tyndalization.	2 Marks	L1	CO2
	e)	List out the components of compound microscope.	2 Marks	L1	CO3
	f)	What is locomotion and name the types of locomotory organs?	2 Marks	L1	CO3
	g)	Draw a neat labeled diagram of mitochondia.	2 Marks	L1	CO4
	h)	Draw a neat labeled diagram of TMV.	2 Marks	L1	CO4
	i)	Define bacteriophage with an example.	2 Marks	L1	CO5
	j)	Name any two different human viruses.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain about microorganisms classification criteria	8 Marks	L2	CO1
	b)	Write down the contributions of T yndal and Joseph Lister.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss the importance of Louis pasture and Alexander Fleming experiment towards the world?	8 Marks	L2	CO1
	b)	Give a detailed note on Whittaker five kingdom classification.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain physical methods of sterilization in detail (wet & dry heat)	8 Marks	L2	CO2
	b)	Discuss chemical, Radiation methods of sterilization in detail.	8 Marks	L2	CO2
		(OR)			
5.	a)	Define sterilization and its importance. List out 10 materials to be sterilized in laboratory	8 Marks	L2	CO2
	b)	Explain filtration methods of sterilization in detail.	8 Marks	L2	CO2

MODULE-III

6.	a)	Draw a neat labeled diagram of compound microscope	8 Marks	L2	CO3
	b)	Explain the basic operational principles of scanning electron microscopy (SEM) and transmission electron microscopy (TEM).	8 Marks	L2	CO3
		(OR)			

7.	a)	Classify the major types of biological stains and dyes used in microscopy. Provide examples of each type and explain their specific applications.	8 Marks	L2	CO3
	b)	Explain the principle and steps involved in Gram staining.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Differentiate the prokaryotic and eukaryotic cell with neat labeled diagrams	8 Marks	L2	CO4
	b)	Describe the structural details of a typical bacterial cell with a neat labeled diagram	8 Marks	L2	CO4
		(OR)			
9.	a)	What are the functions of nucleus and cell membrane with relevant a diagram?	8 Marks	L2	CO4
	b)	Define auxochromes and chromophores in the context of staining techniques. How do these components contribute to the effectiveness of a stain?	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the general characteristics of Viruses.	8 Marks	L2	CO5
	b)	Explain the structure of bacteriophage with a neat labeled diagram and write about lytic cycle	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss about characteristics features of Herpes virus and Polyoma viruses.	8 Marks	L2	CO5
	b)	Explain the Structure of TMV & life cycle of TMV with diagram	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

CRIMINALISTICS

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Difference between Abduction and Kidnapping.	2 Marks	L1	CO1
	b)	What are the types of sketching methods?	2 Marks	L1	CO1
	c)	Explain the dual role of crime scene logs in the investigative process.	2 Marks	L1	CO2
	d)	Explain the initial actions that first responders should take upon arriving at a crime scene.	2 Marks	L2	CO2
	e)	Define Hazardous Evidence.	2 Marks	L1	CO3
	f)	Differentiate between physical and trace evidence found at a crime scene. Provide examples of each type and explain their significance in forensic investigations.	2 Marks	L1	CO3
	g)	What is fracture analysis?	2 Marks	L2	CO4
	h)	Applications of FTIR.	2 Marks	L1	CO4
	i)	Collection of soil evidence.	2 Marks	L1	CO5
	j)	Define druggist folder.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Provide specific scenarios where spiral and zonal method would be most applicable and explain how these methods contribute to the systematic retrieval of evidence.	6 Marks	L1	CO1
	b)	Analyze the importance of maintaining a meticulous and standardized approach in documentation for chain of custody purposes and the presentation of evidence in court.	10 Marks	L4	CO1
		(OR)			
3.	a)	Explore the role of forensic technologies in investigating both outdoor and indoor crimes.	6 Marks	L1	CO1
	b)	Explain various types of sketching methods in detail.	10 Marks	L1	CO1

MODULE-II

4.	a)	How police personnel and forensic scientist related?	6 Marks	L1	CO2
	b)	Examine the challenges faced by first responders in securing and isolating a crime scene. Provide solutions and strategies to overcome these challenges, emphasizing the importance of preserving evidence.	10 Marks	L4	CO2

(OR)

5.	a)	Discuss the elements of crime in detail.	8 Marks	L1	CO2
	b)	Discuss the role of documentation in the Crime Scene Management.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain any two collection methods.	6 Marks	L1	CO3
	b)	Explain the common methods used to preserve biological evidences such as blood or saliva?	10 Marks	L1	CO3

(OR)

7.	a)	Give examples of Hazardous evidence in detail.	6 Marks	L1	CO3
	b)	Explain the importance of maintaining a detailed chain of custody in crime scene investigations.	10 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the working Principle of UV-Visible spectroscopy.	6 Marks	L1	CO4
	b)	Discuss the specific applications of FTIR spectroscopy in the analysis of paint evidence.	10 Marks	L2	CO4

(OR)

9.	a)	Explain the collection and packaging of glass evidences.	6 Marks	L1	CO4
	b)	Explain Bayes Theorem in analysis and applications.	10 Marks	L1	CO4

MODULE-V

10.	a)	Can soil be utilized as primary evidence? Justify?	6 Marks	L1	CO5
	b)	Explain the proper procedures for collecting fiber evidence at a crime scene. Include considerations for packaging, labeling, and preserving the integrity of the samples.	10 Marks	L1	CO5

(OR)

11.	a)	Discover the locations where soil evidence can be found.	6 Marks	L1	CO5
	b)	Explain any 2 case study related to tool marks.	10 Marks	L5	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

CRIMINAL LAW

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Distinguish between a 'cognizable' offence and a 'non-cognizable' offence as per the IPC.	2 Marks	L1	CO1
	b)	List at least two types of criminal defenses and explain them briefly.	2 Marks	L1	CO1
	c)	What is 'Common Intention' under the IPC, and which section addresses it?	2 Marks	L1	CO2
	d)	Compare the definitions of murder and culpable homicide not amounting to murder.	2 Marks	L2	CO2
	e)	What powers does a police officer have during an arrest under Section 154 of the IPC?	2 Marks	L2	CO3
	f)	How do the terms ‘offence’ and ‘crime’ differ in their meanings?	2 Marks	L2	CO3
	g)	Define a ‘dying declaration’ and discuss its importance as evidence.	2 Marks	L2	CO4
	h)	How is primary evidence different from secondary evidence?	2 Marks	L2	CO4
	i)	In what ways can judicial activism conflict with the legislative branch?	2 Marks	L1	CO5
	j)	Outline the judiciary’s role in enforcing social legislation.	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 concept of criminal negligence and outline its varying degrees.	8 Marks	L2	CO1
	b)	Trace the historical evolution of the Indian Penal Code and assess its relevance today.	8 Marks	L2	CO1

(OR)

3.	a)	What is criminal conspiracy, and how does its prevention curb organized crime?	10 Marks	L2	CO1
	b)	How does the IPC classify offences across its various sections and chapters?	6 Marks	L2	CO1

MODULE-II

4.	a)	What distinguishes murder (Section 300) from culpable homicide (Section 299) in the IPC?	10 Marks	L1	CO2
	b)	Explain the difference between causing hurt and inflicting grievous injury in simple terms.	6 Marks	L3	CO2

(OR)

5.	a)	Define 'hurt' under Section 319 of the IPC and provide examples.	8 Marks	L1	CO2
	b)	What legal protections are available to women against cruelty from their spouses or family members?	8 Marks	L4	CO2

MODULE-III

6.	a)	Describe how criminal law courts are structured in India.	8 Marks	L2	CO3
	b)	Discuss the authority and functions of criminal courts in India with relevant examples.	8 Marks	L2	CO3

(OR)

7.	a)	What distinguishes a summary trial from a regular trial, and what are its main objectives?	10 Marks	L4	CO3
	b)	Explain the primary rules for conducting a summary trial under Indian criminal law.	6 Marks	L3	CO3

MODULE-IV

8.	a)	Summarize the historical background of the Indian Evidence Act and its significance.	10 Marks	L1	CO4
	b)	What is the concept of relevancy under the Indian Evidence Act, and why is it significant?	6 Marks	L3	CO4

(OR)

9.	a)	Discuss the importance of 'relevancy' and how it is interpreted under the Indian Evidence Act.	8 Marks	L3	CO4
	b)	Clarify the difference between admissions and confessions, focusing on their legal implications.	8 Marks	L3	CO4

MODULE-V

10.	a)	What is judicial activism, and why is it important in the Indian context?	8 Marks	L1	CO5
	b)	Discuss the principles of due process, ensuring speedy trials, and fair treatment for crime victims.	8 Marks	L3	CO5

(OR)

11.	a)	Why are speedy trials essential for justice, particularly for victims of crime?	8 Marks	L1	CO5
	b)	What modernizations and reforms are needed to improve the criminal justice system in India?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May - 2025

FORENSIC BIOLOGY

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is biological evidence?	2 Marks	L1	CO1
	b)	Explain the significance of biological evidence in forensic investigations.	2 Marks	L2	CO1
	c)	Describe the basic structure of a human hair.	2 Marks	L2	CO2
	d)	What is the significance of the medulla in hair analysis?	2 Marks	L2	CO2
	e)	How can forensic scientists distinguish between different types of pollen?	2 Marks	L2	CO3
	f)	What is the forensic significance of analyzing plant juices?	2 Marks	L4	CO3
	g)	What is wildlife forensics, and why is it important?	2 Marks	L2	CO4
	h)	Describe the role of wildlife forensics in combating illegal wildlife trade.	2 Marks	L2	CO4
	i)	What is forensic entomology and how is it used in death investigations?	2 Marks	L1	CO5
	j)	Name two types of insects commonly used in forensic entomology.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the different types of biological evidence found at a crime scene.	8 Marks	L3	CO1
	b)	Discuss the importance of proper documentation during the collection of biological evidence.	8 Marks	L4	CO1
		(OR)			
3.	a)	Describe the procedures involved in the collection of blood evidence from a crime scene.	8 Marks	L3	CO1
	b)	Explain how environmental factors can impact the integrity of blood evidence	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain the structure of human hair and its components.	8 Marks	L3	CO2
	b)	Discuss how each component of hair can be used in forensic analysis.	8 Marks	L3	CO2
		(OR)			
5.	a)	Compare the morphological characteristics of human and animal hair.	8 Marks	L4	CO2
	b)	Explain how these differences are important in forensic investigations.	8 Marks	L5	CO2

MODULE-III

6.	a)	What techniques are used to identify different types of wood in forensic analysis?	8 Marks	L3	CO3
	b)	Explain how wood identification can link suspects or objects to a crime scene.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the role of diatoms in forensic investigations, especially in cases of drowning.	8 Marks	L4	CO3
	b)	Discuss the methods used to collect and analyze diatom samples for forensic purposes.	8 Marks	L5	CO3

MODULE-IV

8.	a)	Explain the process of collecting and preserving physical evidence from wildlife crime scenes.	8 Marks	L3	CO4
	b)	Discuss the challenges and best practices associated with preserving this evidence for forensic analysis.	8 Marks	L2	CO4
		(OR)			
9.	a)	How does wildlife forensics contribute to the protection of endangered species?	8 Marks	L6	CO4
	b)	Describe a case where wildlife forensics played a crucial role in the conservation of an endangered species.	8 Marks	L6	CO4

MODULE-V

10.	a)	How can forensic entomology be used to investigate cases where a body has been moved or disturbed?	8 Marks	L2	CO5
	b)	Describe the challenges and limitations faced by forensic entomologists in such scenarios.	8 Marks	L5	CO5
		(OR)			
11.	a)	Explain how forensic entomologists determine the species of insects found on a corpse.	8 Marks	L1	CO5
	b)	Discuss how accurate species identification impacts the estimation of the time of death.	8 Marks	L5	CO5

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

MOHAN BABU UNIVERSITY

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B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

CRIME AND SOCIETY

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the concept of modus operandi.	2 Marks	L2	CO 1
	b)	How would you interpret the term "guilty mind"?	2 Marks	L1	CO 1
	c)	Identify the elements that contribute to criminal behavior.	2 Marks	L1	CO2
	d)	Illustrate the potential outcomes and impacts of criminal activities.	2 Marks	L2	CO2
	e)	What strategies can be used to prevent and manage workplace violence effectively?	2 Marks	L1	CO3
	f)	Highlight the most prevalent forms of white-collar crime.	2 Marks	L2	CO3
	g)	Describe the process of analyzing ecological transformations.	2 Marks	L2	CO4
	h)	What is the meaning of a psychological disorder?	2 Marks	L1	CO4
	i)	Outline the key principle guiding policing practices.	2 Marks	L4	CO5
	j)	Which legal provision outlines the framework for human rights?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Compare the core principles of positivist theories of criminal behavior with those of classical theories. How do they differ?	6 Marks	L6	CO1
	b)	How do sociological theories highlight the influence of societal factors on criminal behavior?	10 Mark	L1	CO1

(OR)

3.	a)	In what ways does media coverage affect the investigation and resolution of criminal cases?	8 Marks	L1	CO1
	b)	What ethical issues should be considered when media reports on criminal incidents?	8 Marks	L2	CO1

MODULE-II

4.	a)	Analyze how deviant behavior strays from societal norms. What psychological and sociological factors contribute to such behavior?	8 Marks	L6	CO2
	b)	Discuss the influence of cultural norms and values on identifying and classifying behaviors as deviant.	8 Marks	L1	CO2

(OR)

5.	a)	How does media portrayal of public disorder shape public opinion on law enforcement, protests, and social unrest?	7 Marks	L1	CO2
	b)	What role do social norms and cultural values play in influencing perceptions of public disorder across various demographic groups?	9 Marks	L6	CO2

		MODULE-III			
6.	a)	Provide an overview of the Dowry Prohibition Act of 1961.	8 Marks	L6	CO3
	b)	Define white-collar crimes and explain their distinctions from violent crimes.	8 Makrs	L1	CO3
		(OR)			
7.	a)	Examine the Tandoor case study and its implications.	8 Marks	L4	CO3
	b)	How does victimology enhance our understanding of crime's impact on individuals and communities? What factors affect a person's vulnerability to victimization?	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	What are the effects of social change on crime patterns?	7 Marks	L1	CO4
	b)	Differentiate a Juvenile from a criminal	9 Marks	L6	CO4
		(OR)			
9.	a)	Explain the Juvenile Delinquency in detail.	7 Marks	L4	CO4
	b)	Discuss how community policing complements situational crime prevention	9 Marks	L1	CO4
		MODULE-V			
10.	a)	Create a flowchart of court hierarchy and summarize the key functions of each level.	6 Marks	L1	CO5
	b)	Define heterogeneous societies and discuss the factors that shape them	10 Mark	L2	CO5
		(OR)			
11.	a)	What is an FIR, and what is the process for filing criminal charges?	8 Marks	L1	CO5
	b)	Explain the roles of police, courts, and corrections in the criminal justice system	8 Marks	L6	CO5

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B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

FUNDAMENTALS OF DIGITAL ELECTRONICS AND LOGIC DESIGN

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Translate $(41.6875)_{10}$ into Binary.	2 Marks	L2	CO1
	b)	What are six illegal combinations in Excess three code?	2 Marks	L1	CO1
	c)	State De Morgan's laws. Give two examples.	2 Marks	L2	CO1
	d)	How many adjacent squares produce a product term with two Literals in four variable k-Map?	2 Marks	L1	CO2
	e)	Explain the significance of Don't care conditions.	2 Marks	L1	CO2
	f)	List some of the applications of Combinational Logic Circuits.	2 Marks	L1	CO3
	g)	Which gate is used in Magnitude Comparator?	2 Marks	L1	CO3
	h)	Compare Serial and Parallel Adders.	2 Marks	L2	CO3
	i)	Differentiate PAL, PLA and PROM.	2 Marks	L2	CO4
	j)	Define a Read Only Memory (ROM).	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)	Given the two binary numbers X = 1010100 and Y = 1000011, perform the subtraction(i) X - Y (ii) Y - X by using 2's complements	8 Marks	L2	CO1
	b)	Interpret the Boolean function F = xy + x'z as Product of max-terms.	8 Marks	L2	CO1

(OR)

3.		Explain SOP and POS expression using suitable examples.	16 Marks	L2	CO1

MODULE-II

4.		Consider the Boolean function, F = A'C + A'B + AB'C + BC i) Express the function as sum of minterms ii) Find the minimal sum of products expression using k-map technique.	16 Marks	L3	CO2

(OR)

5.	a)	Simplify the following Boolean functions using K map and sketch the Logic Diagram for optimized Boolean expression i) $F(x,y,z) = \sum(0,2,4,5,6)$ ii) $F(x,y,z) = \sum(3,4,6,7)$ iii) $F(x,y,z) = \sum(2,3,4,5)$	12 Marks	L2	CO2
	b)	Realize EX-OR Gate using only NAND Gates with its logic diagram.	4 Marks	L3	CO2

MODULE-III

6.	a)	Implement the following Boolean function using 8:1 multiplexer. Consider D as the input and A, B, C as selection lines. $F(A,B,C,D) = \sum m(0,1,2,3,4,10,11,14,15)$	10 Marks	L3	CO3
	b)	Analyze the operation of Four bit Adder-sub tractor with logic diagram.	6 Marks	L4	CO3
		(OR)			
7.	a)	Analyze the operation of Four bit Magnitude Comparator with logic diagram.	9 Marks	L2	CO3
	b)	Compare Encoder and Multiplexer.	7 Marks	L4	CO3

MODULE-IV

8.	a)	Design a Ripple counter that generates BCD sequence Using J-K Flip-flop.	9 Marks	L2	CO3
	b)	Explain the operation of SR Flip-flop with truth table.	7 Marks	L4	CO3
		(OR)			
9.	a)	Convert JK-Flip Flop to T- Flip Flop.	9 Marks	L2	CO3
	b)	What is a Priority Encoder? Explain the operation of Priority Encoder.	7 Marks	L2	CO3

MODULE-V

10.	a)	Implement the following Boolean functions using PAL. $F_1 (A,B,C)= \Sigma m(0,1,2,4)$ and $F_2 (A,B,C)= \Sigma m(0,5,6,7)$	9 Marks	L3	CO4
	b)	Design a PROM which converts 3-bit binary to Excess-3 code.	7 Marks	L4	CO4
		(OR)			
11.	a)	Design a combinational using a PLA The circuit accepts 3-bit binary number and generates its Sum and carry of the given numbers	8 Marks	L3	CO4
	b)	Implement Boolean function using PAL $Y(A,B,C,D)=\Sigma m(1,2,3,4,8,9,10,12,13)+d(0,5,7)$	8 Marks	L3	CO4



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B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

SINGLE VARIABLE CALCULUS

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Sequence and give an example.	2 Marks	L1	CO1
	b)	Write the sequence whose nth term is $(\frac{12+5n}{11n+12})$	2 Marks	L1	CO1
	c)	State p- series test.	2 Marks	L2	CO2
	d)	State limit comparison test.	2 Marks	L2	CO2
	e)	State Sandwich Theorem statement.	2 Marks	L2	CO3
	f)	Write any two Limits of standard functions.	2 Marks	L1	CO3
	g)	State Rolle's Theorem.	2 Marks	L2	CO4
	h)	State Lagrange's Mean value Theorem.	2 Marks	L2	CO4
	i)	Define Upper and Lower Riemann Integrals.	2 Marks	L1	CO5
	j)	Define the Riemann integral	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Prove that the below Sequence is increasing and bounded above $S_n = [\frac{3n-1}{n+2}]$	8 Marks	L2	CO1
	b)	Prove that the sequence $\{S_n\}$ where $S_n = \frac{1}{1.2}+\frac{1}{2.3}+\frac{1}{3.4}+....+\frac{1}{n(n+1)}$ is convergent.	8 Marks	L2	CO1

(OR)

3.	a)	Using Sandwich Theorem prove that $\lim_{n\to\infty}\sqrt{n^2+n}-n=\frac{1}{2}$	8 Marks	L2	CO1
	b)	Prove the sequence $S_n = 1+\frac{1}{2}+\frac{1}{3}+.....+\frac{1}{n}$ is not convergent.	8 Marks	L2	CO1

MODULE-II

4.		State and prove Cauchy's root test.	16 Marks	L2	CO2

(OR)

5.	a)	Show that the series $1+2+3+4+...$ is divergent.	8 Marks	L1	CO2
	b)	Show that an infinite series $1+\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+....$ .is convergent.	8 Marks	L1	CO2

MODULE-III

6.	a)	Prove that $\lim_{n\to\infty}(1+\frac{1}{x})^{x} = e$	8 Marks	L2	CO3
	b)	If $f(x)=\frac{e^{1/x}}{1+e^{1/x}}$, find whether $\lim_{x\to\infty} f(x)$ exists or not.	8 Marks	L1	CO3
		(OR)			
7.		Show that $f:R\to R$ defined by $f(x)=x$ if $x\in R-Q$ and $f(x)=-x, if\ x\in Q$ is continuous only at '0'.	16 Marks	L1	CO3

MODULE-IV

8.	a)	Discuss the derivability of $f(x)=\|x\|+\|x-1\|$ in R.	8 Marks	L2	CO4
	b)	Evaluate $\lim_{x\to 0}\frac{\cosh x-\cos x}{xSinx}$.	8 Marks	L5	CO4
		(OR)			
9.	a)	Show that $f(x)=x\sin\frac{1}{x}, x\neq 0;\ f(x)=0, x=0$ is continuous but not derivable at $x=0$.	8 Marks	L2	CO4
	b)	Discuss the applicability of Lagrange's mean value theorem for $f(x)=(x(x-1)(x-2))$ in $[0,\frac{1}{2}]$.	8 Marks	L2	CO4

MODULE-V

10.		Show that $f(x)=3x+1$ is integrable on $[1,2]$ and $\int_1^2(3x+1)\ dx = \frac{11}{2}$	16 Marks	L2	CO5
		(OR)			
11.	a)	A constant function is Riemann integrable on $[a,b]$. Prove it.	8 Marks	L1	CO5
	b)	If $f:[a,b]\to R$ is a bounded function then show that $\int_a^b f(x)\ dx = \int_a^{\overline{b}} f(x)\ dx$.	8 Marks	L1	CO5

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B.Sc. II Semester (MBU-22) Regular Examinations, May - 2025

DATA COMMUNICATION AND NETWORKING

[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)	Give an example of a broadcast network.	2 Marks	L1	CO1
	b)	What are the Types of Network Topologies?	2 Marks	L1	CO1
	c)	What is network architecture? Name two types of network architecture models?	2 Marks	L1	CO2
	d)	What is the function of the physical layer in the OSI model?	2 Marks	L1	CO2
	e)	Mention two advantages and two disadvantages of fiber optic cables.	2 Marks	L1	CO3
	f)	What is the role of the electromagnetic spectrum in wireless communication?	2 Marks	L1	CO3
	g)	Define repeater and What is the function of a repeater in networking.	2 Marks	L1	CO4
	h)	What is a bridge, and what is its purpose in a network?	2 Marks	L1	CO4
	i)	What are the different types of Ethernet?	2 Marks	L1	CO5
	j)	What type of network uses the IEEE 802.5 frame format?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the various types of network topologies and compare their advantages and disadvantages.	8 Marks	L2	CO1
	b)	Differentiate between LAN, MAN, and WAN. Explain the typical use cases, scale, and technologies used in each type of network.	8 Marks	L2	CO1

(OR)

3.	a)	Explain the differences between server-based LANs and peer-to-peer LANs in terms of network management, security, and scalability.	8 Marks	L2	CO1
	b)	What are the advantages and limitations of server-based LANs and peer-to-peer LANs? Provide examples of their typical use cases.	8 Marks	L2	CO1

MODULE-II

4.	a)	What are the components of network architecture? Discuss their roles.	8 Marks	L1	CO2
	b)	Compare and contrast client-server and peer-to-peer network architectures.	8 Marks	L4	CO2

(OR)

5.	a)	Draw the neat diagram of Network Architecture. Design principles of network architecture and its impact on performance and scalability.	16 Marks	L2	CO2

MODULE-III

6.	a)	Differentiate between UTP and STP cables with examples.	8 Marks	L2	CO3
	b)	Explain the types of connectors used with twisted pair cables.	8 Marks	L2	CO3
		(OR)			
7.	a)	Differentiate between single-mode and multimode fiber optic cables.	6 Marks	L2	CO3
	b)	List and explain the applications of fiber optic cables and what are the advantages and disadvantages of fiber optic cables?	10 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the different types of bridges and their functions.	8Marks	L2	CO4
	b)	Discuss the advantages and disadvantages of using bridges in a network.	8Marks	L2	CO4
		(OR)			
9.	a)	Explain the differences between Layer 2 and Layer 3 switches.	8 Marks	L2	CO4
	b)	How do switches differ from hubs and bridges in networking?	8 Marks	L1	CO4

MODULE-V

10.	a)	What are network adapters, and how do they differ from NICs? Explain their role in a LAN setup.	8 Marks	L1	CO5
	b)	Discuss the functions of a NIC in a network. How does it help in communication between devices?	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss the IEEE 802.3 Ethernet frame format in detail, provide a labeled diagram and explain each field.	8 Marks	L2	CO5
	b)	What are the differences between IEEE 802.4, and IEEE 802.5 frame formats?	8 Marks	L1	CO5



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B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

DATA STRUCTURES

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define data structure.	2 Marks	L1	CO1
	b)	What is the purpose of analyzing an algorithm?	2 Marks	L1	CO1
	c)	Define a linear data structure and give an example.	2 Marks	L1	CO2
	d)	What is a linked list?	2 Marks	L1	CO2
	e)	Define a stack.	2 Marks	L1	CO3
	f)	How is a queue represented using arrays?	2 Marks	L1	CO3
	g)	What is a binary tree?	2 Marks	L2	CO4
	h)	Define a balanced binary tree.	2 Marks	L1	CO4
	i)	Mention one limitation of binary search.	2 Marks	L1	CO5
	j)	Define breadth-first search (BFS).	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 difference between abstract data types, data types, and data structures with suitable examples.	8 Marks	L1	CO1
	b)	Explain the different approaches to designing an algorithm with examples.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the refinement stages in the development of a data structure with an example.	8 Marks	L2	CO1
	b)	Explain program design and its principles with relevant examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss one-dimensional arrays and the common operations performed on them.	8 Marks	L2	CO2
	b)	Discuss the representation of linked lists using arrays with examples.	8 Marks	L3	CO2
		(OR)			
5.	a)	Describe the advantages and limitations of arrays as a data structure.	8 Marks	L3	CO2
	b)	Describe the operations on doubly linked lists with an example program.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss the role of stacks in function calls and recursion.	8 Marks	L3	CO3
	b)	Write a detailed note on circular queues and their implementation.	8 Marks	L3	CO3

(OR)

7.	a)	Discuss postfix,infix and postfix evaluation using stacks.	8 Marks	L2	CO3
	b)	What is the difference between queues and deques?	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the concept of binary trees and their properties with suitable examples.	8 Marks	L3	CO4
	b)	Explain with an example how binary tree traversal is used in expression trees.	8 Marks	L2	CO4

(OR)

9.	a)	Explain about representation of binary trees using arrays and linked list?	8 Marks	L2	CO4
	b)	Explain about binary tree traversing methods? Explain with examples?	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain about linear search method with example.	8 Marks	L2	CO5
	b)	Describe the properties and importance of a connected graph.	8 Marks	L2	CO5

(OR)

11.	a)	Compare graphs and trees with respect to structure and applications.	8 Marks	L3	CO5
	b)	Explain about binary search method with example.	8 Marks	L3	CO5



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B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

STATISTICAL METHODS AND INFERENCES

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the difference between linear and nonlinear correlation?	2 Marks	L1	CO1
	b)	How can you interpret the strength of correlation?	2 Marks	L1	CO1
	c)	Write the two Regression coefficients?	2 Marks	L1	CO2
	d)	What is the difference between a dependent and independent variable?	2 Marks	L1	CO2
	e)	What is the purpose of hypothesis testing?	2 Marks	L1	CO3
	f)	Explain alternative hypothesis	2 Marks	L1	CO3
	g)	Explain Two tail tests	2 Marks	L2	CO4
	h)	What is the F-test?	2 Marks	L1	CO4
	i)	What is the Wilcoxon signed-rank test?	2 Marks	L1	CO5
	j)	What is the sign test?	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 differences between scatter diagram method and Spearman Rank correlation method					8 Marks	L2	CO1
	b)	Ten competitors in a debate contest are ranked by three judges in the following order.					8 Marks	L3	CO1

Competitors	A	B	C	D	E	F	G	H	I	J
Ranks By 1st Judge	7	4	10	5	9	8	6	2	1	3
Ranks By 2nd Judge	4	1	9	10	7	3	2	5	6	8
Ranks By 3rd Judge	10	2	8	5	7	6	9	1	4	3

(OR)

3.	a)	Explain the differences between scatter diagram method and Spearman Rank correlation method	8 Marks	L2	CO1
	b)	A group of 8 students got the following marks in a test in Maths and Accountancy.	8 Marks	L3	CO1

Marks in Maths	50	60	65	70	75	40	80	85
Marks in Accountancy	80	71	60	75	90	82	70	50

Compute the coefficient of rank correlation.

MODULE-II

4. a) The two regression lines are 3X+2Y=26 and 6X+3Y=31. Find the correlation coefficient. — 8 Marks — L2 — CO2

   b) The heights (in cm.) of a group of fathers and sons are given below — 8 Marks — L3 — CO2

Heights of fathers	158	166	163	165	167	170	167	172	177	181
Heights of sons	163	158	167	170	160	180	170	175	172	175

Find the lines of regression and estimate the height of son when the height of the father is 164 cm.

(OR)

5. a) In a laboratory experiment on correlation research study the equation of the two regression lines were found to be 2X–Y+1=0 and 3X–2Y+7=0 . Find the means of X and Y. Also work out the values of the regression coefficient and correlation between the two variables X and Y. — 8 Marks — L2 — CO2

   b) The following data give the height in inches (X) and the weight in lb. (Y) of a random sample of 10 students from a large group of students of age 17 years: — 8 Marks — L3 — CO2

X	61	68	68	64	65	70	63	62	64	67
Y	112	123	130	115	110	125	100	113	116	125

Estimate weight of the student of a height 69 inches.

MODULE-III

6. a) Explain about statistical hypothesis — 8 Marks — L2 — CO3

   b) State and prove Neyman and Pearson lemma — 8 Marks — L2 — CO3

(OR)

7. a) Explain null hypothesis and alternative hypothesis with example — 8 Marks — L2 — CO3

   b) Obtain best critical region for testing H_0: $p=p_0$ against H_1: $p=p_1$ in a binomial distribution. — 8 Marks — L2 — CO3

MODULE-IV

8. a) Explain t-test for two different means — 8 Marks — L2 — CO4

   b) A researcher is interested in whether there is a significant difference in the mean reaction times between two groups of participants who are given different types of cognitive tasks. The first group consists of 10 participants who are given a verbal task, and the second group consists of 12 participants who are given a spatial task. The researcher records the reaction times for each participant and wants to know if there is a significant difference in mean reaction times between the two groups. The sample mean and standard deviation for the verbal group are 0.8 seconds and 0.1 seconds, respectively, while the sample mean and standard deviation for the spatial group are 0.6 seconds and 0.15 seconds, respectively. — 8 Marks — L3 — CO4

(OR)

9. a) Explain paired t test. — 8 Marks — L2 — CO4

   b) A manufacturer of electronic equipment is interested in reducing the production time of a particular product. They randomly select 10 units and measure the production time required before and after implementing a new production process. The results are shown in the table below. The manufacturer wants to know if the new process has significantly reduced the production time. — 8 Marks — L3 — CO4

Before	14	17	12	16	19	20	15	18	13	16

After	12	15	10	14	17	18	14	16	12	15

MODULE-V

10.	a)	Explain Wald Wolfoitz's runs test	8 Marks	L2	CO5
	b)	Suppose we have two sets of data, A and B, each with 30 observations. We want to test whether the two sets of data have the same median. The data for sets A and B are randomly generated as: Set A: 8, 6, 9, 4, 2, 1, 7, 5, 10, 3, 5, 2, 9, 7, 1, 8, 10, 6, 3, 4, 8, 6, 1, 10, 2, 9, 7, 3, 4, 5 Set B: 3, 5, 6, 7, 4, 8, 1, 9, 2, 10, 1, 7, 4, 9, 6, 2, 10, 5, 8, 3, 1, 4, 7, 6, 2, 9, 5, 8, 3, 10 Perform the two-sample sign test.	8 Marks	L3	CO5

(OR)

11.	a)	Explain sign test for large sample	8 Marks	L2	CO5
	b)	Suppose we have two sets of data, A and B, each with 10 observations. We want to test whether the two sets of data have the same median. The data for sets A and B are as follows: Set A: 5, 3, 7, 4, 1, 2, 5, 3, 6, 2 Set B: 4, 2, 6, 3, 1, 4, 5, 2, 7, 3 Perform the two-sample sign test	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

OBJECT ORIENTED PROGRAMMING WITH C++

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are keywords in C++?	2 Marks	L1	CO1
	b)	Name two types of tokens in C++.	2 Marks	L1	CO1
	c)	Define function overloading in C++.	2 Marks	L1	CO2
	d)	What are default arguments in C++ functions?	2 Marks	L1	CO2
	e)	How do you access a member function of a class in C++?	2 Marks	L1	CO3
	f)	What is an array of objects in C++?	2 Marks	L1	CO3
	g)	Why are virtual functions used in C++?	2 Marks	L1	CO4
	h)	How is an operator function defined in C++?	2 Marks	L1	CO4
	i)	What are command line arguments in C++?	2 Marks	L1	CO5
	j)	What is the purpose of error handling in file operations?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is the Object-Oriented Paradigm? Explain its key principles with suitable examples.	8 Marks	L1	CO1
	b)	Compare and contrast the features of third-generation and fourth-generation programming languages.	8 Marks	L2	CO1
		(OR)			
3.	a)	What are cin and cout in C++? Explain their roles and usage with an example program.	8 Marks	L1	CO1
	b)	Explain the general structure of a C++ program with an example program and a detailed description of each section.	8 Marks	L2	CO1

MODULE-II

4.	a)	Compare and contrast the if-else statement and the switch statement in C++ with examples of their use.	8 Marks	L2	CO2
	b)	Describe the different looping constructs in C++ (for, while, do-while) with examples. Highlight their differences and applications.	8 Marks	L2	CO2
		(OR)			
5.	a)	Write a program to demonstrate nested loops in C++ and explain its working.	6 Marks	L1	CO2
	b)	What are functions with default arguments? Explain with a detailed example program.	10 Marks	L1	CO2

MODULE-III

6.	a)	Explain the significance of member functions in encapsulating data within a class. Provide a program as an example.	8 Marks	L2	CO3
	b)	How can a member function take an object as an argument in C++? Write a program to demonstrate its working.	8 Marks	L2	CO3

(OR)

7.	a)	Explain how a member function can return an object in C++. Write a program to illustrate this concept.	8 Marks	L2	CO3
	b)	What is an array of objects in C++? Explain how to declare and initialize an array of objects with an example.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the process of overloading unary operators in C++. Write a program to overload the unary ++ operator.	8 Marks	L2	CO4
	b)	Write a program to overload a binary operator (e.g., +) for a custom class in C++ and explain its working.	8 Marks	L1	CO4

(OR)

9.	a)	What are relational operators in C++? Write a program to overload the == and > operators for comparing two objects of a class.	8 Marks	L1	CO4
	b)	Discuss how overloading relational operators helps in object comparison with an example.	8 Marks	L2	CO4

MODULE-V

10.	a)	Write a program to demonstrate the use of ifstream and ofstream classes for reading from and writing to a file.	8 Marks	L1	CO5
	b)	What are unformatted input/output operations in C++? Explain their characteristics with examples.	8 Marks	L1	CO5

(OR)

11.	a)	What are the benefits of formatting output in C++? Provide examples using manipulators such as setw, setprecision and endl.	8 Marks	L1	CO5
	b)	Discuss the use of the read() and write() functions for binary file operations with an example program.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

OPERATING SYSTEMS

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define an operating system.	2 Marks	L1	CO1
	b)	What are the main components of an operating system structure?	2 Marks	L1	CO1
	c)	What is the critical section problem?	2 Marks	L1	CO2
	d)	Define a deadlock.	2 Marks	L1	CO2
	e)	What is swapping in memory management?	2 Marks	L1	CO3
	f)	What is virtual memory?	2 Marks	L1	CO3
	g)	What is a file in a file system?	2 Marks	L2	CO4
	h)	What is the role of the I/O system in an operating system?	2 Marks	L1	CO4
	i)	What are the primary goals of protection in an operating system?	2 Marks	L1	CO5
	j)	Define the security problem in 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)	Define Operating System and explain the various types of Operating Systems?	8 Marks	L1	CO1
	b)	Discuss the criteria for CPU scheduling and its significance.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the working of First-Come-First-Served (FCFS), Shortest Job Next (SJN), and Round-Robin scheduling algorithms with examples.	8 Marks	L2	CO1
	b)	Describe the advantages and disadvantages of multithreading in operating systems.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define Process? Explain process State diagram?	8 Marks	L2	CO2
	b)	Explain the solution for Dining-Philosophers Problem	8 Marks	L3	CO2
		(OR)			
5.	a)	What are the methods for handling deadlock.	8 Marks	L3	CO2
	b)	Explain in detail Inter Process Communication?	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the process of swapping in memory management with a suitable diagram.	8 Marks	L3	CO3
	b)	Explain the following disk scheduling algorithm with proper diagram i) FCFS ii) SSTF	8 Marks	L3	CO3

(OR)

7.	a)	Compare FIFO and Optimal page replacement algorithms with examples.	8 Marks	L2	CO3
	b)	Discuss segmentation and compare it with paging.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Explain the concept of a file and its attributes.	8 Marks	L3	CO4
	b)	Discuss the application I/O interface and its importance.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain the working of the kernel I/O subsystem.	8 Marks	L2	CO4
	b)	Explain the importance of error handling in the kernel I/O subsystem.	8 Marks	L3	CO4
		MODULE-V			
10.	a)	Explain the goals of protection in an operating system.	8 Marks	L2	CO5
	b)	Discuss the principles of protection with examples.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain how encryption and cryptography are used to enhance system and network security.	8 Marks	L3	CO5
	b)	Discuss the role of access control in ensuring system security and protection.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

GENOMICS

[Bioinformatics, Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain the concept of genome banks and their contributions to genomic research.	2 Marks	L2	CO1
	b)	What is the significance of the National Center for Biotechnology Information (NCBI) in genomics?	2 Marks	L1	CO1
	c)	Explain how the completion of the Human Genome Project has impacted biomedical research and personalized medicine.	2 Marks	L2	CO2
	d)	What were the major challenges faced during the Human Genome Project, and how were they overcome?	2 Marks	L1	CO2
	e)	Explain the significance of transcription and translation in the central dogma.	2 Marks	L2	CO3
	f)	Provide an example of a biological process that violates the central dogma	2 Marks	L2	CO3
	g)	What role do bioinformatics tools play in metagenome assembly?	2 Marks	L1	CO4
	h)	Explain the importance of contig length in metagenome assembly.	2 Marks	L2	CO4
	i)	Define population genomics.	2 Marks	L2	CO5
	j)	What is the significance of genetic drift in genomics?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Draw dAMP, dGMP, dTMP and dCMP	9 Marks	L2	CO1
	b)	Provide a detailed explanation of the structure of DNA, including the components involved and the specific bonding interactions that hold the molecule together.	7 Marks	L2	CO1

(OR)

3.	a)	Describe the structure of DNA.	10 Marks	L2	CO1
	b)	What is the purpose of biological databases, and how do they contribute to genomics research?	6 Marks	L1	CO1

MODULE-II

4.	a)	What is the process of shotgun sequencing?	8 Marks	L1	CO2
	b)	Provide examples of when knock-in or knock-out strategies might be used in research.	8 Marks	L2	CO2

(OR)

5.	a)	Describe the mechanisms behind knock in and knock out in terms of gene	10 Marks	L2	CO2
	b)	Explain the concept of shotgun sequencing in genome sequencing. What are the advantages and challenges of shotgun sequencing?	6 Marks	L2	CO2

MODULE-III

6.	a)	How does third-generation sequencing differ from second-generation sequencing?	7 Marks	L1	CO3
	b)	Explain the purpose of BLAST and FASTA in bioinformatics.	9 Marks	L2	CO3

(OR)

7.	a)	Define repeatable elements in the genome. What roles do they play in genome structure and evolution?	10 Marks	L2	CO3
	b)	Define heterochromatin and euchromatin. What are their structural and functional differences?	6 Marks	L2	CO3

MODULE-IV

8.	a)	Explore the concept of eukaryotic microbiomes. How are they studied, and what is their significance in ecological systems?	8 Marks	L3	CO4
	b)	How can metagenomics contribute to our understanding of the role of microbes in maintaining human health?	8 Marks	L1	CO4

(OR)

9.	a)	Provide examples of diseases or health conditions where metagenomics has played a significant role.	10 Marks	L2	CO4
	b)	What is environmental metagenomics, and how can it be applied to study microbial communities in various ecosystems?	6 Marks	L1	CO4

MODULE-V

10.	a)	How does the mutation rate of microsatellites influence their utility in population genetics studies?	8 Marks	L1	CO5
	b)	How does the founder effect contribute to genetic drift in the establishment of new populations?	8 Marks	L1	CO5

(OR)

11.	a)	Provide examples of factors that contribute to spatial and temporal variation in genetic diversity.	10 Marks	L2	CO5
	b)	Explain how the MK-Test utilizes synonymous and nonsynonymous substitutions to assess selection.	6 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

BASIC CONCEPTS OF MICROBIAL GENETICS

[Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write about semiconservative replication.	2 Marks	L1	CO1
	b)	Explain 3'-5' exonuclease.	2 Marks	L1	CO1
	c)	What is sigma factor?	2 Marks	L1	CO2
	d)	What is RNA polymerase?	2 Marks	L1	CO2
	e)	Write about inversions.	2 Marks	L1	CO3
	f)	Define transformation and write the examples.	2 Marks	L1	CO3
	g)	What is genetic exchange?	2 Marks	L1	CO4
	h)	Define transformation and write the examples.	2 Marks	L1	CO4
	i)	Write about uses of plasmids.	2 Marks	L1	CO5
	j)	What are the uses of transposons?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the mechanism of replication.	8 Marks	L2	CO1
	b)	Explain inhibitors of replication process.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe unidirectional replication.	8 Marks	L2	CO1
	b)	Summarize about DNA fidelity in Replication.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the process of transcription.	8 Marks	L2	CO2
	b)	Explain the regulation of gene expression in bacteria.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the translation process.	8 Marks	L2	CO2
	b)	Explain in detail about translation inhibitors.	8 Marks	L2	CO2

MODULE-III

6.	a)	Summarize about mutagens.	8 Marks	L2	CO3
	b)	Explain about spontaneous and induced mutation.	8 Marks	L2	CO3
		(OR)			
7.	a)	Summarize about concept of gene.	8 Marks	L2	CO3
	b)	Explain about one gene one enzyme hypothesis.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain about horizontal gene transfer methods.	8 Marks	L2	CO4
	b)	Explain the transformation process.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain about Hfr strains.	8 Marks	L2	CO4
	b)	Summarize how F^- strain become to F^+ strain.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the about mechanism of transposition.	8 Marks	L2	CO5
	b)	Compare and contrast the different between composite and non-composite transposons.	8 Marks	L2	CO5
		(OR)			
11.	a)	Summarize in detail about properties of plasmids.	8 Marks	L2	CO5
	b)	Describe the importance of transposition.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

MICROBES IN SUSTAINABLE AGRICULTURE AND DEVELOPMENT

[Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	How does climate influence soil formation?	2 Marks	L1	CO1
	b)	List three microbial groups commonly found in soil.	2 Marks	L1	CO1
	c)	Define biocontrol mechanisms and explain how microorganisms contribute to controlling soil-borne plant pathogens.	2 Marks	L2	CO2
	d)	Discuss the role of antagonistic microorganisms in suppressing soil-borne plant pathogens.	2 Marks	L2	CO2
	e)	Discuss the symbiotic relationship between Mycorrhizae and plant roots.	2 Marks	L2	CO3
	f)	Explain how phosphate solubilizers contribute to nutrient availability for plants.	2 Marks	L2	CO3
	g)	List two advantages of utilizing biogas as a renewable energy source.	2 Marks	L1	CO4
	h)	Identify one key parameter crucial for optimizing the production of biogas.	2 Marks	L4	CO4
	i)	List one potential advantage of Golden Rice in addressing nutritional deficiencies.	2 Marks	L1	CO5
	j)	Discuss one challenge or criticism related to the adoption of Golden Rice.	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)	Explore the various factors influencing soil formation, including parent material, climate, topography, organisms, and time. Explain their interplay in shaping different soil profiles.	8 Marks	L3	CO1
	b)	Discuss the factors contributing to microbial diversity in soil. Explore the significance of biodiversity for soil health and ecosystem functioning.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain how microbial populations vary in different soil horizons. Discuss the factors influencing microbial distribution within the soil profile.	8 Marks	L2	CO1
	b)	Provide a detailed account of microbial processes involved in nitrogen mineralization in soil. Discuss the conversion of organic nitrogen to ammonium and subsequent forms.	8 Marks	L1	CO1

MODULE-II

4.	a)	Elaborate on agricultural practices that can influence nitrous oxide emissions. Discuss the role of nitrogen fertilization, cover cropping, and precision farming in emission reduction.	8 Marks	L4	CO2
	b)	Discuss microbial and agricultural practices to control nitric oxide emissions. Explore the potential of biochar, nitrification inhibitors, and optimized nitrogen management.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the various biocontrol mechanisms employed by microorganisms against soil-borne plant pathogens. Discuss the importance of competition, predation, and antibiosis.	8 Marks	L2	CO2
	b)	Discuss the role of antagonistic microorganisms in suppressing soil-borne plant pathogens. Provide examples and explain the mechanisms involved.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the significance of legume-rhizobia symbiosis in sustainable agriculture. Highlight the benefits for both nitrogen fixation and soil fertility	8 Marks	L2	CO3
	b)	Examine the ecosystem services provided by mycorrhizal associations. Discuss their role in nutrient cycling, plant community dynamics, and ecosystem stability.	8 Marks	L4	CO3
		(OR)			
7.	a)	Discuss how phosphate-solubilizing microorganisms enhance phosphorus availability for plants. Explain the importance of phosphorus in plant nutrition.	8 Marks	L2	CO3
	b)	Provide examples of successful microbial consortia used as biofertilizers. Discuss their applications in different agroecosystems.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Discuss the types of organic materials suitable for biogas generation and the microbial activities involved.	8 Marks	L2	CO4
	b)	Examine the environmental and economic advantages of using biogas as a renewable energy source.	8 Marks	L4	CO4
		(OR)			
9.	a)	Discuss its role in waste management and reducing greenhouse gas emissions.	8 Marks	L2	CO4
	b)	Discuss the critical parameters for optimizing biogas production	8 Marks	L2	CO4

MODULE-V

10.	a)	Examine the existing regulatory frameworks for GM crops globally.	8 Marks	L4	CO5
	b)	Discuss the phenomenon of resistance evolution in pests against BT crops. Explore strategies for managing and delaying resistance development.	8 Marks	L2	CO5
		(OR)			
11.	a)	Examine the ecological impact of BT crops on non-target organisms.	8 Marks	L4	CO5
	b)	Discuss the involvement of non-governmental organizations (NGOs) and international organizations in promoting the adoption of Golden Rice. Evaluate the effectiveness of such initiatives.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

CYBER FORENSICS

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are Digital Forensics?	2 Marks	L1	CO1
	b)	Who classified the Characteristics of cyber crimes?	2 Marks	L1	CO1
	c)	Outline the Structure of an Email.	2 Marks	L2	CO2
	d)	Explain the process of Network Forensics.	2 Marks	L1	CO2
	e)	Mention any 4 departmental policies for securing the crime scene.	2 Marks	L2	CO3
	f)	Define Cryptology.	2 Marks	L1	CO3
	g)	What is a forensic investigation suite?	2 Marks	L2	CO4
	h)	List two stakeholders in a forensic investigation.	2 Marks	L1	CO4
	i)	Mention one significant development in mobile phone technology.	2 Marks	L5	CO5
	j)	What is the process of seizure in mobile device forensics?	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are the Rules of Digital Evidence?	6 Marks	L1	CO1
	b)	What are the Basic Characteristics of Cyber Crimes? Explain it with the help of flowchart.	10 Marks	L3	CO1

(OR)

3.	a)	Differentiate Data from Meta data.	6 Marks	L1	CO1
	b)	How is digital evidence defined? Discuss the key considerations when handling digital evidence.	10 Marks	L	CO1

MODULE-II

4.	a)	Differentiate Data Forensics from Data Base Forensics.	6 Marks	L2	CO2
	b)	How does the internet function? Explain the basic working mechanism behind it.	10 Marks	L2	CO2

(OR)

5.	a)	What challenges can arise when collecting and preserving cloud data?	10 Marks	L2	CO2
	b)	What is online chat and explain the various platforms for chatting.	6 Marks	L1	CO2

MODULE-III

6.	a)	Outline the standard procedure for processing computer evidence in digital forensic investigations.	8 Marks	L5	CO3
	b)	Differentiate between symmetric and asymmetric encryption with examples.	8 Marks	L4	CO3

(OR)

7.	a)	Explain the different stages of a forensic investigation process and their significance.	8 Marks	L5	CO3
	b)	What is data masking? Explain its purpose and methods commonly used for data masking	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss the role of a forensic investigation suite in managing digital evidence.	8 Marks	L3	CO4
	b)	Identify and explain the key stakeholders involved in a forensic investigation and their roles.	8 Marks	L2	CO4

(OR)

9.	a)	What is the significance of communication processes during a digital forensic investigation, and how do they facilitate the investigation?	8 Marks	L2	CO4
	b)	How are roles assigned in a forensic team, and why is it essential to follow these role-based responsibilities during an investigation?	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the principle and significance of mobile phone forensics in digital investigations.	10 Marks	L1	CO5
	b)	Explain the process of handling mobile devices during forensic investigations and why proper handling is crucial.	6 Marks	L3	CO5

(OR)

11.	a)	Explain the process of reporting in mobile device forensics and what key information should be included in the report.	10 Marks	L5	CO5
	b)	Discuss the process of cloning SIM card data and its importance in mobile forensics.	6 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

FORENSIC BALLISTIC & EXPLOSIVES

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write two characteristics of modern semi-automatic firearms.	2 Marks	L2	CO1
	b)	Explain the purpose of a primer in a cartridge.	2 Marks	L2	CO1
	c)	What is meant by the stability of a projectile?	2 Marks	L1	CO2
	d)	Define drag and its role in bullet trajectory.	2 Marks	L1	CO2
	e)	How can range determination help in forensic investigations?	2 Marks	L2	CO3
	f)	Define burning in the context of firearm injuries.	2 Marks	L1	CO3
	g)	What is the composition of gunshot residue?	2 Marks	L1	CO4
	h)	Explain the importance of cartridge case examination.	2 Marks	L2	CO4
	i)	Define the reconstruction of sequence of events in an explosion.	2 Marks	L2	CO5
	j)	What is the forensic significance of explosive residue?	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)	Compare cartridge cases used in smooth bore firearms with those used in rifled bore firearms.	8 Marks	L4	CO1
	b)	Discuss the role of primers in the functioning of a cartridge.	8 Marks	L3	CO1
		(OR)			
3.	a)	Analyze how advancements in firearm mechanisms improved accuracy and efficiency.	8 Marks	L6	CO1
	b)	Elaborate on the forensic investigation of ammunition components and their legal implications.	8 Marks	L5	CO1

MODULE-II

4.	a)	Explain the forensic importance of understanding the trajectory of a bullet.	8 Marks	L4	CO2
	b)	Discuss the impact of barrel wear on muzzle velocity and accuracy.	8 Marks	L5	CO2
		(OR)			
5.	a)	Analyze the connection between the type of propellant and firearm efficiency.	8 Marks	L6	CO2
	b)	Evaluate the challenges in reconstructing projectile paths in external ballistics.	8 Marks	L6	CO2

MODULE-III

6.	a)	Explain the phenomenon of "temporary and permanent cavity" in wound ballistics.	8 Marks	L4	CO3
	b)	Discuss the forensic implications of entry and exit wounds in gunshot cases.	8 Marks	L5	CO3

(OR)

7.	a)	Evaluate how terminal ballistics assists in reconstructing shooting scenarios.	8 Marks	L6	CO3
	b)	Discuss the role of ballistic gelatin in studying terminal ballistics.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Discuss the forensic procedures for linking a bullet to a rifled firearm.	8 Marks	L5	CO4
	b)	Compare the forensic examination techniques for smooth bore and rifled bore firearms.	8 Marks	L4	CO4

(OR)

9.	a)	Analyze the role of advanced technology in firearm-ammunition linkage.	8 Marks	L6	CO4
	b)	Evaluate the forensic importance of microscopic comparison of bullet striations.	8 Marks	L6	CO4

MODULE-V

10.	a)	Discuss the significance of trace evidence in explosive residue analysis.	8 Marks	L5	CO5
	b)	Explain the impact of explosions on surrounding structures and their forensic implications.	8 Marks	L4	CO5

(OR)

11.	a)	Explain the forensic significance of reconstructing the sequence of events in an explosion.	8 Marks	L5	CO5
	b)	Compare high and low explosives with examples and forensic applications.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

COMPUTATIONAL BIOLOGY

[Bioinformatics]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Name the different types of Molecular sequences.	2 Marks	L1	CO1
	b)	Define Genome.	2 Marks	L1	CO1
	c)	Recall Phylogenetics.	2 Marks	L1	CO2
	d)	Recall the different types of Phylogenetic trees?	2 Marks	L1	CO2
	e)	Name the structure visualization programs	2 Marks	L1	CO3
	f)	Recall the secondary structural elements.	2 Marks	L1	CO3
	g)	Define Mircroarray	2 Marks	L1	CO4
	h)	Name the Gene prediction tools.	2 Marks	L1	CO4
	i)	What is Perl?	2 Marks	L1	CO5
	j)	Recall the importance of Unix in Bioinformatics.	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 different types of Next generation sequence methods.	9 Marks	L2	CO1
	b)	Classify biological databases.	7 Marks	L2	CO1
		(OR)			
3.	a)	Explain Dynamic programming methods of sequence alignment.	10 Marks	L2	CO1
	b)	Summarize Multiple sequence alignment methods.	6 Marks	L2	CO1

MODULE-II

4.		Discuss about Phylogenetic trees and how they are generated.	16 Marks	L6	CO2
		(OR)			
5.	a)	Explain Character based methods of Phylogenetic tree generation.	9 Marks	L2	CO2
	b)	Summarize UPGMA.	7 Marks	L2	CO2

MODULE-III

6.	a)	Explain the structural organization of proteins.	8 Marks	L2	CO3
	b)	Summarize the Molecular dimension simulations.	8 Marks	L2	CO3
		(OR)			
7.	a)	Outline the steps in docking.	8 Marks	L2	CO3
	b)	Compare Local and Global docking methods.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Summarize the applications of Neural networks in Bioinformatics.	8 Marks	L2	CO4
	b)	Explain Hidden Markov models and their role in different types of predictions.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain DNA computing.	8 Marks	L2	CO4
	b)	Summarize the different types of Microarrays.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the file handling in Perl.	8 Marks	L2	CO5
	b)	Analyze the importance of Perl in bioinformatics.	8 Marks	L4	CO5
		(OR)			
11.	a)	Explain Unix programming and few commands.	8 Marks	L2	CO5
	b)	Identify the Unix significance.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

MOLECULAR BIOLOGY

[Biotechnology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is m-RNA?	2 Marks	L1	CO1
	b)	What is Z-DNA?	2 Marks	L1	CO1
	c)	Define transcription.	2 Marks	L1	CO2
	d)	What is lac operon?	2 Marks	L1	CO2
	e)	Write about promoters.	2 Marks	L1	CO3
	f)	Define transcription.	2 Marks	L1	CO3
	g)	What is amino acid tRNA synthetase?	2 Marks	L1	CO4
	h)	Define operon.	2 Marks	L1	CO4
	i)	Define mutation.	2 Marks	L1	CO5
	j)	Write about SOS.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the structure of DNA.	8 Marks	L2	CO1
	b)	Summarize about different types of DNA.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize DNA as genetic material.	8 Marks	L2	CO1
	b)	Summarize about the types of the genes.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe how initiation of replication takes place in detail.	8 Marks	L2	CO2
	b)	Summarize difference between DNA replication in eukaryotes and prokaryotes.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss about bidirectional replication.	8 Marks	L2	CO2
	b)	Discuss about rolling circular replication.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the steps involved in transcription .	8 Marks	L2	CO3
	b)	Describe the termination process of transcription.	8 Marks	L2	CO3
		(OR)			
7.	a)	Summarize the comparison of transcription between prokaryotes and eukaryotes.	8 Marks	L2	CO3
	b)	Describe the concept and strength of promoter.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss about translational inhibitors.	8 Marks	L2	CO4
	b)	Explain in detail about aminoacylation of t-RNA.	8 Marks	L2	CO4
		(OR)			
9.	a)	Describe about trp opern.	8 Marks	L2	CO4
	b)	Explain in detail about lac operon.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain about physical mutagens.	8 Marks	L2	CO5
	b)	Discuss about chemical mutagens .	8 Marks	L2	CO5
		(OR)			
11.	a)	Summarize about outlines of DNA damage and repair mechanism .	8 Marks	L2	CO5
	b)	Describe the deletions, inversions, tandem duplications, insertion mutations.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

ADVANCED CHEMISTRY-II

[Bioinformatics, Biotechnology, Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is tartaric acid and state its applications?	2 Marks	L1	CO1
	b)	Define ozonolysis.	2 Marks	L1	CO1
	c)	Write the main ore of thorium and uranium.	2 Marks	L1	CO2
	d)	Give a few instances and uses for metal powders.	2 Marks	L2	CO2
	e)	What is eutectic system?	2 Marks	L1	CO3
	f)	What is the role of freezing point in colligative property?	2 Marks	L2	CO3
	g)	For the following reaction, mention the product with suitable cation: Metal ion (Mn+) + EDTA → Complex (M-EDTA)	2 Marks	L1	CO4
	h)	Write few examples of indicators in acid base titration.	2 Marks	L1	CO4
	i)	Point the few advantages of microwave assisted saponification.	2 Marks	L1	CO5
	j)	Write the reactants and microwave conditions in microwave assisted reaction in Classic Diels-Alder reaction.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the Acetoacetic ester synthesis with suitable reactions.	8 Marks	L3	CO1
	b)	Explain the Malonic ester synthesis with suitable reactions.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss the higher alkane synthesis with any four naming reactions	8 Marks	L3	CO1
	b)	How could you use organometallic compounds in the cancer treatment with your known ideas?	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss the methods in the production of metal powders.	8 Marks	L3	CO2
	b)	Explain the advantages and applications of powder metallurgy in industrial production activities.	8 Marks	L3	CO2
		(OR)			
5.	a)	Discuss the production of tungsten powder from wolframite.	8 Marks	L3	CO2
	b)	Write the definition of metallurgy and general introduction to isolation and purification of metals from its ore.	8 Marks	L3	CO2

MODULE-III

6.	a)	State the following: i) Triple point ii) Phase diagrams and iii) Equilibrium.	8 Marks	L3	CO3
	b)	Analyze your understanding on phase equilibria and its application in industrial processes with suitable illustration.	8 Marks	L3	CO3
		(OR)			
7.	a)	State the following: i) Phase ii) Components iii) Critical point and iv) Degrees of freedom.	8 Marks	L3	CO3
	b)	Explain the thermodynamic derivation of Gibbs phase rule.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss your understanding on theory of potentiometric titrations. Write the Nernst equation and mention its terminology.	8 Marks	L3	CO4
	b)	Discuss in detail about the acid base titration with suitable example.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain in detail about the redox titration with suitable example.	8 Marks	L3	CO4
	b)	Write your understanding on complexometric titration with suitable example.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the microwave assisted reactions in organic solvents.	8 Marks	L3	CO5
	b)	State few examples of microwave assisted reactions in organic solvents. Mention the concept of reaction, solvent and advantages in each reactions.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the process of microwave assisted synthesis of organic compounds with suitable examples.	8 Marks	L3	CO5
	b)	Discuss the microwave assisted reactions in diels-alder reaction.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

FUNDAMENTALS OF ANALYTICAL CHEMISTRY

[Bioinformatics, Biotechnology, Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is acidimetry?	2 Marks	L1	CO1
	b)	State titration.	2 Marks	L1	CO1
	c)	What is accuracy?	2 Marks	L1	CO2
	d)	Define precision.	2 Marks	L1	CO2
	e)	What are dissolved solids?	2 Marks	L1	CO3
	f)	Tell about hard and soft water.	2 Marks	L1	CO3
	g)	Differentiate stationary and mobile phase.	2 Marks	L1	CO4
	h)	What is reverse phase column?	2 Marks	L1	CO4
	i)	Name two applications of IR.	2 Marks	L1	CO5
	j)	Define SEM.	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)	Name the different types of titrations and explain the choice of indicators for those titrations.	8 Marks	L2	CO1
	b)	Discuss about the coagulation and peptization.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain different steps involved in gravimetric analysis.	8 Marks	L2	CO1
	b)	Define the terms: a) Normality b) Molarity c) Molality.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the types of determinate errors with examples.	8 Marks	L2	CO2
	b)	Define precision. Explain the methods of expressing precision.	8 Marks	L1	CO2
		(OR)			
5.	a)	Discuss the use of burette, pipette, standard flask in the laboratory.	8 Marks	L2	CO2
	b)	The values of replicate measurements in an analysis are 48.32, 48.36, 48.23, 48.11 and 48.38. Find the mean and median.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss in brief of chemical oxygen demand(COD).	8 Marks	L2	CO3
	b)	Explain the estimation of chloride present in water by Mohr's method.	8 Marks	L2	CO3
		(OR)			

7.	a)	Describe the batch, continuous and counter current methods of solvent extraction.	8 Marks	L2	CO3
	b)	Explain the application of solvent extraction and factors affecting solvent extraction.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain Pumping system and guard column in HPLC.	8 Marks	L2	CO4
	b)	Discuss the applications of HPLC and column chromatography.	8 Marks	L2	CO4

(OR)

9.	a)	Define the terms: i) Isocratic elution ii) Gradient elution iii) Normal phase HPLC and iv) Reversed phase HPLC.	8 Marks	L2	CO4
	b)	Explain the experimental procedure of column chromatography in detail with neat block diagram.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss in brief of chromophore and auxochrome.	8 Marks	L2	CO5
	b)	Explain the instrumentation of UV-Vis spectrophotometer.	8 Marks	L2	CO5

(OR)

11.	a)	Explain Bathochromic shift and Hypsochromic shift.	8 Marks	L2	CO5
	b)	Describe the applications of Mass spectrometry.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

MEDICAL MICROBIOLOGY

[Biotechnology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Differentiate between a pathogen and a non-pathogenic microorganism	2 Marks	L2	CO1
	b)	Write the terms pathogenicity and virulence.	2 Marks	L1	CO1
	c)	What are the preventive measures for typhoid	2 Marks	L1	CO2
	d)	How are sanitation and water quality crucial in typhoid control?	2 Marks	L4	CO2
	e)	Discuss preventive measures for dengue, including vector control strategies and vaccination. How can communities reduce the risk of dengue transmission?	2 Marks	L2	CO3
	f)	Examine public health strategies used to control dengue outbreaks. How do vector control programs and community engagement contribute to dengue control?	2 Marks	L4	CO3
	g)	Explain the mode of transmission of the Leishmania parasite causing Kala-azar. How do sandflies contribute to the spread of the disease?	2 Marks	L2	CO4
	h)	Discuss prophylactic measures for Kala-azar, including vector control and personal protection methods.	2 Marks	L2	CO4
	i)	How does tetracycline interfere with bacterial protein synthesis?	2 Marks	L1	CO5
	j)	Discuss the mechanism of action of Amphotericin B.	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)	Identify common pathogens responsible for nosocomial infections. Discuss their modes of transmission, reservoirs, and mechanisms of antimicrobial resistance.	10 Marks	L3	CO1
	b)	Explain the importance of proper sample collection, transport, and processing in diagnostic microbiology. Discuss guidelines and best practices for collecting specimens from various body sites and transporting them to the laboratory	6 Marks	L2	CO1
		(OR)			
3.	a)	Compare and contrast cultural, biochemical, serological, and molecular methods used in laboratory diagnosis.	8 Marks	L2	CO1
	b)	Discuss the advantages, limitations, and applications of each method in identifying and characterizing microorganisms.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the mode of transmission of Mycobacterium tuberculosis and factors influencing its spread. How do the transmission dynamics differ in high-burden areas compared to low-burden areas?	9 Marks	L2	CO2
	b)	Explain the pathogenesis of tetanus and its clinical features. How does the neurotoxin produced by Clostridium tetani lead to the characteristic symptoms of tetanus?	7 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the mode of transmission of Clostridium tetani and the entry points for the bacterium. How does the spore-forming nature of the bacterium contribute to its persistence in the environment?	10 Marks	L2	CO2
	b)	Discuss the different stages of syphilis and the corresponding clinical symptoms. How does the disease progress from primary to tertiary stages, and what are the potential complications?	6 Marks	L2	CO2

MODULE-III

6.	a)	Explain the transmission dynamics of the dengue virus, emphasizing the role of Aedes mosquitoes. How do factors such as urbanization and climate influence the spread of dengue?	8 Marks	L2	CO3
	b)	Discuss prophylactic measures for Chikungunya, including personal protection methods, community-based interventions, and potential vaccine development. How can individuals and communities reduce their risk of Chikungunya infection?	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe the clinical manifestations of Japanese Encephalitis and the potential neurological complications associated with the disease. How does the virus cause encephalitis, and what are the long-term consequences?	9 Marks	L2	CO3
	b)	Discuss prophylactic measures for Japanese Encephalitis, including vaccination strategies, mosquito avoidance, and the development of herd immunity. How effective is vaccination in preventing Japanese Encephalitis, and what challenges exist in its implementation?	7 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the significant impact of malaria on global health, considering the burden of disease, economic consequences, and challenges in malaria-endemic regions. How do socioeconomic factors contribute to the persistence of malaria?	8 Marks	L2	CO4
	b)	Enumerate common diagnostic methods used for detecting Kala-azar. What challenges exist in diagnosing Kala-azar accurately, and how can advancements in diagnostics improve patient outcomes?	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss the transmission, symptoms, and preventive measures for systemic mycoses. How do individuals typically acquire fungal infections affecting internal organs, and what are the challenges in preventing systemic fungal infections?	10 Marks	L2	CO4
	b)	Examine the issue of drug resistance in malaria, focusing on antimalarial medications. How does the emergence of drug-resistant strains affect malaria control efforts, and what strategies are in place to address this challenge?	6 Marks	L4	CO4

MODULE-V

10.	a)	Discuss the historical development of penicillin, its impact on medicine, and how the discovery revolutionized the treatment of bacterial infections. Include insights into subsequent generations of penicillin's.	8 Marks	L2	CO5
	b)	Discuss the challenges and benefits associated with the development and distribution of vaccines, emphasizing the role of vaccination in public health.	8 Marks	L2	CO5
		(OR)			
11.	a)	Provide an in-de provide the analysis of Acyclovir as an antiviral agent, focusing on its specificity for herpesviruses. D tt the development of resistance and strategies to enhance antiviral efficacy.	8 Marks	L2	CO5
	b)	Evaluate the role of infection control measures in preventing the spread of MRSA in healthcare settings. Discuss the impact of MRSA on patient outcomes and public health.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

FORENSIC TOXICOLOGY

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define toxicokinetics and toxicodynamics.	2 Marks	L1	CO1
	b)	Define ED,TD,LD.	2 Marks	L2	CO1
	c)	What are the signs and symptoms of arsenic poisoning?	2 Marks	L1	CO2
	d)	Draw the flow chart of classification of poisons on the basis of mode of action.	2 Marks	L2	CO2
	e)	What are the signs and symptoms of calotropis?	2 Marks	L2	CO3
	f)	What are the signs and symptoms of semecarpus anacardium.	2 Marks	L1	CO3
	g)	What is the difference between tolerance and addiction in the context of drug use?	2 Marks	L1	CO4
	h)	What are common withdrawal symptoms associated with narcotics?	2 Marks	L1	CO4
	i)	How does gas-liquid chromatography (GLC) help in testing narcotics and drugs?	2 Marks	L1	CO5
	j)	What is the microcrystalline test used for identifying cocaine?	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 distillation and its types.	6 Marks	L4	CO1
	b)	Explain the various techniques used in toxicology for detecting and identifying poisons, drugs, and toxins. Discuss the advantages and limitations of each technique.	10 Marks	L6	CO1

(OR)

3.	a)	Explain the types of samples & collection in post-mortem toxicology.	6 Marks	L4	CO1
	b)	Describe Principle, Instrumentation, Working & Applications of Mass spectrometry.	10 Marks	L6	CO1

MODULE-II

4.	a)	Explain corrosive poisons.	6 Marks	L5	CO2
	b)	Illustrate the classification of poisons based on meidcolegal and toxic- analytical classification.	10 Marks	L6	CO2

(OR)

5.	a)	Describe the process of excretion of poisons from the body. How do kidneys and lungs contribute to the elimination of toxins?	6 Marks	L2	CO2
	b)	Discuss any two case studies related to poisoning.	10 Marks	L6	CO2

MODULE-III

6.	a)	How does snake venom affect the human body? Describe the common symptoms of envenomation.	6 Marks	L5	CO3
	b)	Explain the role of immunoassays in forensic toxicology. Discuss their application in the detection of drugs and poisons at crime scenes.	10 Marks	L5	CO3

(OR)

7.	a)	Describe the mechanism of alcohol.	6 Marks	L3	CO3
	b)	Explain the different types of forensic examination of alcohols.	10 Marks	L5	CO3

MODULE-IV

8.	a)	What steps should be taken by forensic experts when handling evidence from a clandestine drug laboratory?	6 Marks	L6	CO4
	b)	What are designer drugs, and how do they differ from other narcotics and psychotropic substances? Discuss the challenges they pose in forensic toxicology and law enforcement.	10 Marks	L2	CO4

(OR)

9.	a)	Explain how forensic investigators conduct a search for drugs in a vehicle. What steps should be taken to preserve the evidence?	6 Marks	L1	CO4
	b)	What are clandestine drug laboratories, and what are the risks and procedures associated with their discovery and dismantling by forensic investigators?	10 Marks	L6	CO4

MODULE-V

10.	a)	What methods are used to analyze narcotics in biological fluids like blood, urine, and saliva?	6 Marks	L5	CO5
	b)	Discuss in detail the different types of microcrystalline tests used to identify narcotic drugs. Provide the reagents, reaction outcomes, and the drugs they identify.	10 Marks	L5	CO5

(OR)

11.	a)	How are drugs tested for in drivers suspected of impairment? Which biological samples are used for testing?	6 Marks	L5	CO5
	b)	Discuss the significance of dope tests in forensic investigations related to drug-impaired driving. How are these tests performed, and what biological samples are commonly used for testing?	10 Marks	L5	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

FORENSIC CHEMISTRY

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is adulterant? Give any four examples of adulterants.	2 Marks	L1	CO1
	b)	What are the types of food adulteration?	2 Marks	L1	CO1
	c)	What is diesel used for, and why is it considered an important petroleum fraction?	2 Marks	L2	CO2
	d)	What is the significance of analyzing petroleum products in forensic investigations?	2 Marks	L1	CO2
	e)	What information can be obtained from smoke staining at a fire scene?	2 Marks	L2	CO3
	f)	How can fire debris analysis help in identifying the cause of a fire?	2 Marks	L1	CO3
	g)	What are high explosives, and how do they differ from low explosives?	2 Marks	L1	CO4
	h)	How do TNT, PETN, and RDX differ in terms of their explosive power and applications?	2 Marks	L2	CO4
	i)	What is the importance of proper bomb scene management in forensic investigations?	2 Marks	L1	CO5
	j)	What are the key considerations when searching a scene of an explosion for evidence?	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 notable incidents of food adulteration mentioned in the document.	6 Marks	L6	CO1
	b)	Explain the health hazards associated with adulterants in milk and milk products, citing specific examples.	10 Marks	L6	CO1

(OR)

3.	a)	Explain the effects of metallic adulteration and packaging hazards on human health.	6 Marks	L1	CO1
	b)	Define food adulteration and describe its types, providing examples of common adulterants and their effects on health.	10 Marks	L2	CO1

MODULE-II

4.	a)	What techniques are used to detect petroleum traces in forensic investigations?	6 Marks	L1	CO2
	b)	Describe the commercial uses of different petroleum fractions obtained through distillation. Include a discussion of the specific uses of fractions such as gasoline, kerosene, diesel, and lubricating oils.	10 Marks	L6	CO2

(OR)

5.	a)	What is the principle behind the distillation of petroleum? Briefly describe the process and its importance in obtaining specific fractions from crude oil.	6 Marks	L2	CO2
	b)	Explain the concept of adulteration in petroleum products. Discuss the legal consequences and economic impacts of adulterated petroleum products, with examples from both the consumer and industrial sectors.	10 Marks	L5	CO2

MODULE-III

6.	a)	How can the patterns and intensity of smoke staining assist forensic investigators in determining the direction of fire spread and identifying potential accelerants?	6 Marks	L1	CO3
	b)	Explain the methods used to analyze ignitable liquid residues found in fire debris. How do forensic scientists use chemical analysis, such as gas chromatography-mass spectrometry (GC-MS), to detect accelerants in fire scenes?	10 Marks	L6	CO3

(OR)

7.	a)	Explain the concept of flashover and post-flashover burning in fire investigations. How do these phenomena affect the interpretation of burn patterns and the determination of fire origin?	6 Marks	L2	CO3
	b)	Explain the role of fire science in arson investigations. Discuss how understanding fire behavior, combustion, and heat transfer helps forensic investigators analyze fire scenes and make determinations about the cause of the fire.	10 Marks	L2	CO3

MODULE-IV

8.	a)	Provide an overview of the common uses of military explosives. How do military explosives differ from industrial explosives in terms of their composition and purpose?	6 Marks	L6	CO4
	b)	Describe the different types of homemade explosives (HMEs) and discuss the risks and hazards associated with them. How are homemade explosives made, and what are the challenges in detecting and preventing their use in illegal activities?	10 Marks	L6	CO4

(OR)

9.	a)	Briefly explain the chemical structure of PETN and its role in explosive formulations.	6 Marks	L1	CO4
	b)	What forensic methods are used to identify and analyze explosive residues at crime scenes? Discuss how trace evidence of explosives, such as residues from TNT or RDX, is collected and analyzed in forensic investigations.	10 Marks	L5	CO4

MODULE-V

10.	a)	What safety measures should investigators take when searching the scene of an explosion? Discuss how they ensure their own safety and the safety of others while collecting evidence.	6 Marks	L1	CO5
	b)	Explain the essential steps in managing a bomb scene. Discuss how forensic experts and law enforcement approach the scene of an explosion, ensuring safety, securing evidence, and conducting the investigation effectively.	10 Marks	L5	CO5

(OR)

11.	a)	What are the different types of injuries caused by an explosion? Briefly explain primary, secondary, and tertiary blast injuries.	6 Marks	L2	CO5
	b)	What are the key considerations when searching the scene of an explosion? Discuss how investigators collect evidence, prioritize safety, and deal with potential secondary devices or hazards while searching the scene.	10 Marks	L6	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

FORENSIC SEROLOGY

[Forensic Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe the procedure for typing dried bloodstains.	2 Marks	L3	CO1
	b)	Why is blood considered a critical piece of forensic evidence?	2 Marks	L4	CO1
	c)	What makes semen evidence crucial in forensic investigations?	2 Marks	L4	CO2
	d)	Compare and contrast the morphology of spermatozoa with other cells.	2 Marks	L4	CO2
	e)	Why is the forensic analysis of bodily fluids important in criminal investigations?	2 Marks	L4	CO3
	f)	Compare the forensic significance of saliva and sweat.	2 Marks	L4	CO3
	g)	Analyze the significance of genetic marker typing in solving crimes.	2 Marks	L4	CO4
	h)	Discuss the importance of antigen-antibody reactions in forensic investigations.	2 Marks	L4	CO4
	i)	Analyze the difference between contact and projected bloodstain patterns.	2 Marks	L4	CO5
	j)	Discuss how blood trails can provide clues about the sequence of events at a crime scene.	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)	Why is the identification of blood origin crucial in forensic investigations?	8 Marks	L4	CO1
	b)	Examine the forensic limitations of dried blood typing methods.	8 Marks	L5	CO1
		(OR)			
3.	a)	Explain the relationship between bloodstain patterns and the mechanism of injury.	8 Marks	L2	CO1
	b)	Compare the techniques for enzymatic analysis of blood in criminal cases.	8 Marks	L4	CO1

MODULE-II

4.	a)	Compare the efficiency of different semen identification techniques.	8 Marks	L4	CO2
	b)	Outline the standard protocol for handling semen evidence.	8 Marks	L3	CO2
		(OR)			

5.	a)	Explain the limitations of current forensic techniques for semen detection.	8 Marks	L5	CO2
	b)	Analyze the importance of semen evidence in linking suspects to crime scenes.	8 Marks	L4	CO2

MODULE-III

6.	a)	Outline the forensic implications of secretor status in bodily fluids.	8 Marks	L3	CO3
	b)	Discuss the role of bodily fluid analysis in poisoning cases.	8 Marks	L4	CO3

(OR)

7.	a)	Compare the confirmatory tests for saliva and urine.	8 Marks	L4	CO3
	b)	Evaluate the forensic potential of microbiota present in bodily fluids.	8 Marks	L5	CO3

MODULE-IV

8.	a)	Evaluate the reliability of genetic marker evidence in court proceedings.	8 Marks	L5	CO4
	b)	Discuss the ethical considerations in the collection of genetic evidence.	8 Marks	L5	CO4

(OR)

9.	a)	Compare the utility of mitochondrial DNA and nuclear DNA in forensics.	8 Marks	L4	CO4
	b)	Outline the process of using STR markers in crime scene investigations.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss how bloodstain pattern analysis can assist in determining the position of a victim and the direction of movement during a crime.	8 Marks	L3	CO5
	b)	Evaluate the effectiveness of bloodstain pattern analysis in cases involving multiple victims or complex crime scenes.	8 Marks	L5	CO5

(OR)

11.	a)	How can the examination of bloodstains help determine the type of weapon used in a crime? Provide examples of patterns associated with different weapons.	8 Marks	L2	CO5
	b)	Discuss the impact of environmental conditions (e.g., temperature, humidity, and airflow) on bloodstain patterns at a crime scene.	8 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

CLOUD COMPUTING

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the primary difference between virtualization and traditional server deployment?	2 Marks	L1	CO1
	b)	Name two virtualization technologies commonly used in the industry.	2 Marks	L1	CO1
	c)	List the cloud enabling technologies	2 Marks	L1	CO2
	d)	Classify the various types of cloud models	2 Marks	L1	CO2
	e)	Define Compliance as a Service (CaaS)?	2 Marks	L1	CO3
	f)	What is a hypervisor?	2 Marks	L1	CO3
	g)	Name two tools used for cloud administration.	2 Marks	L1	CO4
	h)	What is the purpose of Service Management Interface (SMI) in cloud environments?	2 Marks	L1	CO4
	i)	Define the role of storage location in cloud security.	2 Marks	L1	CO5
	j)	Write about auditing in cloud Security.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the steps involved in setting up a virtual machine using VMware.	8 Marks	L2	CO1
	b)	Describe the features and use cases of Microsoft Hyper-V as a virtualization solution.	8 Marks	L2	CO1

(OR)

3.	a)	Discuss the various usecases and scenarios where VMware virtualization technology is most suitable.	8 Marks	L2	CO1
	b)	What are host servers, virtual machines and guest operating systems? Explain in detail.	8 Marks	L1	CO1

MODULE-II

4.	a)	Differentiate between Infrastructure as a Service (IAAS) & Platform (PAAS) with appropriate example.	8 Marks	L2	CO2
	b)	Discuss the key benefits of cloud computing for enterprises and individual users.	8 Marks	L2	CO2

(OR)

5.		Discuss the role of APIs in cloud architecture. How do they enable integration and connectivity between services?	16 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the key features and capabilities of VMware vSphere as a virtualization and cloud management platform.	6 Marks	L2	CO3
	b)	Analyze the role of SaaS in transforming customer relationship management (CRM) systems with examples.	10 Marks	L3	CO3
		(OR)			
7.	a)	Analyze the integration of virtualization and load balancing in supporting high-availability cloud systems.	8 Marks	L3	CO3
	b)	How do virtualization technologies enable multi-tenancy in cloud computing?	8 Marks	L1	CO3

MODULE-IV

8.		Discuss the importance of pricing models in AWS for cost optimization. Provide recommendations for selecting a suitable model for different use cases.	16 Marks	L2	CO4
		(OR)			
9.	a)	Discuss the importance of emerging cloud management standards in ensuring interoperability and consistency in cloud environments.	8 Marks	L3	CO4
	b)	Discuss the economic and operational benefits of adopting cloud management standards like DMTF in enterprises.	8 Marks	L2	CO4

MODULE-V

10.		How does Windows Azure implement identity standards? Discuss its mechanisms and their role in cloud security.	16 Marks	L1	CO5
		(OR)			
11.	a)	Discuss the role of auditing in ensuring compliance with cloud security standards.	8 Marks	L2	CO5
	b)	What is the significance of the security service boundary in a cloud environment? Provide examples of how it interacts with cloud infrastructure.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

COMPUTER ORGANIZATION AND ARCHITECTURE

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is an interconnection structure in a computer system?	2 Marks	L1	CO1
	b)	What is the purpose of the control bus in a bus interconnection?	2 Marks	L1	CO1
	c)	Define an *opcode* and its role in a machine instruction.	2 Marks	L2	CO2
	d)	What are the main phases of an instruction cycle?	2 Marks	L1	CO2
	e)	List out the advantages and disadvantages of using a hardwired control unit.	2 Marks	L1	CO3
	f)	What is the purpose of an I/O module in a computer system?	2 Marks	L1	CO3
	g)	Distinguish between NAND and NOR flash memory.	2 Marks	L2	CO4
	h)	What is the role of cache addresses in cache memory?	2 Marks	L1	CO4
	i)	What is the key difference between NUMA and SMP?	2 Marks	L1	CO5
	j)	Define the term "homogeneous multicore architecture."	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 the design of computer architecture impacts system performance and scalability.	8 Marks	L2	CO1
	b)	How does the IAS computer handle instructions and data storage? Discuss its memory architecture.	8 Marks	L2	CO1

(OR)

3.	a)	What are interconnection structures in a computer system? Explain their role in the communication between CPU, memory, and I/O devices.	8 Marks	L1	CO1
	b)	Compare and contrast the different types of interconnection structures and their advantages and disadvantages.	8 Marks	L4	CO1

MODULE-II

4.	a)	Illustrate the internal structure of an ALU using a block diagram. Explain how control signals are used to select different operations.	8 Marks	L4	CO2
	b)	Describe the significance of the Booth's Algorithm in computer arithmetic. Write the step-by-step procedure for the algorithm and explain it with a flowchart.	8 Marks	L2	CO2

(OR)

5.	a)	Discuss the role of register organization in improving processor performance. How do general-purpose and special-purpose registers contribute to this?	8 Marks	L2	CO2
	b)	Discuss the role of interrupts in the instruction cycle and how they impact the normal flow of execution.	8 Marks	L2	CO2

MODULE-III

6.	a)	What is a micro programmed control unit? Explain its components and working with a suitable diagram	8 Marks	L1	CO3
	b)	Compare and contrast hardwired control and micro programmed control units, highlighting their advantages and disadvantages.	8 Marks	L4	CO3

(OR)

7.	a)	What are I/O channels and I/O processors? Compare their roles and discuss their impact on system performance.Explain the advantages of using I/O channels and processors in handling large-scale I/O operations.	8 Marks	L1	CO3
	b)	Explain the key functions performed by an I/O module, including data transfer, control, and error handling.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the role of chip logic and chip packaging in the organization of semiconductor memory, including the impact of packaging on performance and cost.	8 Marks	L2	CO4
	b)	Describe the importance of memory management in computer systems. How do operating systems manage and allocate memory effectively?	8 Marks	L2	CO4

(OR)

9.	a)	Explain the different mapping functions used in cache memory design, highlighting their advantages and disadvantages.	8 Marks	L2	CO4
	b)	Discuss the relationship between the CPU, cache memory, and main memory in terms of cache addressing and data retrieval.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the advantages and disadvantages of shared memory and distributed memory architectures in multiple processor systems.	8 Marks	L2	CO5
	b)	Compare and contrast symmetric and asymmetric multiprocessing systems in terms of architecture and functionality.	8 Marks	L4	CO5

(OR)

11.	a)	Explain the key features of multicore organization with a focus on shared and private caches, interconnects, and memory hierarchy.	8 Marks	L2	CO5
	b)	Discuss task scheduling techniques in multicore systems. Explain how they improve the utilization of processor cores.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

ENGLISH FOR PROFESSIONAL

[Bioinformatics, Biotechnology, Microbiology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the meaning and usage of the following idiomatic expressions. Beat around the bush	2 Marks	L1	CO4
	b)	Write a meaningful sentence with the following idiomatic expressions. An eye for an eye	2 Marks	L1	CO4
	c)	Find one-word substitutes for this description Too long and slow	2 Marks	L1	CO4
	d)	Find the description for the following one-word substitutes. Hollow	2 Marks	L1	CO4
	e)	Fill the blank with a suitable verb form. Charles Darwin ____ (visit) the Galapagos Islands.	2 Marks	L1	CO2
	f)	Identify and define the tense of the underlined verbs I agree up to this point of the solution.	2 Marks	L1	CO2
	g)	Spot the error in the given sentences and correct them. If you read books all night long, you will not be able to get up early.	2 Marks	L1	CO2
	h)	Fill in the blanks using suitable forms of the words given in brackets. If I___ (be) PM, I would abolish all exams.	2 Marks	L1	CO2
	i)	Fill in the blanks with the correct modal verbs I ____ visit the library.	2 Marks	L1	CO2
	j)	Write a meaningful sentence with the following modal verbs. Must	2 Marks	L1	CO2

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	'Many superheroes themselves are scientists' Explain in detail.	8 Marks	L2	CO1
	b)	Write a review of a mobile of your choice.	8 Marks	L1	CO5

(OR)

3.	a)	Write the meaning of the following idiomatic expressions. i) Pay an arm and leg ii) To fight tooth and nail iii) Young at heart iv) At the drop of a hat v) Bank on vi) To turn a deaf ear vii) To be in hot water viii) To be hand in glove	8 Marks	L1	CO4

	b)	Complete the statements using suitable question tags. i) You are coming for the movie, _____? ii) Let's discuss the annual report, _____? iii) He prepares for classes regularly, _____? iv) My superiors wouldn't accept the idea, _____? v) Don't forget to lock the door, _____? vi) I am good at getting things done, _____? vii) This talk isn't very interesting, _____? viii) We will meet the deadline, _____?	8 Marks	L1	CO2
		MODULE-II			
4.	a)	Fill in the blanks using the correct articles: i) _____first part includes___ imagined condition. ii) ____Netherlands is ___ beautiful country. iii) _____man who invented _____ USB technology didn't make any money out of it. iv) ____ lion let go of ___ mouse.	8 Marks	L1	CO2
	b)	Find one-word substitutes for these descriptions: The practice of taking someone else's work or ideas and passing them off as one's own i) One who does not express himself freely ii) A person who is mentally ill iii) One who collects coins as a hobby iv) A person who writes beautiful writing v) A person who compiles dictionaries vi) The sound of Crows vii) The sound of Elephants	8 Marks	L1	CO4
		(OR)			
5.	a)	Discuss the writer's first encounter with the alien with reference to "the cylinder opens".	8 Marks	L2	CO1
	b)	Write a description of a restaurant of your interest in about 200-250 words.	8 Marks	L1	CO5
		MODULE-III			
6.	a)	**Identify the tense of the underlined verbs** i) She <u>went</u> shopping last week. ii) When Hari reached the bus station, the bus <u>had left</u>. iii) Manoj remembered where he <u>had hidden</u> the money. iv) Raju <u>was crossing</u> the road when Shobha noticed her. v) Parthu <u>had been working</u> with Amazon for nearly two years before he left for the US. vi) They <u>spoke</u> in English vii) We <u>had been attending</u> the program viii) Mani and Ravi <u>were working</u> towards their goal	8 Marks	L3	CO2
	b)	**Fill in the blanks using verbs in the correct tense.** i) When my father came home, we ____ FIFA. (watch) ii) I ___ out with my friends yesterday. (go) iii) While Tim ____ towards the field, he saw his friends (walk) iv) The flight ___ one hour before. (leave) v) The teacher ___ us about dinosaurs since yesterday morning. (teach) vi) ____ to Las Vegas last week. (drive) vii) The actress ___ next to the actor, before he called her. (stand) viii) The thief ____ into the house last night. (break)	8 Marks	L1	CO2
		(OR)			
7.	a)	Explain the Raman effect with spectrum color observations.	8 Marks	L2	CO1

	b)	What are the different types of Barriers to communication? Explain with suitable examples.	8 Marks	L2	CO1

MODULE-IV

8.	a)	Fill in the blanks using suitable forms of the words given in brackets. i) If Amy had cleaned her room, her mother _____ (be) happy ii) She will get an immediate reply if she _____ (write) a mail to the customer relations officer. iii) If students _____ (read) books all night long, they would not be able to get up early. iv) If she throws a party while your parents are gone, she _____ (be) in big trouble. v) If Karthik_____ (be) you, he would listen to the advice and go to a dentist immediately. vi) They should_____ good habits. (cultivation) vii) You _____ a big fool (be) viii)If you had studied well you would _____ with me. (work)	8 Marks	L1	CO2
	b)	Identify the errors in these sentences and correct them. i) If it will be sunny the guest will want some lemonade. ii) If I'm having more money, I would bought a house. iii) If I'm you, I wouldn't do this work. iv) If my brother will be moving to Singapore, I'll visit him there. v) If Raju had magical powers, he will help all. vi) If she will be stuck in traffic, she will inform you. vii) If they had been sleeping on time, they would have woke up early. viii)If they would wish, they can host the event.	8 Marks	L3	CO2

(OR)

9.	a)	"Processed foods and sugary drinks affect our health." Illustrate the effects with suitable examples.	8 Marks	L2	CO1
	b)	Illustrate intonation in statements and orders with examples.	8 Marks	L2	CO3

MODULE-V

10.	a)	You are planning to sell your car online. Write a detailed description.	8 Marks	L1	CO5
	b)	List out any eight Business and job-related jargon.	8 Marks	L1	CO4

(OR)

11.	a)	"Ms Zhou is the world's richest self-made woman". Discuss how she reached that position.	8 Marks	L1	CO1
	b)	Spot and correct the errors in the use of modals in these sentences i) He should not hurry; there is plenty of time. ii) The case is serious; you should consult a good doctor. iii) When I was young, I had worked for twelve hours. iv) He played with me when he was a boy. v) When would you accompany me to Kolkata? vi) He was working hard so that he should get good marks. vii) A doctor should do everything possible to save a patient. viii)My boy, you must not have spoken this.	8 Marks	L1	CO2



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

MULTIVARIABLE CALCULUS

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State Jacobian Transformation and it's properties.	2 Marks	L1	CO1
	b)	Write the conditions for finding minima.	2 Marks	L1	CO1
	c)	Evaluate $\int_0^{\frac{\pi}{4}}\int_0^{a\sin\theta}\frac{rdrd\theta}{\sqrt{a^2-r^2}}$.	2 Marks	L2	CO2
	d)	Define Double Integral.	2 Marks	L2	CO2
	e)	Define Triple Integral.	2 Marks	L1	CO3
	f)	Evaluate $\int_{z=-1}^{1}\int_{x=0}^{1}\int_{y=x-2}^{x+z}(x+y+z)dxdydz.$	2 Marks	L2	CO3
	g)	Find the unit normal vector $\phi = xy^2z^3 - 5$ at $(2,-2,3)$.	2 Marks	L1	CO3
	h)	Define Divergence.	2 Marks	L1	CO3
	i)	State Gauss divergence theorem.	2 Marks	L1	CO4
	j)	State Stoke's Theorem.	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)	Write the properties of Jacobian transformation and illustrate an example.	8 Marks	L3	CO1
	b)	If the sum of three numbers is constant prove that their product is maximum when they are equal.	8 Marks	L3	CO1

(OR)

3.	a)	Define Lagranges multiplier method and find the minimum value of $x^2+y^2+z^2$ given that $xyz = a^3$.	8 Marks	L3	CO1
	b)	Find first and second order partial derivative of $ax^2+2hxy+by^2$ and also verify $\frac{\partial^2 f}{\partial x\partial y} = \frac{\partial^2 f}{\partial y\partial x}$.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define Double integral and Evaluate $\int_0^{\frac{\pi}{2}}\int_{a(1-\cos\theta)}^{a} r^2drd\theta$.	8 Marks	L2	CO2
	b)	Evaluate $\iint r^3drd\theta$ over the area included between the circles $r = 2\sin\theta$ and $r = 4\sin\theta$.	8 Marks	L3	CO2

(OR)

5.	a)	Evaluate $\iint_R \frac{r}{\sqrt{a^2+r^2}} dr d\theta$ Where R is the one loop of leminiscate of Bernoulli $r^2 = a^2 \cos 2\theta$.	8 Marks	L3	CO2
	b)	Change the order of integral and evaluate $\int_0^b \int_0^{\frac{a}{b}\sqrt{b^2-y^2}} xy dx dy$.	8 Marks	L2	CO2

MODULE-III

6.	a)	Evaluate $\int_{\theta=0}^{2\pi} \int_{r=0}^{b} \int_{z=-h}^{h} \left(x^2 + r^2 \sin^2\theta\right) dz dr d\theta$.	8 Marks	L3	CO3
	b)	Evaluate $\iiint (x+y+z) dx dy dz$ over the tetrahedral bounded by the coordinate planes $x+y+z=1$.	8 Marks	L2	CO3

(OR)

7.	a)	Evaluate $\iiint \left(x^2+y^2+z^2\right) dx dy dz$ taken over the volume enclosed by the sphere $x^2+y^2+z^2=1$ transformed into spherical coordinates.	8 Marks	L3	CO3
	b)	Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} \frac{dx dy dz}{\sqrt{1-x^2-y^2-z^2}}$ by changing into spherical polar coordinate.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Find the Directional Derivative of $\phi = x^2yz + 4xz^2$ at $(1,-2,-1)$ in the direction of $2\bar{i} - \bar{j} - 2\bar{k}$.	8 Marks	L2	CO3
	b)	If f and g are two scalar point functions then prove that $div(f\nabla g) = f\nabla^2 g + \nabla f . \nabla g$.	8 Marks	L2	CO3

(OR)

9.	a)	If $a = x+y+z; b = x^2+y^2+z^2; c = xy+yz+zx$ then show that $[\nabla a \nabla b \nabla c] = 0$.	8 Marks	L3	CO3
	b)	Find the angle between the surfaces of the spheres $x^2+y^2+z^2=9; x^2+y^2-z^2=3$ at the point $(2,-1,2)$.	8 Marks	L2	CO3

MODULE-V

10.	a)	State and prove Stoke's Theorem.	8 Marks	L3	CO4
	b)	Evaluate $\oint_C (\sin z dx - \cos x dy + \sin y dz)$ by using Stoke's theorem where C is the boundary of rectangle $0 \le x \le \pi; 0 \le y \le 1; z = 3$.	8 Marks	L2	CO4

(OR)

11.	a)	Evaluate $\int_S F.N ds, F = xy\bar{i} - x^2\bar{j} + (x+z)\bar{k}$ aqnd S is the surface of $2x+2y+z=6$ in the first octant.	8 Marks	L3	CO4
	b)	Evaluate $\int_V \bar{F} dv$ where $\bar{F} = x\bar{i} + y\bar{j} + z\bar{k}$ and V is the region bounded by $x=0; y=0; y=6; z=4; z=x^2$.	8 Marks	L3	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc IV Semester (MBU-22) Regular Examinations, April – 2025

INTEGRAL TRANSFORMS

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define periodic function.	2 Marks	L1	CO1
	b)	Write the Fourier coefficients of $f(x)$ in the interval $c \le x \le c + 2\pi$.	2 Marks	L1	CO1
	c)	Define Fourier cosine Integral Theorem.	2 Marks	L1	CO2
	d)	Write the Complex Fourier Integral.	2 Marks	L1	CO2
	e)	Define Fourier Sine Transform.	2 Marks	L1	CO2
	f)	State convolution theorem for Fourier Transforms.	2 Marks	L1	CO2
	g)	Find the Laplace Transform of $\cosh 3t - \sinh 3t$.	2 Marks	L1	CO3
	h)	Define unit step function.	2 Marks	L1	CO3
	i)	Find the inverse Laplace transform of $\frac{s}{2s^2 + 8}$.	2 Marks	L1	CO4
	j)	Use First shifting theorem, find $L^{-1}\left[\frac{1}{s^2 + 2s + 5}\right]$.	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)	Show that $x^2 = \frac{\pi^2}{3} + 4\sum_{n=1}^{\infty} (-1)^n \frac{\cos nx}{n^2}, -\pi < x < \pi$.	8 Marks	L2	CO1
	b)	Find the half range cosine series $f(x) = x(\pi - x)$ in $0 < x < \pi$	8 Marks	L1	CO1

(OR)

3.		Find the half range cosine series of the function $f(x) = (x-1)^2$ in $0 < x < 1$ and hence show that $\frac{1}{1^2} + \frac{1}{2^2} + \ldots = \frac{\pi^2}{6}$.	16 Marks	L1	CO1

MODULE-II

4.		Applying Fourier integral theorem , Show that $e^{-ax} - e^{-bx} = \frac{2(b^2 - a^2)}{\pi}\int_0^{\infty} \frac{\lambda \sin \lambda x}{(\lambda^2 + a^2)(\lambda^2 + b^2)} d\lambda$.	16 Marks	L2	CO2

(OR)

5.		Find the Fourier complex transform of $f(x) = \begin{cases} k, & \lvert x \rvert \le 1 \\ 0 & \lvert x \rvert > 1 \end{cases}$	16 Marks	L1	CO2

MODULE-III

6.		State and Prove convolution theorem for Fourier transform.	16 Marks	L1	CO2
		(OR)			
7.		Find the Fourier transform of $f(x) = \begin{cases} 1, & if \ \|x\| < 1 \\ 0, & if \ \|x\| > 1 \end{cases}$. Hence evaluate $\int_0^\infty \frac{\sin x}{x} dx$.	16 Marks	L2	CO2

MODULE-IV

8.	a)	Find the Laplace transform of $e^t \frac{\sin 3t}{t}$.	8 Marks	L1	CO3
	b)	Using Laplace transform, Show that $\int_0^\infty te^{-3t} \sin t \, dt = \frac{3}{50}$.	8 Marks	L2	CO3
		(OR)			
9.	a)	Applying Laplace transform, evaluate $\int_0^\infty \frac{e^{-t} - e^{-2t}}{t} dt$.	8 Marks	L2	CO3
	b)	Determine Laplace transform of $t^2 \cos 3t$ by using transformation of derivatives.	8 Marks	L3	CO3

MODULE-V

10.	a)	Find the inverse Laplace transform of $\frac{3s+1}{s^2 - 2s - 3}$.	8 Marks	L1	CO4
	b)	Evaluate $L^{-1}\left[\frac{1}{s^2(s+1)^2}\right]$ by using convolution theorem.	8 Marks	L5	CO4
		(OR)			
11.		Solve the differential equation $\frac{d^2x}{dt^2} + 2\frac{dx}{dt} + 2x = 5\sin t$, given that $x(0) = 0, x'(0) = 0$ using Laplace transforms.	16 Marks	L3	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

AGRICULTURAL MARKETING TRADE AND PRICES

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	_____is a process that analyses, creates, informs and delivers value to the customer	1 Mark	L1	CO1
2.	The processing function adds _____utility to the product by changing the raw material into a finished form	1 Mark	L1	CO1
3.	A _____is a small unit within a large market comprising of like minded individuals.	1 Mark	L1	CO1
4.	Markets which are located near the seashore and are meant mainly for the import and/or export of goods are known as _____markets	1 Mark	L1	CO1
5.	A market in which there are more than two but still a few sellers of a commodity is termed as an _____market.	1 Mark	L1	CO1
6.	_____ is a product pricing strategy by which a firm charges the highest initial price that customers will pay and then lowers it over time	1 Mark	L1	CO2
7.	The stages through which the individual products develop over a period of time is known as _____	1 Mark	L1	CO2
8.	_____ is the sequence of events and actions that coordinate the flow of goods and value adding activities in the marketing system	1 Mark	L1	CO2
9	_____ means the sorting of the unlike lots of the produce into different lots according to the quality specifications laid down	1 Mark	L1	CO2
10	_____ pricing refers to a method in which an organization considers the prices of competitors' products to set the prices of its own products	1 Mark	L1	CO2
11	_____purchase goods from wholesalers and sell them to consumers in small quantities.	1 Mark	L1	CO3
12	_____ middlemen assist in the marketing process but do not buy or sell directly.	1 Mark	L1	CO3
13	_____ integration occurs when firms performing similar marketing functions join hands	1 Mark	L1	CO3
14	_____refers to the profit made by intermediaries between purchase and sale prices	1 Mark	L1	CO3
15	A _____is the route taken by a product from producer to consumer	1 Mark	L1	CO3
16	The _____ revolution brought about significant changes in Indian agriculture by introducing high-yielding varieties and advanced technologies	1 Mark	L1	CO4
17	Farmers often face exploitation due to the presence of _____ in the marketing chain	1 Mark	L1	CO4
18	Agricultural products are _____ in nature, which leads to higher transportation and storage costs.	1 Mark	L1	CO4
19	_____ is trade within the geographical boundaries of a nation and is also known as intra-regional or internal trade.	1 Mark	L1	CO4
20	The Theory of Absolute Cost Advantage was advocated by_____	1 Mark	L1	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Explain the role of middlemen in agricultural marketing	3 Marks	L2	CO1
2	List the components of market structure that influence competition and market conduct	3 Marks	L1	CO1
3	Differentiate between marketable surplus and marketed surplus in agriculture.	3 Marks	L4	CO1
4	Explain the significance of price signals in helping farmers plan production.	3 Marks	L2	CO1
5	Explain the concept of the Product Life Cycle (PLC) and discuss the characteristics for each stage with examples.	3 Marks	L3	CO2
6	Explain the functions of NABARD in providing finance for agricultural marketing.	3 Marks	L2	CO2
7	Describe the functions and significance of facilitatory middlemen in the marketing process.	3 Marks	L2	CO3
8	What is a marketing channel? Provide a simple example.	3 Marks	L1	CO3
9	Define forward and backward integration with examples.	3 Marks	L1	CO3
10	List any four reasons for high marketing costs in agricultural produce.	3 Marks	L1	CO3
11	Identify the major challenges of agricultural marketing in India and analyze their effects on farmers' income	3 Marks	L2	CO4
12	Describe the objectives of cooperative marketing societies and their role in enhancing farmers' bargaining power.	3 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

CROP PRODUCTION TECHNOLOGY –II (RABI CROPS)

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	Seed rate of barley for 1 hectare is _____	1 Mark	L1	CO1
2.	In India, _____ is the second important food crop being next to rice	1 Mark	L1	CO1
3.	Expand CIMMYT _____	1 Mark	L1	CO1
4.	Tossa jute scientific name_____	1 Mark	L2	CO1
5.	jute bundles tied together to form a sort of platform called _____	1 Mark	L1	CO1
6.	Broken fibres of Jute is called _____.which is used in making low grade paper	1 Mark	L1	CO1
7.	Scientific name of chickpea_____	1 Mark	L2	CO2
8.	Lentil has high _____content that reduces cholesterol levels in the blood	1 Mark	L1	CO2
9	The germinated seeds of chick pea can cure _____ disease	1 Mark	L1	CO2
10	Seed rate of lentil is _____ kg/ha.	1 Mark	L1	CO2
11	what is the scientific name of field pea bean_____	1 Mark	L1	CO3
12	To overcome the dormancy, treat the seed with _____solution for 6 hours.	1 Mark	L1	CO3
13	_____ has the largest sugarcane area	1 Mark	L1	CO3
14	Boron deficiency leads to -_____ in ground nut.	1 Mark	L2	CO3
15	In Greek language ‘Arachis’ means _____ and ‘hypogaea’ means _____,referring to formation of pods in the soil.	1 Mark	L1	CO3
16	Operation of tying the leaves together using the bottom dry and green leaves is known as _____	1 Mark	L1	CO4
17	Juice sucrose percent is determined by _____	1 Mark	L2	CO4
18	Expand FAO _____	1 Mark	L1	CO4
19	The scientific name of mint is _____	1 Mark	L1	CO5
20	The origin of lucerne is _____	1 Mark	L1	CO5

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Differentiate about Corchorus capsularis and Corchorus olitorious.	3 Marks	L4	CO1
2	Briefly explain about classification and growth stages of barley.	3 Marks	L2	CO1
3	Enlist the importance of pulses in India.	3 Marks	L1	CO2
4	What are the differences between Desi type and Kabuli type?	3 Marks	L4	CO2
5	What are the strategies for improving the productivity of pulses?	3 Marks	L1	CO2
6	Differentiate characters of virginia & spanish/Valencia.	3 Marks	L4	CO3

7	Write about classification of kinds of rapeseed and mustard grown in India.	3 Marks	L2	CO3
8	Write about process of jaggery making in sugarcane.	3 Marks	L3	CO4
9	Define wrapping, propping and detrasing in sugarcane and write one adantage for the practice.	3 Marks	L1	CO4
10	Differentiate between sugarcane and sugar beet.	3 Marks	L4	CO4
11	Explain about types of hay curing.	3 Marks	L2	CO5
12	Briefly explain toxicities associated with lucerne crop.	3 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

RENEWABLE ENERGY AND GREEN TECHNOLOGY

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	_____ energy sources are finite and take millions of years to form.	1 Mark	L1	CO1
2.	Examples of renewable energy sources include solar energy, _____ and hydropower.	1 Mark	L1	CO1
3.	Secondary energy sources are derived from the processing of _____ energy sources.	1 Mark	L1	CO1
4.	_____ energy sources are finite and take millions of years to form.	1 Mark	L2	CO1
5.	_____ is a exothermic chemical reaction between a fuel (usually a hydrocarbon) and an oxidant accompanied by the production of heat or both heat and light.	1 Mark	L1	CO1
6.	_____ is the decomposition of organic waste to gaseous fuel by bacteria in an oxygen-free environment.	1 Mark	L1	CO1
7.	_____ convert biomass into producer gas through a thermochemical process.	1 Mark	L2	CO2
8.	_____ plant, mainly consists of a digester or pit for fermentation and a floating drum for the collection of gas.	1 Mark	L1	CO2
9	The standard value of solar constant is _____w/m^2	1 Mark	L1	CO2
10	The solar radiation that reaches earth's surface after passing through the atmosphere is known as _____	1 Mark	L1	CO2
11	_____ the rate at which radiant energy is incident per unit area of the surface.	1 Mark	L1	CO3
12	The point directly overhead is called _____	1 Mark	L1	CO3
13	Concentrating cookers utilize _____ to attain higher temperatures.	1 Mark	L1	CO3
14	A _____ is a saltwater pool that stores and collects solar energy	1 Mark	L2	CO3
15	A _____ is an air-tight basin that contains saline or contaminated water	1 Mark	L1	CO4
16	_____ is the technology of solar cells for energy by converting solar energy (sunlight, including ultra violet radiation) directly into electricity.	1 Mark	L1	CO4
17	_____ works on the principle of converting the Kinetic energy (KE) of the wind into mechanical energy.	1 Mark	L2	CO4
18	In windmills, by doubling the diameter of the rotor the power will increase _____ fold	1 Mark	L1	CO4
19	_____ works on the principle of cup anemometer.	1 Mark	L1	CO5
20	_____ have their axis of rotation horizontal to the ground and almost parallel to the wind stream.	1 Mark	L1	CO5

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Explain the different classifications of energy sources.	3 Marks	L2	CO1
2	What are non-conventional energy sources? Describe briefly.	3 Marks	L2	CO1
3	Design an appropriate size of a biogas plant for a family of 8 members owning two bullocks, one buffalo, and 2 calves. The gas is required for cooking food and lighting one lamp of 100 candle power for 2h daily (Assume density of slurry= 1090 kg/m^3)	3 Marks	L4	CO2
4	Explain the process of bio-diesel production with the flowchart.	3 Marks	L3	CO2
5	Explain the concept of solar energy.	3 Marks	L2	CO3
6	Define the following terms: Solar constant, Direct or Beam radiation, Diffuse radiation,Global radiation, Irradiance, Declination, and Zenith angle.	3 Marks	L2	CO3
7	Distinguish between AC and DC solar water pumping systems.	3 Marks	L2	CO4
8	Explain the components and working of the solar flat-plate collector with a neat sketch.	3 Marks	L3	CO4
9	Explain the working principle of a Solar cooker with a neat sketch.	3 Marks	L2	CO4
10	Write the advantages and Disadvantages of wind energy.	3 Marks	L1	CO5
11	List the types of windmills and explain the vertical types of windmills with neat sketches.	3 Marks	L2	CO5
12	Explain the Forces acting on the blades and the thrust on turbines.	3 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

FARMING SYSTEM AND SUSTAINABLE AGRICULTURE

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	_____ is an assembly of objects or things, which are interrelated and interdependent on each other for proper functioning to achieve a common objective	1 Mark	L1	CO1
2.	In India _____ ha land holding may be said large scale farming	1 Mark	L1	CO1
3.	India occupies _____ place in silk production in the world	1 Mark	L1	CO1
4.	Expand ITK _____	1 Mark	L1	CO1
5.	Farming in estates where single cash crop is grown for sale is called as _____	1 Mark	L1	CO1
6.	The plants which will provide nectar and pollen for honey bees are known as _____	1 Mark	L2	CO2
7.	The cocoons or mountages are popularly known as _____	1 Mark	L2	CO2
8.	Expand DFL _____	1 Mark	L3	CO2
9	The chicks must be vaccinated against _____diseases with F1 Serain vaccine within the first 6-7 days of age.	1 Mark	L3	CO2
10	_____ are essentially browsers and eat plants, which any other animals won't touch.	1 Mark	L3	CO2
11	Expand LEISA _____	1 Mark	L2	CO3
12	Farming pattern depends heavily on external and chemical inputs is a characteristic feature of _____	1 Mark	L3	CO3
13	_____is based on reduction-but not necessarily elimination-of chemical fertilizers, insecticides and herbicides.	1 Mark	L2	CO3
14	Nearly _____ percentage of the land resource in India is facing degradation due to water erosion, wind erosion, loss of productivity and chemical and physical degradation	1 Mark	L2	CO3
15	_____ensures that wastes from one form of agriculture become a resource for another form	1 Mark	L1	CO4
16	Write the formula for grain equivalent yield?	1 Mark	L1	CO4
17	Parameters like cost of cultivation /production, gross and net returns and per day returns are comes under _____ analysis of crop production	1 Mark	L3	CO4
18	_____ is a system of farming without harming earth, atmosphere, animals, human beings, insects, and all other living beings, without using any chemicals, with minimum human effort and expenses.	1 Mark	L4	CO5

19	The leaf requirement of growing silkworms is estimated at _____kg during 1st instar to _____ kg during 5th instar for 100 DFLs	1 Mark	L4	CO5
20	Production system which completely avoids or excludes synthetic fertilizers or chemicals is known as _____	1 Mark	L3	CO5

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Write short notes on subsistence and commercial farming	3 Marks	L4	CO1
2	Define farming system and enlist principles of farming system	3 Marks	L3	CO1
3	Define multiple cropping and explain about types of multiple cropping	3 Marks	L3	CO1
4	Define alley cropping and what are the advantages of alley cropping	3 Marks	L2	CO2
5	Give brief notes on sheep and goat farming with two breed names each	3 Marks	L3	CO2
6	Enlist the procedure of silk worm rearing	3 Marks	L2	CO2
7	Explain briefly about management of land resources	3 Marks	L1	CO3
8	Enlist any four characters of HEIA and LEIA.	3 Marks	L1	CO3
9	Write advantages and disadvantages of high external input agriculture	3 Marks	L2	CO4
10	Explain about IFS model under Dryland situation	3 Marks	L3	CO4
11	Explain about Crop – fish –poultry system farming system	3 Marks	L3	CO5
12	Enlist the drawbacks of modern agriculture	3 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

FUNDAMENTAL OF STRESS PHYSIOLOGY

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	An example for water collector type of plant is_____	1 Mark	L1	CO1
2.	An example for CAM plant is_____	1 Mark	L1	CO1
3.	_____ and _____ hormone is synthesized under drought stress situation in plants.	1 Mark	L1	CO1
4.	Drought avoidance mechanisms in plants include early flowering and deep root systems. True or False	1 Mark	L2	CO1
5.	The molecular size of heat shock protein (HSP) 100 is _____ kDa.	1 Mark	L1	CO1
6.	One visible symptom of high temperature stress in plants is the wilting of _____	1 Mark	L1	CO2
7.	High temperature stress can disrupt the process of _____ in plants, affecting their growth and development.	1 Mark	L2	CO2
8.	The enzyme _____ is responsible for scavenging hydrogen peroxide and converting it into water.	1 Mark	L1	CO2
9	Reduced _____ synthesis under flood stress limits the plant's ability to produce energy for growth.	1 Mark	L1	CO2
10	The formation of _____ in plant roots helps alleviate hypoxia-induced damage by improving oxygen transport.	1 Mark	L1	CO2
11	Aerenchyma formation helps reduce _____ damage in submerged tissues by facilitating oxygen transport.	1 Mark	L1	CO3
12	_____ is a toxic compound that accumulates in waterlogged soils, worsening stress effects.	1 Mark	L1	CO3
13	Presence of sufficient Ca^+ in soil, preference goes to K^+ uptake by restricting _____uptake.	1 Mark	L1	CO3
14	Salt tolerant plants deposit the salt on the surface of leaves through some special types of cells called as_____	1 Mark	L2	CO3
15	High concentration of _____ in soil leads to sodicity	1 Mark	L1	CO3
16	Plants that can grow in saline soils are called _____.	1 Mark	L1	CO4
17	_____ are plants that cannot grow in saline soils.	1 Mark	L2	CO4
18	An example of Heavy metal stress in agriculture field is _____	1 Mark	L1	CO4
19	Heavy metal stress often results in the disruption of _____ balance within plant tissues.	1 Mark	L1	CO4
20	Arsenic is used in pesticides and is highly toxic to humans and animals.	1 Mark	L1	CO5

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	What are the physiological response of plants to drought stress?	3 Marks	L1	CO1
2	Explain Drought resistance mechanisms with respect to physiological traits.	3 Marks	L4	CO1
3	Discuss the concept of osmotic adjustment, osmoprotectants and stress proteins with examples.	3 Marks	L4	CO2
4	Explain the heat tolerance mechanism of crop plants.	3 Marks	L4	CO2
5	What are the methods to mitigate the high moisture stress condition in plants?	3 Marks	L2	CO3
6	What are the different Functions of ROS in Plants?	3 Marks	L3	CO3
7	Discuss the physiological Constraints Imposed by Salinity.	3 Marks	L4	CO4
8	Explain Physiological Mechanisms Conferring Salinity Tolerance in Plants.	3 Marks	L4	CO4
9	Briefly write adaptive response of plants to salt stress.	3 Marks	L4	CO4
10	Write the classification of plants based on salinity.	3 Marks	L2	CO4
11	Write a short note on Arsenic (AS), Lead (Pb) and Mercury (Hg) on crop plants.	3 Marks	L1	CO5
12	Briefly explain the types of environmental pollution.	3 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

PESTS OF CROPS, STORED GRAIN 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.	In rice, yellow or silvery streaks on the leaves of young seedlings is due _____ (scientific name)	1 Mark	L2	CO1
2.	Scientific name of pink stem borer is _____	1 Mark	L2	CO1
3.	In sugarcane, _____ and _____ are the damage symptoms of early shoot borer	1 Mark	L1	CO1
4.	In cotton, pink boll worm damage results in _____ flowers	1 Mark	L2	CO1
5.	Match and tick the correct option	1 Mark	L3	CO1

a) Adult yellowish white with two black spots on each forewings ( ) 1. Rice yellow stem borer
b) Adult straw coloured with black specks along caudal margin of forewings ( ) 2. Sorghum stem borer
c) Adult straw coloured with marginal black streaks on each forewings ( ) 3. Pink stem borer
d) Adult creamy white in colour ( ) 4. Sugarcane top shoot borer
e)

a. 1, 2, 3, 4
b. 1, 2, 4, 3
c. 4, 3, 2, 1
a. 3, 2, 1, 4

6.	_____ and _____ are the scientific names of red gram pod fly and soybean stem fly, respectively	1 Mark	L2	CO2
7.	Sesamum leaf webber feeds on _____ while gall midge feeds on_____	1 Mark	L1	CO2
8.	*Liriomyza trifoli* was introduced to India through _____ cuttings	1 Mark	L2	CO2
9	Match and tick the correct option	1 Mark	L3	CO2

a) Little leaf of brinjal ( ) 1. *Aceria cajani*
b) Tomato leaf curl ( ) 2. *Cestius phycitis*
c) Bhendi yellow vein clearing ( ) 3. *Bemesia tabaci*
d) Bud necrosis ( ) 4. *Bemesia tabaci*

a. 2, 1, 4, 3
b. 1, 2, 4, 3
c. 4, 3, 2, 1
d. 3, 2, 1, 4

10	_____ and _____ are the scientific names of sesamum gall fly and chilli blossom midge, respectively	1 Mark	L2	CO2
11	Grapevine thrips causes _____symptoms in berries	1 Mark	L1	CO3
12	In sapota, _____ larvae constructs a tunnel of webs and frass and feed on green matter of the tender leaves (scientific name).	1 Mark	L3	CO3

13	_____ are the management aspects of mango leaf hoppers a) Pruning of dense orchards b) Avoid excess use of nitrogenous fertilizers c) Smoking of orchards d) All the above	1 Mark	L1	CO3
14	In coconut, _____ are the damage symptoms of red palm weevil Presence of circular holes on the stem Brownish black viscous fluid oozing out from holes Both A and B None of the above	1 Mark	L2	CO3
15	Onion thrips, *Thrips tabaci* lacerate the leaf tissue and suck sap from leaves causes _____ , later turn into along the leaves	1 Mark	L2	CO3
16	Tobacco stem borer, *Scrobipalpa heliopa* larvae mines into the leaf axil and then to stem causing bored stem to become _____ and forming a _____	1 Mark	L1	CO4
17	In chrysanthemum, _____ pest sucks sap, causing yellowing and drying of tender shoots, devitilization and stunted growth of plant (scientific name)	1 Mark	L1	CO4
18	Cigarette beetle (*Lasioderma serricorne*) also attacks ginger, turmeric and chilli (True/False)	1 Mark	L2	CO4
19	In rice _____ nematodes causes leaf tips (2-5 cm) turning yellow, brown and finally turn white, dry up and hang down	1 Mark	L2	CO4
20	Match and tick the correct option a) Khapra beetle ( ) 1. *Trogoderma granarium* b) Saw toothed beetle ( ) 2. *Oryzaephilus surinamensis* c) Long headed flour ( ) 3. *Latheticus oryzae* d) beetle e) Red flour beetle ( ) 4. *Tribolium castaneum* a. 1, 2, 3, 4 b. 1, 2, 4, 3 c. 4, 3, 2, 1 a. 3, 2, 1, 4	1 Mark	L1	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Write in brief nature and symptoms of damage and management aspects of sorghum shoot fly?	3 Marks	L2	CO1
2	Write in brief about the nature and symptoms of damage and management aspects of cotton pink boll worm?	3 Marks	L3	CO1
3	Write down the identification characters of a) Earias vitella vs. Earias insulana? b) Nephotettix virescens vs. Nephotettix nigropictus?	3 Marks	L3	CO1
4	Write the nature and symptoms of damage and management aspects of ground red headed hairy caterpillar?	3 Marks	L2	CO1
5	Write the nature and symptoms of damage and management aspects of tomato South American leaf miner/tomato pin worm?	3 Marks	L2	CO2
6	Write down the identification characters of a) Scirtothrips dorsalis vs. Thrips parvispinus? b) Noorda blitealis vs. Spoladea recurvalis?	3 Marks	L3	CO2
7	Write down the identification characters, damage symptoms and management aspects of mango stem borer?	3 Marks	L2	CO3

8	Write down the nature of damage and damage symptoms and management practices of coconut rhinocerous beetle?	3 Marks	L2	CO3
9	Write down the damage symptoms of a) Banana rhizome weevil vs. Banana pseudostem weevil? b) Apple woolly aphid vs. sugarcane woolly aphid?	3 Marks	L3	CO3
10	Write down the identification characters for citrus fruit sucking moth complex?	3 Marks	L2	CO3
11	List out any two lepidopteran stored grain pest along with damage symptoms and management practices?	3 Marks	L2	CO4
12	Write down the damage symptoms and management aspects of citrus nematode and banana burrowing nematode?	3 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

CROP IMPROVEMENT-II (RABI CROPS)

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	The Centre of origin of coffee is_____	1 Mark	L1	CO1
2.	Name the wheat variety which led to Indian green revolution_____	1 Mark	L1	CO1
3.	The genetic material that leads to partial fertility on crossing with GPI is referred to as	1 Mark	L2	CO1
4.	The homologous series of variation was proposed by_____	1 Mark	L1	CO1
5.	CIMMYT situated in_____	1 Mark	L2	CO1
6.	_____ is a major trait in barley crop.	1 Mark	L2	CO2
7.	βNoxalyamine alanine BOAA to be reduced in _____ crop.	1 Mark	L1	CO2
8.	Write a popular Indian wheat variety,	1 Mark	L3	CO2
9	What is the chromosome number of annual barley	1 Mark	L3	CO2
10	*Ascochyta* blight is a major devastating disease in_____ crop	1 Mark	L1	CO2
11	_____is the major disease in field pea.	1 Mark	L2	CO3
12	Give an example for the source of CMS lines in Brassica species	1 Mark	L3	CO3
13	_____is defined as the reduction or loss in vigour or fertility due to the crossing closely related individuals.	1 Mark	L2	CO3
14	State the scientific name of rapeseed	1 Mark	L2	CO3
15	State the centre of origin of the fodder crop Berseem.	1 Mark	L1	CO3
16	Which is the perennial variety in Napier grass?	1 Mark	L3	CO4
17	_____ is the commercial variety of mango was developed from open pollinated seedling selection.	1 Mark	L3	CO4
18	Multi-cut varieties of fodder sorghum is_____	1 Mark	L1	CO4
19	The gradual loss of variability in cultivated species and their wild forms and relatives is called as _____	1 Mark	L4	CO4
20	National Bureau of Plant Genetic Resources is located at _____	1 Mark	L1	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Compare the floral structures of wheat and barley.	3 Marks	L2	CO1
2	Mention the key differences in floral biology between tomato and brinjal.	3 Marks	L3	CO1
3	Describe the process of pollination and fertilization in wheat.	3 Marks	L3	CO1
4	Describe the steps involved in hybridization techniques used in oat breeding	3 Marks	L2	CO2
5	Define the nutritional components of cowpea and their breeding efforts	3 Marks	L3	CO2
6	Explain the breeding objectives for chickpea improvement and their impact on crop yield.	3 Marks	L4	CO2

7	Discuss the importance of broadening the genetic base in field pea breeding.	3 Marks	L2	CO3
8	How is a conceptual model developed for ideotype breeding, and what factors are considered in its design?	3 Marks	L1	CO3
9	Compare and contrast the methods of traditional breeding and modern biotechnological approaches (e.g., genetic modification and gene editing) for disease resistance.	3 Marks	L2	CO3
10	Explain the pollination and hybridization techniques in solanaceous rabi crops.	3 Marks	L3	CO3
11	Discuss Breeding achievements in sunflower and safflower.	3 Marks	L3	CO4
12	Explain about maintenance breeding.	3 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

AGRI- INFORMATICS

(FUNDAMENTALS OF COMPUTER APPLICATIONS IN AGRICULTURE)

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	Name any three parts of computer_____, _____ and _____.	1 Mark	L1	CO1
2.	_____ are used to listen to sounds on a computer.	1 Mark	L1	CO1
3.	_____is a presentation program developed by Microsoft.	1 Mark	L1	CO1
4.	What is known as temporary memory _____.	1 Mark	L1	CO1
5.	_____ is the smallest unit of memory.	1 Mark	L1	CO1
6.	_____is a global Community of Practice, where people worldwide exchange information, ideas, and resources.	1 Mark	L1	CO2
7.	Compiler converts _____language	1 Mark	L1	CO2
8.	_____ models are used to forecast localized weather conditions such as single-cell thunderstorms and tornadoes.	1 Mark	L1	CO2
9	_____are primarily used to help meteorologist provide accurate analog forecasts	1 Mark	L1	CO2
10	The programming language C was developed by _____ at Bell Labs	1 Mark	L1	CO2
11	Crop yield gaps quantify the potential for _____ increases.	1 Mark	L1	CO3
12	_____is imagery and data collected from space- or airborne camera and sensor platforms.	1 Mark	L1	CO3
13	The use of _____ technology in agriculture eliminates the need for coaxial cables.	1 Mark	L1	CO3
14	_____is imagery and data collected from space- or airborne camera and sensor platforms.	1 Mark	L1	CO3
15	The Kisan Call Centre agents are known as _____.	1 Mark	L1	CO3
16	_____ stands for Group on Earth Observations Global Agricultural Monitoring.	1 Mark	L1	CO4
17	The Crop Doctor uses an _____ rule-based system.	1 Mark	L1	CO4
18	The Early Warning Crop Monitor is focused on _____ risks.	1 Mark	L1	CO4
19	SIS helps in making critical decisions about _____ and _____ management.	1 Mark	L1	CO4
20	The Crop Monitor provides global _____ condition assessments.	1 Mark	L1	CO4

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	What are computer viruses? Explain their types, effects, and methods to prevent them	3 Marks	L2	CO1
2	Explain the different types of operating systems with examples.	3 Marks	L2	CO1
3	Explain the differences between RAM and ROM in terms of functionality and storage.	3 Marks	L4	CO1

4	Explain the characteristics of computers, highlighting speed, accuracy, diligence, and versatility.	3 Marks	L2	CO1
5	Explain the evolution and features of Visual Basic, including its applications in different fields.	3 Marks	L2	CO2
6	Describe the role of ICT in e-Agriculture and its advantages for agricultural development.	3 Marks	L3	CO2
7	Explain the role of smartphone apps and ICT-based solutions in improving agricultural productivity.	3 Marks	L2	CO3
8	Describe the applications and importance of crop simulation models in agriculture.	3 Marks	L2	CO3
9	Write about the applications of Soil Information System (SIS) in improving crop quality.	3 Marks	L3	CO3
10	Explain the process of diagnosing pests, diseases, and nutrient disorders using the Crop Doctor system.	3 Marks	L2	CO4
11	Explain the components and applications of Decision Support Systems (DSS) in agriculture.	3 Marks	L2	CO4
12	Explain the significance of crop calendars in promoting sustainable farming practices.	3 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT-I

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	The insect vector which is involved in the transmission of rice tungro virus disease is _____	1 Mark	L1	CO1
2.	Externally seed borne disease in maize crop is_____	1 Mark	L1	CO1
3.	The disease is externally seed borne and systemic in sorghum crop is _____	1 Mark	L1	CO1
4.	The disease is associated with a physiological disorder known as akiochi in rice is_____	1 Mark	L1	CO1
5.	Early leaf spot in groundnut is caused by_____	1 Mark	L4	CO2
6.	The mode of dispersal or spread of leaf spot pathogen in groundnut is _____	1 Mark	L3	CO2
7.	The seed and seedling rot in soybean is caused by _____	1 Mark	L2	CO2
8.	_____ and _____ are the seed borne diseases in case of soybean crop	1 Mark	L1	CO2
9	Infected plants have water-soaked lesions on their leaves, brown to black, slightly sunken lesions and galls on their stems and petioles in pigeonpea is due to _____	1 Mark	L1	CO3
10	Yellow mosaic in blackgram is caused by _____	1 Mark	L1	CO3
11	Mosaic in tobacco is caused by _____	1 Mark	L1	CO3
12	Disease appears as minute black spot on the stem, the pith region is found to be dried up in disc-like plates showing black discolouration in tobacco is due to _____	1 Mark	L1	CO3
13	_____ pathogen is involved in the wilt disease in guava	1 Mark	L2	CO4
14	Insect vector which is involved in the transmission of bunchy top virus is _____	1 Mark	L1	CO4
15	Severe curling, crinkling and distortion of leaves accompanied by vein clearing and reduction of leaf lamina in papaya is due to _____	1 Mark	L1	CO4
16	Mode of transmission of black rot causing pathogen in cabbage is _____	1 Mark	L1	CO4
17	The name of the disease which is transmitted through seeds in brinjal is _____	1 Mark	L2	CO5
18	Insect vector which is involved in the transmission of Bhendi yellow vein mosaic virus is _____	1 Mark	L1	CO5
19	_____ beetle play a role in the spread and aggravation of bud rot disease in coconut	1 Mark	L1	CO5
20	Rust disease of coffee is caused by _____	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Write about symptoms and disease cycle of bacterial blight of rice?	3 Marks	L2	CO1
2	Describe in detail about symptomology of anthracnose disease of sorghum?	3 Marks	L1	CO1
3	Write about etiology and disease cycle of groundnut leafspot disease?	3 Marks	L1	CO2
4	Write about etiology and disease cycle of groundnut leafspot disease?	3 Marks	L1	CO2
5	Explain in detail about symptomology and etiology of wilt in pigeonpea?	3 Marks	L3	CO3
6	Explain in detail about symptomology and management of mosaic disease in blackgram?	3 Marks	L2	CO3
7	Write about symptomology and management of mosaic disease in tobacco?	3 Marks	L4	CO4
8	Write about symptomology and management of guava wilt?	3 Marks	L2	CO4
9	Write about symptomology and management of bunchy top disease in banana?	3 Marks	L2	CO5
10	Write about symptomology of bacterial blight in pomegranate?	3 Marks	L1	CO5
11	Write about symptomology and disease cycle of damping off disease in tomato?	3 Marks	L1	CO5
12	Write about symptomology and management of soft rot or rhizome rot in ginger?	3 Marks	L1	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) IV Semester (SOA-22) Regular Examinations, May – 2025

MANURES, FERTILIZERS AND SOIL FERTILITY 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.	Father of field plot technique is _____	1 Mark	L1	CO1
2.	Conversion of organic form of nutrient to inorganic form is called as _____	1 Mark	L1	CO1
3.	The nutrient which Imparts disease resistance in plants is _____	1 Mark	L1	CO1
4.	The essentiality of iron was given by _____	1 Mark	L1	CO1
5.	The rhizobium species nodulated by soyabean is _____	1 Mark	L1	CO1
6.	The percent of boron in borax is _____	1 Mark	L1	CO2
7.	An example of slow release nitrogen fertilizer is _____	1 Mark	L1	CO2
8.	The oldest synthetic fertilizer is _____	1 Mark	L1	CO2
9	The potassic fertilizer not recommended for tobacco crop is _____	1 Mark	L1	CO2
10	The minimum guaranteed quantity of plant nutrients in a multinutrient fertilizer is called as _____	1 Mark	L1	CO2
11	The starter used in coimbatore process is _____	1 Mark	L1	CO3
12	The gas produced during anaerobic decomposition is _____	1 Mark	L1	CO3
13	The tree considered as village dispensary is _____	1 Mark	L1	CO3
14	The concentrated manure contains highest nitrogen is _____	1 Mark	L1	CO3
15	The clear supernatant liquid obtained after activated sludge process is _____	1 Mark	L1	CO3
16	The nutrient available to biological organisms is termed as _____	1 Mark	L1	CO4
17	The Law of restitution was given by _____	1 Mark	L1	CO4
18	The soil rating for available sulphur is _____	1 Mark	L1	CO4
19	The full form of STCR is _____	1 Mark	L1	CO4
20	The spraying of fertilizer solutions containing one or more nutrients on the foliage of growing plants is called _____	1 Mark	L1	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	List out the deficiency symptoms of zinc and explain any one in detail.	3 Marks	L1	CO1
2	Write a short note on Ammonium fixation in soils.	3 Marks	L2	CO1
3	Describe the methods to reduce p fixation.	3 Marks	L2	CO1
4	Write a short note on amendments.	3 Marks	L2	CO2
5	Explain why there is increase in need for micronutrient fertilization in soils.	3 Marks	L2	CO2
6	Write about the advantages of mixed fertilizers over straight fertilizers.	3 Marks	L4	CO2
7	Differentiate between Manures and Fertilizers.	3 Marks	L4	CO3
8	Write a note on vermicomposting .	3 Marks	L2	CO3

9	Describe in detail the constituents of FYM.	3 Marks	L2	CO3
10	Explain the factors affecting NUE.	3 Marks	L2	CO4
11	Explain sunflower pot culture method for boron evaluation.	3 Marks	L2	CO4
12	Write a note on chemical methods for estimating different nutrients.	3 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

FARM MANAGEMENT, PRODUCTION AND RESOURCE 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.	_____ is form of farm business organization in which persons unite voluntarily, pool their land, resources and cultivate the lands jointly.	1 Mark	L1	CO1
2.	Ownership and type of operation is collective in case of cooperative_____farming.	1 Mark	L1	CO1
3.	How to produce' decision is taken under _____	1 Mark	L1	CO2
4.	_____ represents all the possible combinations of two products that can be produced with given amount of inputs	1 Mark	L1	CO2
5.	When MPP=0, TPP is _____	1 Mark	L1	CO2
6.	MP=AP then E_p _____	1 Mark	L1	CO2
7.	Additional output from each successive unit of variable input	1 Mark	L1	CO2
8.	Shape of AFC curve_____	1 Mark	L1	CO3
9	Business income = Gross income minus _____	1 Mark	L1	CO3
10	TR=TC is an condition for _____	1 Mark	L2	CO3
11	Cost A2 = Cost A1 + _____	1 Mark	L2	CO3
12	Shape of variable cost is _____	1 Mark	L2	CO3
13	_____ budgeting considers all the crops, livestock, methods of production and aspects of marketing in consolidated form and estimates costs and returns for the farm as a whole	1 Mark	L2	CO4
14	_____ refers to the art of keeping books of farm business accounts in a regular and systemic manner.	1 Mark	L2	CO4
15	Name Ratio measure in Physical efficiency measures is_____	1 Mark	L1	CO4
16	Total asset/Total liability= _____	1 Mark	L2	CO4
17	Kyoto protocol is related to _____	1 Mark	L1	CO5
18	Montreal protocol is related to _____	1 Mark	L1	CO5
19	Premium rate for kharif crops under present crop insurance schemes _____	1 Mark	L1	CO5
20	Premium for kharif crops in WBCIS is _____	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Explain systems of farming.	3 Marks	L2	CO1
2	Explain Types of cooperative farming & their features.	3 Marks	L4	CO1
3	Explain relationship of farm management with other sciences.	3 Marks	L2	CO1
4	Explain the laws of returns?	3 Marks	L1	CO2
5	Distinguish between Factor-Product, Factor-Factor and Product – Product relationship.	3 Marks	L2	CO2

6	Distinguish between real cost and Nominal cost.	3 Marks	L2	CO2
7	Explain the farm efficiency Measure.	3 Marks	L4	CO3
8	Explain cash flow statement.	3 Marks	L2	CO4
9	List out the steps in farm planning and characteristics of a good farm plan.	3 Marks	L2	CO4
10	Write the concepts used in linear programming.	3 Marks	L2	CO4
11	Explain Management of natural resources or solutions.	3 Marks	L2	CO5
12	Explain management of common property resources for water resources, forestry and land.	3 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

PROTECTED CULTIVATION AND SECONDARY AGRICULTURE

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	The growing of off-season cucumbers under a transparent stone for Emperor _____ in the 1st century is the earliest reported protected agriculture.	1 Mark	L1	CO1
2.	Greenhouses of today can be considered as _____ or _____ factories.	1 Mark	L1	CO1
3.	The greenhouse covering material is transparent to _____ wave radiation and opaque to _____wave radiation.	1 Mark	L1	CO1
4.	In Japan, the year-round use of greenhouses is becoming _____	1 Mark	L2	CO1
5.	The _____type greenhouse connects two or more A-frame greenhouses along the length of the eave.	1 Mark	L1	CO2
6.	_____greenhouses are the least expensive and are typically used for small-scale production.	1 Mark	L1	CO2
7.	A _____greenhouse is often used for areas requiring greater light intensity and durability.	1 Mark	L1	CO2
8.	The rate of photosynthesis is governed by available fertilizer elements, water, carbon dioxide, light, and _____	1 Mark	L1	CO2
9	The commonly used woods for greenhouse construction are _____and _____	1 Mark	L1	CO3
10	Polyethylene film can last for up to _____when UV-inhibitor is added.	1 Mark	L1	CO3
11	The structural members of a pipe-framed greenhouse include _____	1 Mark	L1	CO3
12	The service building is centrally located in a nearly _____design of the firm.	1 Mark	L1	CO3
13	The heat is always lost from the greenhouse when the surroundings are _____	1 Mark	L1	CO4
14	The third type of heating system is the _____in which **gas** is burned within pipes suspended overhead in the greenhouse.	1 Mark	L1	CO4
15	Regardless of the type, protected agricultural systems are extremely _____	1 Mark	L1	CO4
16	_____is a measure of the sharpness of the solid material.	1 Mark	L1	CO4
17	If the moisture content of a food material does not vary with time for a given combination of _____and _____it has reached EMC.	1 Mark	L2	CO5
18	EMC also determines the _____amount of moisture dehydrated food can absorb during storage.	1 Mark	L1	CO5
19	In thin layer drying, the grain bed thickness is up to _____cm**.**	1 Mark	L1	CO5
20	_____batch dryers **consist of two** concentric circular cylinders**.**	1 Mark	L1	CO5

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Why is greenhouse cultivation considered a system of controlled environment agriculture?	3 Marks	L1	CO1
2	Explain how the greenhouse effect contributes to global warming.	3 Marks	L2	CO1
3	What are the major considerations while selecting a greenhouse type based on construction?	3 Marks	L1	CO2
4	How does a ridge and furrow-type greenhouse improve efficiency in crop production?	3 Marks	L1	CO2
5	Discuss the role of different types of greenhouses in modern agriculture.	3 Marks	L2	CO2
6	Discuss the advantages and disadvantages of glass greenhouses.	3 Marks	L2	CO3
7	How does polyethylene film compare to glass in greenhouse construction?	3 Marks	L2	CO3
8	Explain the criteria for selecting land for greenhouse construction.	3 Marks	L2	CO3
9	Explain the effect of shape and size on the handling and processing of grains.	3 Marks	L2	CO4
10	What is frictional force? Explain static and kinetic friction with their impact on agricultural material handling.	3 Marks	L2	CO4
11	Discuss the differences between tray dryers and fluidized bed dryers in terms of operation and efficiency.	3 Marks	L2	CO5
12	Explain the design and operation of a continuous flow (mixing and non-mixing) dryer. How does it impact the drying time and quality of the grain?	3 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

RAINFED AGRICULTURE AND WATERSHED 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.	Total net cultivated area in India is_____.	1 Mark	L1	CO1
2.	Dry land farming have growing period of _____.	1 Mark	L1	CO1
3.	The main source of water in rainfed farming is _____.	1 Mark	L1	CO1
4.	Presence of hard layers (pans) in soil and deep cracks affect the crop production especially in _____soils.	1 Mark	L2	CO1
5.	The ability of crop to grow satisfactorily under water stress is called as _____.	1 Mark	L1	CO2
6.	In arid regions _____ pre-dominates soil formation.	1 Mark	L1	CO2
7.	_____ is the rainless period for short time.	1 Mark	L2	CO2
8.	_____ refers to a condition where crops are unable to absorb water from soil even when water is available.	1 Mark	L1	CO2
9	A village pond in Rajasthan used for storing rainwater is known as a _____.	1 Mark	L1	CO3
10	A method of treating soil with chemicals to make it water repellant is called _____.	1 Mark	L1	CO3
11	Two methods used to induce runoff are _____ and _____.	1 Mark	L1	CO3
12	_____ is the area where collected water in water harvesting structure is used.	1 Mark	L1	CO3
13	_____soils have few limitations and are suitable for intensive cultivation.	1 Mark	L1	CO4
14	The integration of fruit trees with pasture is called _____ system.	1 Mark	L2	CO4
15	Land capability classes from _____ are suitable for alternate land use systems.	1 Mark	L1	CO4
16	Expand WDPSCA	1 Mark	L1	CO4
17	Expand IAEDP	1 Mark	L3	CO4
18	Expand CGIAR	1 Mark	L4	CO1
19	Expand AICRPAM	1 Mark	L4	CO1
20	Expand PET	1 Mark	L3	CO1

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Explain about the climatic constraints of crop production in dryland agriculture.	3 Marks	L4	CO1
2	Differentiate dryland and rainfed farming.	3 Marks	L3	CO1
3	Give the present mandate of CRIDA.	3 Marks	L3	CO1

4	Give the classification of drought based on relevance to the users.	3 Marks	L2	CO2
5	Write about the avoiding stress under the drought conditions.	3 Marks	L3	CO2
6	Explain about the mid season corrections.	3 Marks	L2	CO2
7	Give notes on farm ponds.	3 Marks	L1	CO3
8	Explain about the water harvesting methods in arid regions.	3 Marks	L1	CO3
9	Enlist the six types of contingent crop plans and explain about the contingent crop plan for prolonged dry spells.	3 Marks	L2	CO3
10	Enlist the principles of watershed management.	3 Marks	L3	CO4
11	Explain about the alternate land use system.	3 Marks	L3	CO4
12	Enlist the factors affecting watershed management and write about the characters of watershed.	3 Marks	L1	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

PRINCIPLES OF ORGANIC FARMING

[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.	_____ holds the largest share of organic land, followed by Latin America and Oceania.	1 Mark	L1	CO1
2.	Father of organic agriculture is_____.	1 Mark	L1	CO1
3.	One principle of organic farming is to work with natural _____ rather than against them.	1 Mark	L1	CO1
4.	_____ is the technique to grow numerous varieties of crops within the same space, consistent with the various seasons, during a successive manner.	1 Mark	L2	CO1
5.	Examples of green manuring in-situ is _____.	1 Mark	L1	CO1
6.	_____ helps organic farmers with low-interest loans and financial assistance for expansion and adoption of organic farming practices.	1 Mark	L1	CO2
7.	The Ministry of Agriculture and Farmers Welfare has set up _____ to provide farmers with resources and guidance on organic farming techniques and market linkages.	1 Mark	L2	CO2
8.	_____ is the panel to address the issues regarding crop productivity and input use under organic farming.	1 Mark	L1	CO2
9	_____ a global organization promoting organic farming and sustainable food systems.	1 Mark	L1	CO2
10	_____ promotes sustainable livelihoods through organic farming.	1 Mark	L1	CO2
11	In heating phase, the temperature in the compost heap rises to _____°C, and remains for 2-3 weeks.	1 Mark	L1	CO3
12	In organic farming, the selection of crops is often based on their _____ to local soil conditions, climate, and growing seasons.	1 Mark	L1	CO3
13	_____ refers to the variety and variability of life forms in an ecosystem, including species diversity, genetic diversity, and ecosystem diversity.	1 Mark	L1	CO3
14	_____ is a fine powder derived from ground animal bones, providing a rich source of phosphorus and calcium for plants.	1 Mark	L2	CO3
15	_____ in crops such as tomato help reduce the incidence of _____	1 Mark	L1	CO4
16	The use of _____ dusts or sprays can be effective in controlling _____	1 Mark	L1	CO4
17	Removal of weeds either manually or by using tools like khurpi or sickle, when weeds grown upto some extent is called _____	1 Mark	L2	CO4
18	APEDA was established in _____ to promote the export of agricultural and processed food products from India.	1 Mark	L1	CO4

19	An organic operation must submit an _____ system plan (OSP) outlining farming practices to meet organic standards.	1 Mark	L1	CO5
20	The _____ Certification program is one of the certifications offered by APEDA to ensure organic products meet international standards.	1 Mark	L1	CO5

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	How organic farming is benefitted over chemical farming?	3 Marks	L2	CO1
2	What is the scope of organic farming in India?	3 Marks	L1	CO1
3	What is organic agriculture? Briefly explain about the principles of organic agriculture?	3 Marks	L4	CO1
4	What is regenerative agriculture? Mention some of the government schemes to promote organic agriculture.	3 Marks	L1	CO2
5	Expand APEDA and NPOP. Write a short note on its functions.	3 Marks	L2	CO2
6	Discuss about the criteria for crop selection in organic farming.	3 Marks	L4	CO3
7	Define vermicomposting. Write the procedure for vermicompost preparation.	3 Marks	L2	CO3
8	Define bio fertilizers. What are different methods of biofertilizer application?	3 Marks	L4	CO4
9	Explain the detail preparation of panchagavya.	3 Marks	L3	CO4
10	Define integrated weed management. What are the principles and advantages of integrated weed management?	3 Marks	L4	CO4
11	Draw the flow chart for the process of organic certification.	3 Marks	L4	CO5
12	Expand APEDA. What are the key responsibilities and functions of APEDA?	3 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

FUNDAMENTALS OF ANIMAL PRODUCT TECHNOLOGY

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 x 1 = 20 Marks**

1.	_____ is the Principal sugar present in the milk imparts sweet taste and flavor to the milk	1 Mark	L1	CO1
2.	_____ is the important factor present in Human milk which converts lactose to lactogen.	1 Mark	L1	CO1
3.	What is the Causative organism for Bitty Cream_____	1 Mark	L1	CO1
4.	_____is the Iron-binding protein inhibits bacterial growth.	1 Mark	L2	CO1
5.	The term pasteurization was coined by scientist _____	1 Mark	L1	CO2
6.	The process of heating milk continuously to a temperature of 115 ° C for 15 min. or 145 ° C for 3 sec is called as _____	1 Mark	L1	CO2
7.	The process of subdividing fat globules to avoid cream separation, making milk more palatable and visually appealing is called as _____	1 Mark	L2	CO2
8.	The process of Removal of unwanted flavors under reduced pressure is called as _____	1 Mark	L1	CO2
9	_____ test is used for detection of antibiotics and sulphonamides in milk.	1 Mark	L1	CO3
10	_____ refered as milk produced from cows raised under specific organic farming practices	1 Mark	L1	CO3
11	_____ is the standard for a symbol of quality assurance	1 Mark	L1	CO3
12	_____is a critical aspect of dairy processing to ensure the production of safe, high-quality milk and milk products	1 Mark	L1	CO3
13	_____ is a condition, which develops when young poultry is frozen and thawed.	1 Mark	L1	CO4
14	The Process of preservation of meat by thermal sterilization of a product held in thermetically sealed containers is called as _____.	1 Mark	L2	CO4
15	The Various additives employed for lowering the water activity of foods are known as_____	1 Mark	L1	CO4
16	The ability of muscle to retain water affects meat juiciness and yield is called as _____	1 Mark	L1	CO4
17	The meat preservation process in which involves using a mixture of salt, nitrites, and nitrates to preserve meat and enhance flavor is called _____	1 Mark	L2	CO5
18	The process in which meat is exposed to smoke from burning wood, which dries the meat and imparts a unique flavor is called_____	1 Mark	L1	CO5

19	The process in GM animals producing proteins like insulin or clotting factors in their milk, which can be used in medical treatments is called _____	1 Mark	L1	CO5
20	The phenomenon of Suppressing undesirable traits by deactivating specific gene is called as _____	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	What is meant by Lipolysis and write about Causative organisms?	3 Marks	L1	CO1
2	What is meant by Curdling of Milk and mention about the microorganisms involved in the process?	3 Marks	L2	CO1
3	Write in detail about Composition in the form of flow chart and explain in detail about Nutritive value of Milk.	3 Marks	L1	CO1
4	What is meant by Homogenization of Milk?	3 Marks	L1	CO2
5	Write about Monitoring and Control Measures.	3 Marks	L1	CO2
6	What is meant by Bactofugation of Milk?	3 Marks	L2	CO2
7	Explain the Characteristics of Organic Milk.	3 Marks	L1	CO3
8	What are the different types of Organic Milk Products?	3 Marks	L2	CO3
9	Explain in detail about structure of Muscle.	3 Marks	L1	CO4
10	Explain Nutritive Value of Meat.	3 Marks	L2	CO4
11	Write in detail about Composition of Muscle.	3 Marks	L2	CO4
12	Explain about the future Prospects of Organic Meat.	3 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT

[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 communication process starts with the_____	1 Mark	L1	CO1
2.	The ultimate objective of any communication is_____	1 Mark	L1	CO1
3.	_____ noise exists when words themselves are not mutually understood	1 Mark	L1	CO1
4.	Degree to which pairs of individuals who interact are different in certain attributes is_____	1 Mark	L1	CO1
5.	The movements of part of body especially a hand or the heard to express an idea refers_____	1 Mark	L1	CO1
6.	A word used instead of a Noun is_____	1 Mark	L2	CO2
7.	Process of receiving interpreting and reacting to a message from the speaker is_____	1 Mark	L2	CO2
8.	The practice of recording information captured from a transient source, such as an oral discussion at meeting refers to_____	1 Mark	L3	CO2
9	In ABC principles of written communication 'C' refers to_____	1 Mark	L3	CO2
10	The documents and guides to action for specific purposes and groups of people is_____	1 Mark	L3	CO2
11	_____are written dialogues between two or more parties	1 Mark	L2	CO3
12	Organizing an effective presentation involves_____ steps.	1 Mark	L3	CO3
13	The most important qualities of technical writing are _____	1 Mark	L2	CO3
14	The most important qualities of technical writing are_____	1 Mark	L2	CO3
15	_____is the frequency of our voice.	1 Mark	L1	CO3
16	_____enables the researches to record events as they occur which they annotate with developing interpretation.	1 Mark	L1	CO4
17	An alphabetical list that is printed at the back of a book and tells you on which page important topics are referred as_____	1 Mark	L3	CO4
18	A detailed list of items that have been consulted and citied in the text of an article, research paper or book is_____	1 Mark	L4	CO4
19	Institution for communication of farming information_____	1 Mark	L4	CO4
20	_____speaking is something done without advance thought or without a plan.	1 Mark	L3	CO4

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	What is communication and write its functions.	3 Marks	L4	CO1
2	What are the points to be considered in making effective public speaking.	3 Marks	L3	CO1

3	What are the types group discussion methods.	3 Marks	L3	CO1
4	Give any four reasons for failure of students in competitive exams and suggestions to them.	3 Marks	L2	CO2
5	What are the types of abstracts.	3 Marks	L3	CO2
6	Write the elements of communication and its characters.	3 Marks	L2	CO2
7	Explain about types of non-verbal communication.	3 Marks	L1	CO3
8	What is feedback and write its characters .	3 Marks	L1	CO3
9	What are the models of communication.	3 Marks	L2	CO3
10	Give a brief on intensive reading.	3 Marks	L3	CO3
11	Write the Strategies for giving oral presentation.	3 Marks	L3	CO4
12	What are the barriers of communication.	3 Marks	L1	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

PRINCIPLES OF FOOD SCIENCE AND NUTRITION

[B.Sc. Agriculture]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

I **20 X 1 = 20 Marks**

1	_____ is a mixture of solid and liquid phases that forms a network to trap liquids, as in jams or jellies	1 Mark	L1	CO1
2	The _____ method is used to measure the volume of irregular solids by water displacement	1 Mark	L1	CO1
3	The most abundant substance in the human body is_____	1 Mark	L1	CO1
4	Which vitamin is synthesized by intestinal bacteria?	1 Mark	L1	CO1
5	The process of _____ involves adding a phosphate group to fructose	1 Mark	L1	CO2
6	The deficiency of iodine results in the condition known as_____	1 Mark	L1	CO2
7	A food that contains all essential amino acids is called _____	1 Mark	L1	CO2
8	Which chemical is commonly used in the preservation of pickles? _____	1 Mark	L1	CO2
9	Fats that are solid at room temperature are primarily_____	1 Mark	L1	CO3
10	The _____ test is used to detect the presence of reducing sugars	1 Mark	L1	CO3
11	Which food component has the highest water-holding capacity_____	1 Mark	L1	CO3
12	_____ is the process of heat treatment to kill harmful microorganisms in milk	1 Mark	L1	CO3
13	The_____ method measures the moisture in the air relative to saturation	1 Mark	L1	CO4
14	Vitamin D deficiency in children leads to the disease…….	1 Mark	L1	CO4
15	Which pathogen is associated with improperly cooked poultry_____	1 Mark	L1	CO4
16	Calcium and _____ are essential for strong bones and teeth	1 Mark	L1	CO4
17	The element _____ is necessary for the normal functioning of the thyroid gland	1 Mark	L1	CO5
18	_____ is a non-nutritive sweetener derived from plants	1 Mark	L1	CO5
19	The condition caused by excessive water intake is_____ The process of _____ involves adding a phosphate group to fructose	1 Mark	L1	CO5
20	Vacuum packaging helps in food preservation by_____	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 X 3 = 30 Marks**

1	Explain the concept of glycemic index and its relevance to dietary planning.	3 Marks	L2	CO1
2	How do colloidal systems contribute to the texture and mouth feel of food products?	3 Marks	L3	CO1

3	What are emulsions, and how are they stabilized in food products?	3 Marks	L3	CO1
4	How does lactose differ from other disaccharides in its composition and nutritional significance?	3 Marks	L3	CO1
5	What are the six general kinds of nutrients found in foods and what role do they play in the human body?	3 Marks	L3	CO2
6	How do proteins contribute to energy metabolism in the human body?	3 Marks	L3	CO2
7	How do volatile liquids differ from non-volatile liquids in the context of evaporation?	3 Marks	L3	CO2
8	Differentiate between the glycemic index (GI) and glycemic load (GL) of foods.	3 Marks	L3	CO2
9	Differentiate between anaerobic and aerobic respiration in energy metabolism.	3 Marks	L3	CO3
10	Differentiate between direct heat processing and low-temperature processing as food preservation methods.	3 Marks	L3	CO3
11	Compare the functions of major minerals and trace minerals in the human body.	3 Marks	L3	CO5
12	Analyze the role of food additives in enhancing food safety and quality.	3 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

POST-HARVEST MANAGEMENT AND VALUE ADDITION OF FRUITS AND VEGETABLES

[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.	_____ technology deals with handling, storage, and processing of agricultural produce after harvest.	1 Mark	L1	CO1
2.	Proper _____ can significantly extend the shelf life of fruits and vegetables.	1 Mark	L2	CO1
3.	_____ is the process of sorting agricultural produce based on size, shape, color, and quality.	1 Mark	L1	CO1
4.	_____ is a packaging technique that helps in extending the shelf life of perishable fruits and vegetables by modifying the gas composition.	1 Mark	L1	CO1
5.	The primary ripening hormone in climacteric fruits is _____.	1 Mark	L2	CO2
6.	Expand- CFTRI_____.	1 Mark	L2	CO2
7.	_____ is the process where starch is converted into simple sugars during ripening.	1 Mark	L1	CO2
8.	_____ fruits continue to ripen after harvest, whereas _____ fruits do not.	1 Mark	L2	CO2
9	_____ is the process of increasing the economic value of raw fruit and vegetable products.	1 Mark	L2	CO3
10	_____ is a low-cost storage system that works on evaporative cooling principles.	1 Mark	L1	CO3
11	_____ and _____ are two common gases controlled in CA storage.	1 Mark	L2	CO3
12	_____is defined as the removal of field heat from freshly harvested produce in order to slow down metabolism and reduce deterioration prior to transport or storage.	1 Mark	L3	CO3
13	The process of immersing fruit in sugar syrup for preservation is called _____.	1 Mark	L2	CO4
14	_____ is the process of removing moisture to inhibit microbial activity.	1 Mark	L2	CO4
15	The primary goal of food preservation is to prevent _____.	1 Mark	L1	CO4
16	The main ingredient responsible for gel formation in jam and jelly is _____.	1 Mark	L2	CO4
17	Wine is a non-fermented beverage. (True/False).	1 Mark	L2	CO5
18	Packaging prevents contamination and extends shelf life. (True/False).	1 Mark	L1	CO5
19	Dehydration reduces _____ activity to prevent spoilage.	1 Mark	L2	CO5
20	The right packaging reduces _____during transport.	1 Mark	L1	CO5

PART - B

Answer any Ten Question
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Describe importance and scope of post-harvest technology.	3 Marks	L3	CO1
2	Write possible causes of post-harvest losses.	3 Marks	L3	CO1
3	What role do packaging techniques play in minimizing post-harvest losses?	3 Marks	L2	CO1
4	Define ripening and write changes occur during.	3 Marks	L2	CO2
5	Define ripening and Explain pre-harvest factors affecting postharvest quality of fruits and vegetables.	3 Marks	L3	CO2
6	Enlist different storage methods and What are the advantages of ZECC storage for small-scale farmers? How does it work?	3 Marks	L4	CO3
7	Describe about Harvesting and field handling procedures of fruits and vegetables.	3 Marks	L4	CO3
8	Explain the principles of food preservation and their importance in food safety.	3 Marks	L4	CO4
9	Write different methods followed in preservation.	3 Marks	L2	CO4
10	Define Jam. Give flow chart of jam preparation and list out problems while preparing jam.	3 Marks	L2	CO4
11	Explain about step by step canning process.	3 Marks	L3	CO5
12	Write different types of drying and dehydration techniques.	3 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. (Hons) VI Semester (SOA-22) Regular Examinations, May – 2025

DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT-II

[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 primary source of inoculum for black stem rust of wheat is comes from _____	1 Mark	L1	CO1
2.	Teleutospores are smooth, oblong, thick walled and brown with a rounded and a prominent thickened apex in _____(Scientific name)	1 Mark	L1	CO1
3.	The bunt affected plants emits a foul smell which is mainly due to the presence of _____	1 Mark	L1	CO1
4.	Discolouration of the young leaves and reddening of the internal tissues, especially the vascular bundles, which are usually elongated at right angles to the long axis of the stalk in sugarcane _____	1 Mark	L1	CO1
5.	Rainy weather, cool winter climate and late sown crops are the favourable conditions for the _____ pathogen in sunflower.	1 Mark	L4	CO2
6.	Arrangement of sporangiospores in white rust of mustard is _____	1 Mark	L3	CO2
7.	Name the chemical used for the management of downy mildew of mustard _____	1 Mark	L2	CO2
8.	Drooping of petioles, rachis and leaflets, discoloration of vascular bundles, in chickpea is due to _____ (Scientific Name).	1 Mark	L1	CO2
9	When the defense mechanism is controlled by a single gene pair, it is called _____ resistance.	1 Mark	L1	CO3
10	The phenomenon in which plant tissues infected with mild strain of a virus are protected from infection by other severe strains of the same virus is known as _____	1 Mark	L1	CO3
11	Removal of diseased plants or their affected organs from field, which prevent the dissemination of plant pathogens is known as _____	1 Mark	L1	CO3
12	Reducing, inactivating, eliminating or destroying inoculum at the source, either from a region or from an individual plant in which it is already established is known as _____	1 Mark	L1	CO3
13	Sunken spots appear on mango fruits near the stem end as small brown areas that enlarge rapidly and become black in_____ disease.	1 Mark	L2	CO4
14	Presence of high-water table and prolonged direct contact of trunk with water in citrus favors the infection by _____pathogen.	1 Mark	L1	CO4
15	_____is known as perfect stage of Elsinoeampelina.	1 Mark	L1	CO4
16	Mummification and shedding of berries in grapevine is caused by _____ (Scientific Name)	1 Mark	L1	CO4

17	Bacterial wilt of cucurbits is caused by_____(Scientific Name).	1 Mark	L2	CO5
18	Wilt disease in chilli is caused by _____(Scientific Name).	1 Mark	L1	CO5
19	Small, circular, yellowish to pinkish sunken spots appear on fruits of chilli is due to _____(Scientific Name).	1 Mark	L1	CO5
20	Marssoninarosae is the anamorph of _____ (Scientific Name)	1 Mark	L1	CO5

PART - B

Answer any Ten Questions
All Questions Carry Equal Marks

II **10 x 3 = 30 Marks**

1	Difference between karnal bunt and smut of wheat.	3 Marks	L2	CO1
2	Explain in detail about symptomology and management of ratoon stunting of sugarcane.	3 Marks	L1	CO1
3	Difference between anthracnose and blackarm of cotton.	3 Marks	L1	CO2
4	Write a short note on grey mould disease of gram.	3 Marks	L1	CO2
5	Define exclusion. Write a short note on exclusion of pathogen.	3 Marks	L3	CO3
6	Write about the classification of fungicides based on mode of application.	3 Marks	L2	CO3
7	Write about symptomology and management of citrus gummosis.	3 Marks	L4	CO4
8	Write a short note on symptomology and management of crown gall of apple.	3 Marks	L2	CO4
9	Write a short note on symptomology of mango powdery mildew.	3 Marks	L2	CO4
10	Write a short note on symptomology and management of purple blotch of onion.	3 Marks	L1	CO5
11	Write a short note on symptomology of rose powdery mildew.	3 Marks	L1	CO5
12	Explain in detail about symptomology and management of bacterial wilt of cucurbits.	3 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 – 2025

DISCRETE MATHEMATICAL STRUCTURES

[Computer Science and Engineering, Computer Science and Engineering (Cyber Security), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out the Min terms for three logical variables p_1, p_2 and p_3.	2 Marks	L1	CO1
	b)	What are PDNF and PCNF?	2 Marks	L2	CO1
	c)	Let $B = P(A)$ be the power set of $A = \{1,2,3\}$. The relation R defined on B is inclusion relation $\subseteq$. Draw the Hasse diagram of R.	2 Marks	L1	CO2
	d)	Let $A = \{0,1,2,3,4\}$ and $B = \{0,1,2,3\}$. The relation $R: A \to B$ and it is defined as aRb iff $\text{GCD}(a,b) = 1$. List all the elements in the relation R.	2 Marks	L2	CO2
	e)	Define group.	2 Marks	L1	CO3
	f)	Determine whether the system $(\square, +)$ and $(\square, +)$ are groups. In case not, point out which of the group postulate fail to hold.	2 Marks	L1	CO3
	g)	Write down the closed form expression of the generating function for the sequence $< 3^0, 3^1, 3^2, 3^3 ..... >$.	2 Marks	L2	CO4
	h)	Write down the closed form expression of the generating function for the sequence $(-1)^n$.	2 Marks	L2	CO4
	i)	Define graph and complete graph.	2 Marks	L1	CO5
	j)	Draw all simple graphs of one, two, three and four vertices.	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	State and prove the De Morgan's laws using truth table.	8 Marks	L1	CO1
	b)	Show that $(p \wedge q) \to (p \vee q)$ is a tautology using i) Truth table ii) logical equivalent identities.	8 Marks	L2	CO1

(OR)

3.	a)	Show that $\sim(p \vee (\sim p \wedge q)) \equiv (\sim p) \wedge (\sim q)$ using logical equivalent formulas.	8 Marks	L3	CO1
	b)	Obtain the PCNF for $(\sim p_1 \to p_3) \wedge (p_2 \leftrightarrow p_1)$ by using i) Truth table ii) logical equivalent formulas.	8 Marks	L1	CO1

MODULE-II

4.	a)	Let $B = P(A)$ be the power set of $A = \{a_1, a_2, a_3, a_4\}$. The relation R defined on B is inclusion relation $\subseteq$. Draw the Hasse diagram of R.	8 Marks	L1	CO2
	b)	Let A be a set of natural numbers and R be a relation on $A \times A$ defined by $(a,b)R(c,d)$ whenever $ad = bc$. Prove that R is an equivalence relation.	8 Marks	L3	CO2

(OR)

5.	a)	Let $A = \{1,2,3,4\}, B = \{a,b,c\}$ and $c = \{w,x,y,z\}$ with $f: A \to B$ $g: B \to C$ given by $f = \{(1,a),(2,a),(3,b),(4,c)\}$ and $g = \{(a,x),(b,y),(c,z)\}$ find gof.	8 Marks	L3	CO2
	b)	Let A = {1,2,3,4} and R be a relation on A defined by xRy iff **x | y** write down i) R is a relation of set of ordered pairs ii) Draw di-graph of R	8 Marks	L3	CO2
		MODULE-III			
6.	a)	Define Generalized Pigeonhole Principle. How many cards (N) must be selected from a standard deck of 52 cards to guarantee that at least three cards of the same suit are chosen?	8 Marks	L2	CO3
	b)	Show that $1^2 + 2^2 + 3^2 + ...+ n^2 = \frac{n(n+1)(2n+1)}{6}$ by principle of mathematical induction.	8 Marks	L3	CO3
		(OR)			
7.	a)	Show that the set $\{0,1,2,3\}$ is not a group under multiplication modulo 4.	8 Marks	L3	CO3
	b)	Define homomorphism and isomorphism of groups. Show that the mapping $\phi(x) = x^2$ from $\mathbb{R}^*$ the nonzero real numbers under multiplication, to itself is a homomorphism.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Solve i) $a_r + 6a_{r-1} + 12a_{r-2} + 8a_{r-3} = 0$ ii) $4t_r - 20t_{r-1} + 17t_{r-2} - 4t_{r-3} = 0$	8 Marks	L1	CO4
	b)	Find the recurrence relation of i) $a_n = A3^n + B(-4)^n$ and ii) $a_n = (2/5)4^n + (3/5)(-1)^n$.	8 Marks	L3	CO4
		(OR)			
9.	a)	Solve the recurrence relation using generating function $a_n - 6a_{n-1} - 1 = 0$ for $n \geq 1$ where $a_0 = 1$.	8 Marks	L3	CO4
	b)	Solve $a_n - 5a_{n-1} + 6a_{n-2} = 0$, where $a_0 = 2$ and $a_1 = 5$.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Define the following with examples: i) Directed graph ii) Undirected graph iii) Simple graph iv) Planar graph	8 Marks	L1	CO5
	b)	Explain Breadth First Search and Depth First Search algorithms to find a spanning tree.	8 Marks	L3	CO5
		(OR)			
11.	a)	Show that in every graph the number of vertices of odd degree is even.	8 Marks	L3	CO5
	b)	Prove that isomorphism is an equivalence relation on diagraphs.	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 – 2025

DATA STRUCTURES AND ALGORITHMS

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the time complexity of a linear search algorithm.	2 Marks	L1	CO1
	b)	What is the difference between Bubble Sort and Selection Sort.	2 Marks	L1	CO1
	c)	How is memory allocated in a Linked List?	2 Marks	L1	CO2
	d)	What is a Circular Linked List?	2 Marks	L1	CO2
	e)	Describe Linear Search using numeric example.	2 Marks	L1	CO3
	f)	What is Stack and its operations.	2 Marks	L1	CO3
	g)	Define a Binary Tree.	2 Marks	L1	CO4
	h)	Draw a diagram to show linked representation of a binary tree.	2 Marks	L1	CO4
	i)	What are the operations on graph?	2 Marks	L1	CO5
	j)	Define Hash Function?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is space complexity? Explain how to analyze the space complexity of an algorithm.	8 Marks	L2	CO1
	b)	Explain Bubble sorting Algorithm and also find its time complexity.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the Linear Search algorithm. Discuss its time complexity in the best, worst, and average cases.	8 Marks	L3	CO1
	b)	Explain the Binary Search algorithm. What are the conditions for Binary Search to work effectively?	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe how to reverse a Singly Linked List. Provide a step-by-step explanation and analyze the time and space complexity of the algorithm.	8 Marks	L2	CO2
	b)	What is a Doubly Linked List? Discuss the advantages and disadvantages of using a Doubly Linked List over a Singly Linked List	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain how a Circular Linked List works. What are its advantages over a regular Linked List?	8 Marks	L2	CO2
	b)	Discuss how operations like insertion, deletion, and traversal are handled in a Circular Linked List.	8 Marks	L4	CO2

MODULE-III

6.	a)	Describe how a stack can be implemented using both an array and a linked list with an example.	8 Marks	L2	CO3
	b)	Write a program to evaluate a postfix expression using a stack. Explain the algorithm and its time complexity.	8 Marks	L3	CO3

(OR)

7.	a)	What is Stack? Write algorithms or programs for Stack operations using arrays.	8 Marks	L3	CO3
	b)	What is Queue? Write algorithms or programs for Queue operations using arrays.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Construct the Splay tree using the following elements: 45,15,40,6,10,100,28,82,53,25,4	8 Marks	L2	CO4
	b)	Explain about the insertion, deletion and searching operations on AVL trees.	8 Marks	L2	CO4

(OR)

9.	a)	Explain how a postfix expression is converted into an expression tree with an example.	8 Marks	L4	CO4
	b)	What is Red-Black Tree? Explain insertion and deletion operations on it using examples.	8 Marks	L2	CO4

MODULE-V

10.	a)	Write algorithms for searching a binary search tree. Explain using suitable example	8 Marks	L2	CO5
	b)	What is minimum cost spanning tree? Discuss Prim's algorithm with example.	8 Marks	L4	CO5

(OR)

11.	a)	Discuss about the Prim's algorithm with example.	8 Marks	L2	CO5
	b)	Explain about the Kruskal's algorithm with example	8 Marks	L3	CO5

B

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List two significant features of Java that make it platform-independent.	2 Marks	L1	CO1
	b)	Explain the difference between JDK, JRE, and JVM.	2 Marks	L2	CO1
	c)	Define inheritance and explain how it helps in code reusability.	2 Marks	L1	CO2
	d)	Briefly explain what method overriding is and how it works.	2 Marks	L2	CO2
	e)	Define exception handling.	2 Marks	L1	CO3
	f)	What is the purpose of the try block?	2 Marks	L3	CO3
	g)	What is the Collection Framework? Briefly explain its key components	2 Marks	L2	CO4
	h)	Name two classes that implement the **List** interface.	2 Marks	L2	CO4
	i)	What is an applet in Java?	2 Marks	L1	CO5
	j)	Name two methods of the **Applet** class.	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 evolution of Java and its features.	8 Marks	L2	CO1
	b)	Construct a program to calculate the sum of digits of a given number and explain the logic behind it.	8 Marks	L2	CO1

(OR)

3.	a)	Explain the significance of Byte code and the role of JVM in Java program execution.	8 Marks	L3	CO1
	b)	Construct a program to generate the Fibonacci series up to a given number and explain the algorithm used.	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss the different types of inheritance (single, multilevel, hierarchical, multiple, hybrid) and how inheritance promotes code reusability.	8 Marks	L2	CO2
	b)	Construct a program to demonstrate single inheritance and constructor chaining between a super class Person and a subclass Employee. Ensure that the subclass constructor calls the super class constructor.	8 Marks	L2	CO2

(OR)

5.	a)	Explain how public, protected, and private members of a super class are inherited by sub classes, and the access rules for each.	8 Marks	L3	CO2
	b)	Develop a program that overrides a method area() in a super class Shape in its subclasses Circle and Rectangle. Show dynamic method dispatch by calling the area() method on super class references.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the concepts of exception handling in detail. Discuss the flow of control using try, catch, throw, throws, and finally with suitable examples.	8 Marks	L2	CO3
	b)	Explain built-in exceptions in Java. Write a program demonstrating Null Pointer Exception and Number Format Exception.	8 Marks	L2	CO3

(OR)

7.	a)	Explain the concept of nested try statements with an example. Highlight their use cases.	8 Marks	L3	CO3
	b)	Write a program to create multiple threads using the Runnable interface.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the Collection Framework in Java. What are its key components and advantages?	8 Marks	L2	CO4
	b)	Demonstrate Array List with examples of adding, removing, and accessing elements.	8 Marks	L2	CO4

(OR)

9.	a)	Compare the List, Set, and Map interfaces.	8 Marks	L2	CO4
	b)	Demonstrate the usage of the Vector class in Java. Write a program to perform the following operations: i) Add elements to the vector. ii) Retrieve elements from the vector. Remove elements from the vector.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the lifecycle of an applet with a brief description of each method.	8 Marks	L3	CO5
	b)	Construct an applet program to draw a rectangle and a circle on the applet window. purpose and focuses on creating a graphical applet using Java's AWT library.	8 Marks	L2	CO5

(OR)

11.	a)	Describe the structure of a basic applet skeleton and its components.	8 Marks	L3	CO5
	b)	Create an applet to handle keyboard events and display the pressed key.	8 Marks	L3	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering, Computer Science and Engineering (Cyber Security), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe the role of the String Tokenizer class.	2 Marks	L2	CO1
	b)	Differentiate method overloading and method overriding.	2 Marks	L2	CO1
	c)	Define an abstract class and its purpose.	2 Marks	L1	CO2
	d)	Write the syntax and purpose of defining an interface.	2 Marks	L1	CO2
	e)	Explain the use of the catch block.	2 Marks	L2	CO3
	f)	Name two built-in exceptions in Java.	2 Marks	L1	CO3
	g)	Name two methods provided by the Iterator interface.	2 Marks	L1	CO4
	h)	What is the difference between Comparator and Comparable?	2 Marks	L1	CO4
	i)	What is the purpose of a JRadioButton?	2 Marks	L1	CO5
	j)	Name two classes used for handling mouse events in Java.	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)	Analyze the scope and lifetime of variables in Java with suitable examples.	8 Marks	L2	CO1
	b)	Construct a program to sort an array in ascending order using a sorting algorithm, and explain how it works.	8 Marks	L3	CO1

(OR)

3.	a)	Discuss the concept of arrays in Java, including declaration, initialization, and usage.	8 Marks	L2	CO1
	b)	Construct a program to check whether a given number is even or odd, and discuss how the modulus operator is used.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain what method overriding is, how it works, and why it is used in Java. Provide examples to demonstrate method overriding.	8 Marks	L2	CO2
	b)	Develop a program that demonstrates method overloading with different parameter types and return types in a class Calculator. Include methods for adding integers, doubles, and concatenating strings with numbers.	8 Marks	L3	CO2

(OR)

5.	a)	Define abstract classes, their purpose, and how they are used in Java. Discuss the differences between abstract classes and concrete classes.	8 Marks	L2	CO2
	b)	Develop a program with an abstract class Vehicle that has two abstract methods start() and stop(). Implement these methods in two subclasses Car and Bike and instantiate them to call the methods.	8 Marks	L3	CO2
		MODULE-III			
6.	a)	Describe the thread life cycle in Java. Explain the various states of a thread with the help of a diagram.	8 Marks	L2	CO3
	b)	Write a program to create multiple threads using the Runnable interface.	8 Marks	L3	CO3
		(OR)			
7.	a)	What is synchronization in Java? Why is it important? Explain how to implement synchronization in Java with examples.	8 Marks	L2	CO3
	b)	Write a program demonstrating inter-thread communication using wait(), notify(), and notify All().	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Explain the Collection Framework in Java. What are its key components and advantages?	8Marks	L2	CO4
	b)	Demonstrate Array List with examples of adding, removing, and accessing elements.	8 Marks	L3	CO4
		(OR)			
9.	a)	Differentiate between Comparator and Comparable.	8 Marks	L2	CO4
	b)	Write a program to demonstrate the use of the Tree Map class.	8 Marks	L3	CO4
		MODULE-V			
10.	a)	Explain the Delegation Event Model in Java. How does it simplify event handling?	8 Marks	L2	CO5
	b)	Write an applet program that demonstrates the usage of Action Event with a button.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the differences between JList and JComboBox. Discuss their typical use cases in GUI design.	8 Marks	L2	CO5
	b)	Create an applet program that changes the background color based on user actions.	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 – 2025

ENGINEERING CHEMISTRY

[Civil Engineering, Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Recall the units of hardness.	2 Marks	L1	CO1
	b)	Define reverse osmosis.	2 Marks	L1	CO1
	c)	Write the structure of polycarbonate.	2 Marks	L1	CO2
	d)	Recall the applications of Teflon.	2 Marks	L1	CO2
	e)	What is a primary battery? Give an example.	2 Marks	L1	CO3
	f)	Write the applications of H_2-O_2 fuel cell.	2 Marks	L1	CO3
	g)	List the various types of electronic transitions in UV spectroscopy.	2 Marks	L1	CO4
	h)	Distinguish between SEM and TEM.	2 Marks	L1	CO4
	i)	Define calorific value. Write its significance.	2 Marks	L1	CO5
	j)	What is cloud and pour point?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

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

(OR)

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

MODULE-II

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

(OR)

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

MODULE-III

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

(OR)

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

MODULE-IV

8.		Illustrate the instrumentation and working of UV-spectroscopy with a block diagram. Write its applications.	16 Marks	L2	CO4
		(OR)			
9.		Describe the instrumentation and working of the IR spectrophotometer with a block diagram. Write its applications.	16 Marks	L2	CO4
		MODULE-V			
10.	a)	Describe the manufacture of gasoline by the Fischer-Tropsch process with a neat diagram.	10 Marks	L2	CO5
	b)	Calculate the gross and net calorific values of a coal sample containing 84% carbon, 1.5% sulphur, 0.6% nitrogen, 5.5% hydrogen, and 8.4% oxygen.	6 Marks	L3	CO5
		(OR)			
11.		Discuss the classification of lubricants.	16 Marks	L2	CO5



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

ENGINEERING CHEMISTRY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List any four specifications of potable water as per WHO & BIS standards.	2 Marks	L1	CO1
	b)	What are the salts that are responsible for temporary and permanent hardness?	2 Marks	L1	CO1
	c)	Write the synthesis of Teflon.	2 Marks	L1	CO2
	d)	Define polymer. Give an example.	2 Marks	L1	CO2
	e)	Give the examples of primary and secondary cell.	2 Marks	L1	CO3
	f)	What are sensors? Give an example.	2 Marks	L1	CO3
	g)	State Beer-lambert's law.	2 Marks	L1	CO4
	h)	Recall the various types of energy present in a molecule.	2 Marks	L1	CO4
	i)	What are eco-friendly fuels? Give an example.	2 Marks	L1	CO5
	j)	Write any four characteristics of a good fuel.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.		Explain the ion exchange process with a neat diagram. Write its advantages over the zeolite process.	16 Marks	L2	CO1
		(OR)			
3.	a)	Describe the estimation hardness by the EDTA method.	10 Marks	L2	CO1
	b)	Calculate the total, temporary and permanent hardness of the water sample with 0.5 g of $CaCO_3$ dissolved in dil HCl, and the solution was made up to 500 ml with distilled water. 50 mL of the solution required 48 ml of the EDTA solution for the titration. 50 ml of hard water sample required 15 ml of EDTA and after boiling and filtering required 10 ml of the EDTA solution.	6 Marks	L3	CO1

MODULE-II

4.		Explain in detail the classification of conducting polymers.	16 Marks	L2	CO2
		(OR)			
5.	a)	Describe the various properties of nanomaterials.	8 Marks	L2	CO2
	b)	Illustrate the synthesis of nanomaterials by the CVD method.	8 Marks	L2	CO2

MODULE-III

6.		Discuss the construction, working, and applications of the H_2-O_2 fuel cell. Explain the advantages of fuel cells.	16 Marks	L2	CO3
		(OR)			

7.		Describe the construction and working of Lithium-ion batteries with a neat diagram and list their applications. List its advantages over a primary battery.	16 Marks	L2	CO3
		MODULE-IV			
8.		Discuss the instrumentation and working of the UV-spectrophotometer with a block diagram. Write its applications.	16 Marks	L2	CO4
		(OR)			
9.		Explain the working principle and applications of SEM and TEM.	16 Marks	L2	CO4
		MODULE-V			
10.	a)	Describe the manufacture of gasoline by the Bergius process with a neat diagram.	10 Marks	L2	CO5
	b)	Calculate the gross and net calorific values of a coal sample containing 84% carbon, 1.5% sulphur, 0.6% nitrogen, 5.5 % hydrogen, and 8.4% oxygen.	6 Marks	L3	CO5
		(OR)			
11.		What is lubrication? Illustrate the various types of the mechanism of lubrication.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

ENGINEERING MECHANICS

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State Newton's First Law of Motion.	2 Marks	L1	CO1
	b)	What are the fundamental units used in the SI system of units for force, length, and mass?	2 Marks	L1	CO1
	c)	List the different types of friction.	2 Marks	L1	CO2
	d)	What is the second law of friction?	2 Marks	L2	CO2
	e)	What is the significance of the radius of gyration of an area?	2 Marks	L1	CO3
	f)	What is meant by the section modulus of an area?	2 Marks	L1	CO3
	g)	What is Poisson's ratio?	2 Marks	L2	CO4
	h)	What is the proportionality limit in the context of Hooke's law?	2 Marks	L1	CO4
	i)	Define volumetric strain in thin cylinders.	2 Marks	L2	CO5
	j)	State the relationship between longitudinal strain and hoop strain in a thin cylinder.	2 Marks	L1	CO5

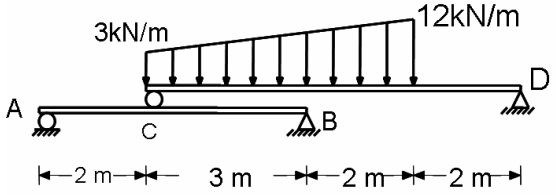
PART - B

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

5 x 16 = 80 Marks

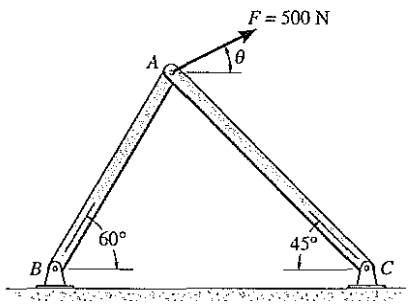
MODULE-I

2.	Calculate reactions at A, B, C and D as shown in the given Figure.	16 Marks	L4	CO1



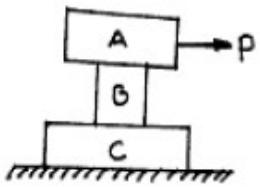
(OR)

3.	The 500N force acting on the frame is to be resolved into two components acting along the axis of the struts AB and AC as shown in Figure. If the component of force along AC is required to be 300 N, directed from A to C, determine the magnitude of force acting along AB and the angle q of the 500 N forces.	16 Mark	L3	CO1



MODULE-II

4.	Find the least horizontal force 'P' to start motion of any part of the system of three blocks resting upon one another as shown in the below Figure. The weights of the blocks are A = 3000N, B = 1000N, C =2000N. Between A and B μ= 0.3, between B and C, μ = 0.2 and between C and the ground μ = 0.1.	16 Marks	L4	CO2

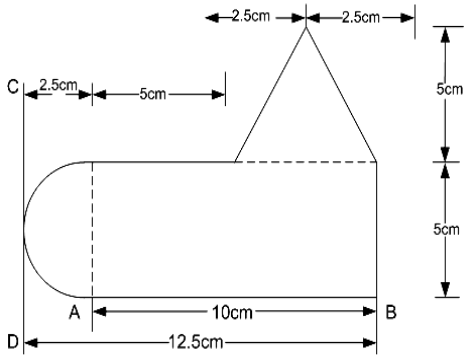


(OR)

5.	A block weighing 100 N is resting on a rough plane inclined 200 to the horizontal. It is acted upon by a force of 50 N directed upward at angle of 140 above the plane. Determine the friction. If the block is about to move up the plane, determine the co-efficient of friction.	16 Marks	L3	CO2

MODULE-III

6.	Determine the center of gravity of the plane uniform lamina shown in Figure.	16 Marks	L3	CO3



(OR)

7.	State and prove theorems of Pappus–Guldinus.	16 Marks	L4	CO3

MODULE-IV

8.	Derive the relationship between Modulus of Elasticity and Modulus of rigidity.	16 Marks	L4	CO4

(OR)

9.	A 2m long bar has a uniform diameter of 35 mm for a length 1 m from one end for the next 0.6 m length, the diameter decreases uniformly to 'd'. For the remaining 0.6 m length, it has an uniform diameter of'd' mm. When a load of 120kN is applied, the observed extension is 2.1 mm. Determine the diameter d. Take E=2x105 N/mm^2.	16 Marks	L4	CO4

MODULE-V

10.	Mention the assumptions in Lame's theory. Derive Lame's equation for radial and circumferential stress of thick cylinder.	16 Marks	L2	CO5

(OR)

11.	Calculate the thickness of the metal required for a cast iron main 800 mm in diameter for water at a pressure head of 100 m if the maximum permissible tensile stress is 20 MN/m^2 and weight of water is 10 kN/m^3.	16 Marks	L4	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 – 2025

CIVIL ENGINEERING MATERIALS AND CONCRETE TECHNOLOGY

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are different types of stones based on their geological origin?	2 Marks	L1	CO1
	b)	Write down the standard and nominal size of the brick.	2 Marks	L1	CO1
	c)	Define the timbers	2 Marks	L1	CO2
	d)	How to build a house with minimum cost?	2 Marks	L1	CO2
	e)	What are all the raw materials of the cement?	2 Marks	L1	CO3
	f)	Which types of aggregates are not used in concrete?	2 Marks	L1	CO3
	g)	Can excess water be added in concrete to improve workability? Justify.	2 Marks	L2	CO4
	h)	What are activities normally followed during concreting?	2 Marks	L2	CO4
	i)	Define creep of concrete	2 Marks	L2	CO5
	j)	What is meant by proportioning of concrete?	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)	Name the three geological classes into which rocks can be divided. Describe the process of their formation. What are the important building stones which are derived from these rocks?	8 Marks	L2	CO1
	b)	Enumerate the characteristics of good building stone.	8 Marks	L4	CO1
		(OR)			
3.	a)	Mention the different tests conducted on bricks and explain any two tests.	8 Marks	L4	CO1
	b)	Discuss the characteristics of good tile in detail.	8 Marks	L4	CO1

MODULE-II

4.	a)	What suggestions do you propose for improvement in construction to avoid decay of timber, and what measures are to be taken, when it has occurred?	8 Marks	L4	CO2
	b)	Explain the following defects of timber: a) Shakes b) Rindgall c) Upsets d) Knots	8 Marks	L2	CO2
		(OR)			
5.	a)	Enumerate the precautionary measures to reduce various defects in timber.	8 Marks	L4	CO2
	b)	Write advantages and disadvantages if waste is used as alternative building material.	8 Marks	L2	CO2

MODULE-III

6.	a)	Mention different types of tests on cement. Explain how to conduct a normal consistency test on cement.	8 Marks	L2	CO3
	b)	What are admixtures? Describe the effects of the following admixtures on cement concrete with three examples of each i) Retarders ii) Accelerators iii) Water proofers	8 Marks	L2	CO3

(OR)

7.	a)	Explain the classification of aggregates and discuss the characteristics of aggregate.	8 Marks	L4	CO3
	b)	Describe the test and tools involved in testing of aggregates to ensure satisfactory performance.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain how the measurement of workability of fresh concrete is carried out in laboratory.	8 Marks	L4	CO4
	b)	Briefly explain about ready mix concrete.	8 Marks	L2	CO4

(OR)

9.	a)	Write a note on importance of Water/Cement ratio in concrete.	8 Marks	L2	CO4
	b)	Explain how you estimate the compressive strength of concrete using Rebound hammer.	8 Marks	L4	CO4

MODULE-V

10.	a)	Discuss the significance of modulus of elasticity with reference to the properties of concrete.	8 Marks	L4	CO5
	b)	Explain the various factors affecting creep of concrete.	8 Marks	L2	CO5

(OR)

11.		Design a M30 concrete mix using IS method of mix design for the following data: i) Maximum size of aggregate: 20 mm (Angular) ii) Workability: 125 mm slump. iii) Quality control: good iv) Type of exposure - Mild (R.C.C) v) Specific Gravity: a) Cement:3.15 b) Sand:2.63 c) CA: 2.66 vi) Water absorption: a) CA - 0.5% b) FA - 1.0% vii) Free surface moisture: a) CA - Nil b) FA - 2.2% viii) Sand confirms to Zone III grading Assume any other data required suitably.	16 Marks	L6	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 – 2025

SURVEYING

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1	a)	What was the first form of surveying in the field of civil Engineering?	2 Marks	L1	CO1
	b)	Define bearing in compass	2 Marks	L1	CO1
	c)	What is the size of plane table?	2 Marks	L1	CO2
	d)	Define contouring.	2 Marks	L1	CO2
	e)	How does vertical angles are divided in determining the height of any object?	2 Marks	L2	CO3
	f)	List any two uses of contour maps.	2 Marks	L1	CO3
	g)	Write the formula for solid cube with a semi-circular on the above.	2 Marks	L1	CO4
	h)	Write the formula for Simpsons rule.	2 Marks	L1	CO4
	i)	Define EDM	2 Marks	L1	CO6
	j)	Write any two application of drone surveying.	2 Marks	L1	CO6

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2	a)	Explain the need for surveying in the field of Civil Engineering.	8 Marks	L2	CO1
	b)	Describe in detail about the following: i) Chain Survey ii) Cross-staff Survey	8 Marks	L4	CO1

(OR)

3	a)	Solve the following: i) $N60^0 12'W$ ii) $S19^0 50'E$ iii) $178^0 34'$ iv) $31^0 18'$	8 Marks	L4	CO1
	b)	Describe the procedure for calculating the area of plot using compass surveying.	8 Marks	L4	CO1

MODULE-II

4		Describe the functioning of plain table survey with an example of plot area.	16 Marks	L4	CO2

(OR)

5	a)	Discuss the types of leveling instruments.	8 Marks	L4	CO2
	b)	Define contour. List the different applications of contour surveying.	8 Marks	L2	CO2

MODULE-III

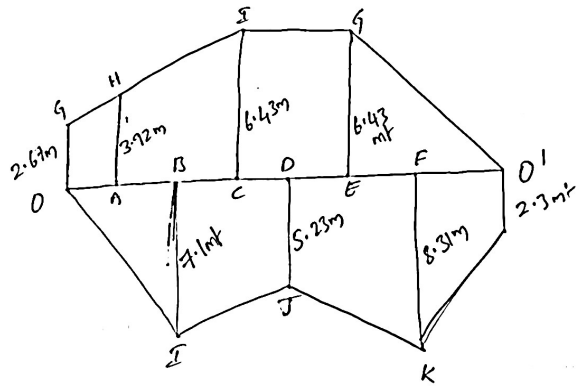
6	a)	How one can calculate the horizontal distance between two inaccessible points? Explain with a neat sketch.	8 Marks	L4	CO3
	b)	Determine the height of a electrical pole which is above ground level making an angle of elevation of $31^0 57'$ and angle of depression is $11^0 24'$. The distance from the equipment station to the electrical pole is 13.96mts.	8 Marks	L3	CO3

(OR)

7		Describe the parts of theodolite with neat sketch.	16 Marks	L4	CO3

MODULE-IV

8		Determine the area of a plot divided by possible regular shapes where. Each ordinate is divided with 30mt each.	16 Marks	L4	CO4



(OR)

9	a)	Discuss the use of mathematical approach in determining areas and volumes of different plots.	8 Marks	L4	CO4
	b)	Describe the road cross section with a neat sketch.	8 Marks	L2	CO4

MODULE-V

10	a)	Explain the working principal of total station with an example.	8 Marks	L2	CO5
	b)	Describe the applications of drone surveying.	8 Marks	L4	CO5

(OR)

11	a)	Describe the how data is collected in total station.	8 Marks	L4	CO5
	b)	Explain the functioning process of drone.	8 Marks	L2	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

DIGITAL LOGIC DESIGN

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Translate $(41.6875)_{10}$ into Binary.	2 Marks	L2	CO1
	b)	What are six illegal combinations in Excess three code?	2 Marks	L1	CO1
	c)	State De Morgan's laws. Give two examples.	2 Marks	L2	CO1
	d)	How many adjacent squares produce a product term with two Literals in four variable k-Map?	2 Marks	L1	CO2
	e)	Explain the significance of Don't care conditions.	2 Marks	L1	CO2
	f)	List some of the applications of Combinational Logic Circuits.	2 Marks	L1	CO3
	g)	Which gate is used in Magnitude Comparator?	2 Marks	L1	CO3
	h)	Compare Serial and Parallel Adders.	2 Marks	L2	CO3
	i)	Differentiate PAL, PLA and PROM.	2 Marks	L2	CO4
	j)	Define a Read Only Memory (ROM).	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)	Given the two binary numbers X = 1010100 and Y = 1000011, perform the subtraction i) X - Y ii) Y - X by using 2's complements	8 Marks	L2	CO1
	b)	Interpret the Boolean function F = xy + x'z as Product of maxterms.	8 Marks	L2	CO1

(OR)

3.		The message given below is coded in 7-bit Hamming code. It is transmitted through a noisy channel. Decode the message assuming that at most a single error occurred in each code word. 1001001 0111001 1110110 0011011	16 Marks	L2	CO1

MODULE-II

4.		Consider the Boolean function, F = A'C + A'B + AB'C + BC i) Express the function as sum of min terms ii) Find the minimal sum of products expression using k-map technique.	16 Marks	L3	CO2

(OR)

5.	a)	Simplify the following Boolean functions using K map and sketch the Logic Diagram for optimized Boolean expression. i) $F(x,y,z) = \sum(0,2,4,5,6)$ ii) $F(x,y,z) = \sum(3,4,6,7)$ iii) $F(x,y,z) = \sum(2,3,4,5)$	12 Marks	L2	CO2
	b)	Realize EX-OR Gate using only NAND Gates with its logic diagram.	4 Marks	L3	CO2
		MODULE-III			
6.	a)	Implement the following Boolean function using 8:1 multiplexer. Consider D as the input and A, B, C as selection lines. $F(A,B,C,D) = \sum m(0,1,2,3,4,10,11,14,15)$	10 Marks	L3	CO3
	b)	Analyze the operation of Four bit Adder-sub tractor with logic diagram.	6 Marks	L4	CO3
		(OR)			
7.	a)	Analyze the operation of Four bit Magnitude Comparator with logic diagram.	9 Marks	L2	CO3
	b)	Compare Encoder and Multiplexer.	7 Marks	L4	CO3
		MODULE-IV			
8.	a)	Design a Ripple counter that generates BCD sequence Using J-K Flip-flop.	9 Marks	L2	CO3
	b)	Explain the operation of SR Flip-flop with truth table.	7 Marks	L4	CO3
		(OR)			
9.	a)	Convert JK-Flip Flop to T- Flip Flop.	9 Marks	L2	CO3
	b)	What is a Priority Encoder? Explain the operation of Priority Encoder.	7 Marks	L2	CO3
		MODULE-V			
10.	a)	Implement the following Boolean functions using PAL. $F_1(A,B,C) = \Sigma m(0,1,2,4)$ and $F_2(A,B,C) = \Sigma m(0,5,6,7)$	9 Marks	L3	CO4
	b)	Design a PROM which converts 3-bit binary to Excess-3 code.	7 Marks	L4	CO4
		(OR)			
11.	a)	Design a combinational using a PLA The circuit accepts 3-bit binary number and generates its Sum and carry of the given numbers	10 Marks	L3	CO4
	b)	Explain in detail about the following: i) Static Hazards ii) Dynamic Hazard iii) Essential hazards	6 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 – 2025

SENSORS AND TRANSDUCERS

[Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Discuss the importance of Measurement?	2 Marks	L1	CO1
	b)	Discuss the Sources of Error?	2 Marks	L2	CO1
	c)	List the applications of LVDT?	2 Marks	L1	CO2
	d)	What are the types of resistance strain guage?	2 Marks	L1	CO2
	e)	What is a thermistor?	2 Marks	L1	CO3
	f)	Illustrate working principle of RTD?	2 Marks	L1	CO3
	g)	How to calibrate an accelerometer?	2 Marks	L1	CO4
	h)	What is the gauge factor of a strain gauge?	2 Marks	L2	CO4
	i)	How are SAW sensors different from traditional resonant sensors?	2 Marks	L1	CO5
	j)	What is a gyroscope, and how does it work?	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss about: i) Speed of Response ii) Dynamic Error	8 Marks	L1	CO1
	b)	Discuss briefly about the types of Errors	8 Marks	L2	CO1

(OR)

3.	a)	Discuss briefly about: i) Mean ii) Average Deviation iii) Standard Deviation	8 Marks	L2	CO1
	b)	Discuss about the Static characteristics of a Transducer?	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain the transducer using the change in the distance between the plates?	8 Marks	L1	CO2
	b)	Explain advantages and disadvantages of capacitive sensors?	8 Marks	L2	CO2

(OR)

5.	a)	What is sensor and explain the principle of sensing?	8 Marks	L2	CO2
	b)	Discuss briefly about the Inductive sensors?	8 Marks	L1	CO2

MODULE-III

6.	a)	Define RTD with working principle materials and construction?	8 Marks	L2	CO3
	b)	Explain the different types of velocity sensors, such as Doppler sensors, tachometers, and optical sensors, and discuss the working principles behind each.	8 Marks	L1	CO3

(OR)

7.	a)	Explain the different types of radiation and discuss the methods used	8 Marks	L1	CO3

		for measuring each type?			
	b)	Describe how a tachometer works and the factors that influence the choice of tachometer in various industrial applications.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Describe the working principle of a load cell and discuss its various types.	8 Marks	L1	CO4
	b)	Explain the principles of torque measurement and the different methods used to measure torque in engineering applications.	8 Marks	L2	CO4
		(OR)			
9.	a)	Analyze the factors that affect the accuracy of strain gauge measurements and how these factors can be mitigated.	8 Marks	L2	CO4
	b)	Explain the working principle of tachometers and discuss the different types of tachometers used in various industries.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Explain the working principle of a gyroscope and its significance in navigation.	8 Marks	L1	CO5
	b)	Explain the principle of operation of Surface Acoustic Wave (SAW) sensors and how they detect physical changes.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss the applications of vibration sensors in predictive maintenance in industrial environments?	8 Marks	L1	CO5
	b)	Explain the working principle of resonant sensors and how they detect physical changes.	8 Marks	L1	CO5



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B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

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)	Explain the terms Resolution and Threshold.	2 Marks	L1	CO1
	b)	Describe precision with example.	2 Marks	L2	CO1
	c)	List the applications capacitive sensors.	2 Marks	L2	CO2
	d)	Mention the list of inductive sensors.	2 Marks	L2	CO2
	e)	Write the balanced equation of wheat stone bridge.	2 Marks	L2	CO3
	f)	Formulate the unknown parameter of hay bridge.	2 Marks	L2	CO3
	g)	What is the necessity of spectrum analyzer?	2 Marks	L2	CO4
	h)	Compare dual trace and Dual beam CRO.	2 Marks	L2	CO4
	i)	Write the working principle of X-Y recorder.	2 Marks	L2	CO5
	j)	Describe the working principle of LCD display.	2 Marks	L3	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Draw the block diagram of measurement system and explain the importance of each block in detail.	8 Marks	L2	CO1
	b)	Derive the expression for series resistance of DC voltmeter and explain its working in detail.	8 Marks	L2	CO1

(OR)

3.	a)	With a neat sketch explain the working of thermocouple type AC voltmeter.	8 Marks	L3	CO1
	b)	Elaborate the working principle of series and shunt ohmmeters.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain the thermocouple laws with neat sketch.	8 Marks	L2	CO2
	b)	Construct a LVDT and explain the working principle with its characteristics.	8 Marks	L3	CO2

(OR)

5.	a)	Implement liquid level measurement with inductive transducer and explain its working.	8 Marks	L4	CO2
	b)	Describe the applications of resistive transducers.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the theory and method of measurement of medium resistance using wheat Bridge.	8 Marks	L2	CO3
	b)	Draw the circuit diagram of Schering Bridge. Derive the conditions for balancing the bridge.	8 Marks	L4	CO3

(OR)

7.	a)	Describe the theory and method of measurement of high resistance.	8 Marks	L2	CO3
	b)	Draw the circuit diagram of Anderson Bridge. Derive the conditions for balancing the bridge.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Differentiate Frequency selective and Heterodyne wave analyzers with respect to working principle.	8 Marks	L4	CO4
	b)	Construct a spectrum analyzer and explain each block in detail.	8 Marks	L3	CO4

(OR)

9.	a)	Draw the block diagram of CRO and describe its working principle.	8 Marks	L3	CO4
	b)	Elaborate the working of CRO probes in detail with neat diagrams.	8 Marks	L2	CO4

MODULE-V

10.	a)	Mention the block of strip chat recorder and explain procedure of recording in it.	8 Marks	L2	CO5
	b)	Write short notes on LCD display devices.	8 Marks	L2	CO5

(OR)

11.	a)	Explain the working of 7 segment display with neat circuit diagram.	8 Marks	L2	CO5
	b)	Explain the working of digital data recorder in detail.	8 Marks	L2	CO5



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B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

SEMICONDUCTOR DEVICES AND CIRCUITS

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Draw diode's equivalent circuit and name the two components generally included in it.	2 Marks	L2	CO1
	b)	What is the primary application of a Zener diode	2 Marks	L1	CO1
	c)	Differentiate between series clipper and shunt clipper circuits	2 Marks	L2	CO2
	d)	On what parameters dose the efficiency of an rectifier depends.	2 Marks	L1	CO2
	e)	Explain the basic construction of a transistor	2 Marks	L1	CO3
	f)	Define the operating point of a transistor. Why is it important	2 Marks	L1	CO3
	g)	Write the brief classification of BJT	2 Marks	L1	CO3
	h)	List the applications of MOSFET	2 Marks	L2	CO3
	i)	What is an oscillator, and why is it used in electronic circuits	2 Marks	L1	CO4
	j)	Name two types of oscillators that use LC feedback circuits	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)	Briefly explain Avalanche break down and Zener break	8 Marks	L1	CO1
	b)	Summarize the formation of PN Junction diode	8 Marks	L1	CO1

(OR)

3.	a)	Explain the working of a Light Emitting Diode (LED) with energy band diagram. Mention its advantages and applications	10Marks	L1	CO1
	b)	Write the diode equation in forward bias and reverse biased condition and list the parameters in the diode equation.	6 Marks	L1	CO1

MODULE-II

4.		Describe the working of a half-wave rectifier with a circuit diagram, waveforms, and relevant equations. Discuss its efficiency and ripple factor.	16 Marks	L1	CO2

(OR)

5.	a)	Derive an expression for ripple factor and efficiency of a full wave rectifier	10 Marks	L3	CO2
	b)	Explain the Role of a Zener Diode in a Voltage Regulator Circuit	6 Marks	L1	CO2

MODULE-III

6.	a)	Describe the input and output characteristics of a transistor in the common-base configuration with relevant diagrams	10 Marks	L1	CO3
	b)	Summarize why operating point changes.	6 Marks	L1	CO3
		(OR)			
7.	a)	Explain stability factor for Fixed biased configuration	8 Marks	L1	CO3
	b)	Draw the input and output characteristics of CE configuration and explain.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Draw the transfer characteristics and drain characteristics of depletion MOSFET	6 Marks	L2	CO3
	b)	What is the importance of biasing in MOSFET amplifiers? Explain one method of biasing in detail	10 Marks	L1	CO3
		(OR)			
9.	a)	What is the threshold voltage of a MOSFET? Explain its significance with respect to the I-V characteristics	8 Marks	L1	CO3
	b)	How JFET act as voltage variable resistor, justify	8 Marks	L1	CO3
		MODULE-V			
10.	a)	Explain the operation of a phase-shift oscillator with a circuit diagram.	8 Marks	L1	CO4
	b)	What are the applications of phase shift oscillators? Highlight their key features and limitations	8 Marks	L1	CO4
		(OR)			
11.	a)	Compare Hartley and Colpitts oscillators in terms of circuit configuration, working principle, and applications	8 Marks	L2	CO4
	b)	Describe the working of a Wien bridge oscillator with a neat circuit diagram. Derive the condition for oscillation	8 Marks	L1	CO4



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B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

GENERATION OF ELECTRIC POWER

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How the hydroelectric projects affect aquatic ecosystems?	2 Marks	L1	CO1
	b)	List the greenhouse gases commonly emitted from hydroelectric reservoirs.	2 Marks	L1	CO1
	c)	How does improper disposal of nuclear waste affect the environment?	2 Marks	L2	CO2
	d)	Suggest measures to reduce atmospheric pollution from power plants.	2 Marks	L2	CO2
	e)	How does the performance of a gas turbine vary with temperature and pressure?	2 Marks	L2	CO3
	f)	What are greenhouse gases, and how do they contribute to atmospheric pollution?	2 Marks	L3	CO3
	g)	How does a power capacitor reduce the reactive power in a system?	2 Marks	L2	CO4
	h)	What is meant by "most economical power factor"?	2 Marks	L1	CO4
	i)	Write the relationship between loss factor and load factor.	2 Marks	L2	CO5
	j)	Differentiate between simple tariff and two-part tariff.	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.		Discuss the environmental impacts of hydroelectric projects, focusing on their effects on ecosystems, water quality, and biodiversity.	16 Marks	L2	CO1
		(OR)			
3.	a)	Suggest measures to mitigate the environmental impacts of hydroelectric projects, including technological and policy interventions.	8 Marks	L2	CO1
	b)	Explain how hydroelectric reservoirs contribute to greenhouse gas emissions. Discuss the sources and types of gases involved.	8 Marks	L2	CO1

MODULE-II

4.	a)	Classify nuclear waste based on its radioactivity levels. Explain the characteristics of low-level, intermediate-level, and high-level waste.	8 Marks	L3	CO2
	b)	What are the major challenges associated with nuclear waste disposal? Discuss potential environmental and safety risks.	8 Marks	L2	CO2
		(OR)			
5.		Explain the technologies used to control atmospheric pollution in	16 Marks	L2	CO2

power plants, such as scrubbers, electrostatic precipitators, and catalytic converters.

MODULE-III

6.	a)	Discuss the atmospheric pollutants emitted by hydro, diesel, and gas turbine power plants.	8 Marks	L2	CO3
	b)	Discuss the measures that can be taken to reduce the carbon footprint of power plants.	8 Marks	L2	CO3
		(OR)			
7.	a)	How does distributed generation contribute to minimizing environmental impacts compared to centralized power generation?	8 Marks	L2	CO3
	b)	What are the primary environmental concerns associated with gas turbine power plants?	8 Marks	L4	CO3

MODULE-IV

8.		Explain the role of power capacitors in improving the power factor of an electrical system.	16 Marks	L3	CO4
		(OR)			
9.	a)	Discuss the project risks involved in implementing a cogeneration plant.	8 Marks	L3	CO4
	b)	How does the location of a cogeneration plant impact its design and operation?	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain how power factor tariffs can lead to energy savings in industries.	8 Marks	L2	CO5
	b)	Discuss the role of maximum demand tariffs in managing peak loads effectively.	8 Marks	L2	CO5
		(OR)			
11.	a)	Elaborate on the benefits and drawbacks of three-part tariffs in electricity billing.	8 Marks	L2	CO5
	b)	Explain the relation between the loss factor and load factor.	8 Marks	L2	CO5



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B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

ELECTRICAL CIRCUITS

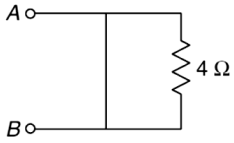
[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

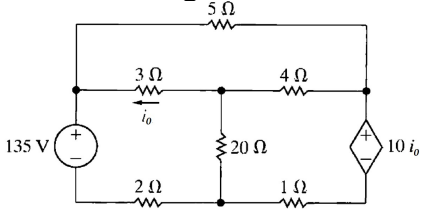
1.	a)	Convert a 6A current source in parallel with a 3Ω resistor into an equivalent voltage source.	2 Marks	L3	CO1
	b)	What is the equivalent resistance between terminals A and B of the network shown in figure 	2 Marks	L3	CO1
	c)	A load takes 10kVA at a power factor of 0.8. Find the active power (P) and reactive power Q.	2 Marks	L3	CO2
	d)	Define quality factor (Q-factor) and write its formula for a series resonance circuit.	2 Marks	L2	CO2
	e)	Can the superposition theorem be applied to nonlinear circuits? Why or why not?	2 Marks	L2	CO3
	f)	Convert a circuit containing a 10V source, 4Ω series resistance, and an 8Ω load into its Norton equivalent.	2 Marks	L3	CO3
	g)	What is a balanced and unbalanced three-phase system?	2 Marks	L2	CO4
	h)	A three-phase balanced load draws a line current of 10 A at 0.8 power factor lagging from a 400 V supply. Find the total power consumed.	2 Marks	L2	CO4
	i)	A magnetic circuit has a magnetomotive force (MMF) of 500 AT and reluctance of 250 AT/Wb. Find the magnetic flux.	2 Marks	L3	CO5
	j)	Explain the energy stored in a system of two mutually coupled coils.	2 Marks	L2	CO5

PART - B

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

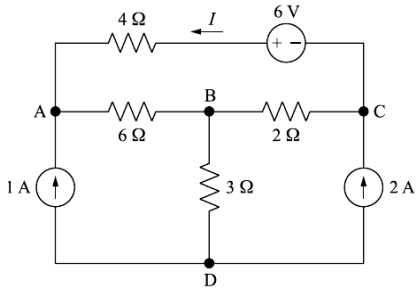
5 X 16 = 80 Marks

MODULE-I

2.	a)	Derive the transformation equations for Delta (Δ) to Wye (Y) and vice versa and explain their applications in circuit analysis.	8 Marks	L3	CO1
	b)	Use the mesh-current method to find the power dissipate in the 20 Ohm resistor in the circuit in Figure: 	8 Marks	L3	CO1

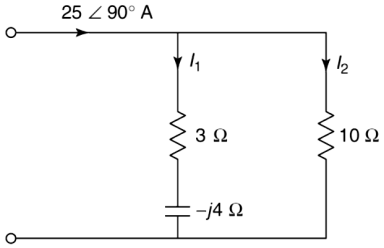
(OR)

3.	a)	Explain how voltage source with a source resistance can be converted into an equivalent current source?	8 Marks	L2	CO1
	b)	In the circuit shown in figure, write three node equations for nodes A, B, and C, with node D as the reference, and find the node voltages.	8 Marks	L3	CO1



MODULE-II

4.	a)	Find currents I_1 d I_2 shown in figure:	8 Marks	L3	CO2



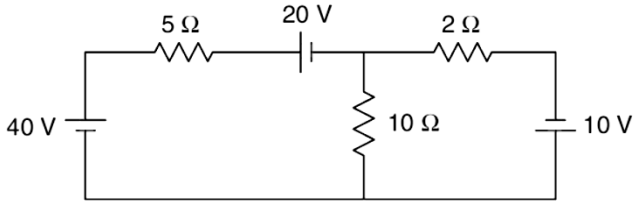
	b)	A series RLC circuit has Q = 75 and a pass band (between half power frequencies) of 160 Hz. Calculate the resonant frequency and the upper and lower frequencies of the pass band.	8 Marks	L3	CO2

(OR)

5.	a)	Draw the phasor representation of voltage and current for Resistor, inductor and capacitor with sinusoidal excitation.	8 Marks	L3	CO2
	b)	A series circuit consisting of a 10 ohm resistor, a 100 μF capacitance and a 10mH inductance is driven by a 50Hz a.c. voltage source of max. value 100 volts. Calculate the equivalent impedance, current in the circuit, the power factor and power dissipated in the circuit. Also, draw the vector diagram.	8 Marks	L3	CO2

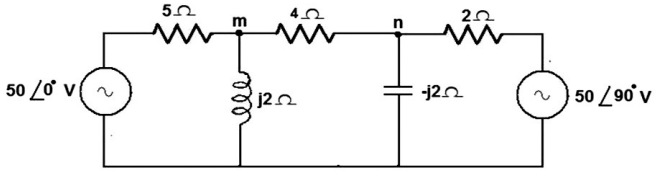
MODULE-III

6.	a)	Explain the superposition theorem in detail, including its steps for solving circuits.	8 Marks	L3	CO3
	b)	Using Thevenin's theorem, Determine the current through the 10Ω resistor in the given network.	8 Marks	L3	CO3



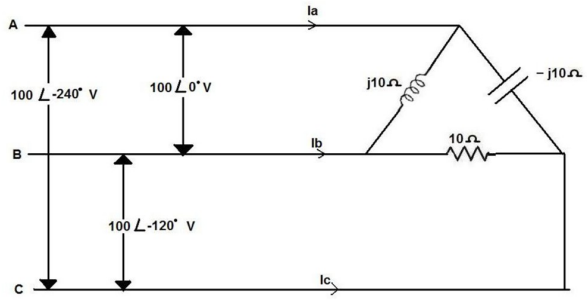
(OR)

7.	a)	State and explain Millman's theorem	8 Marks	L3	CO3
	b)	Using Superposition theorem, find the current through 4 Ohm resistor in the circuit shown below.	8 Marks	L3	CO3



MODULE-IV

8.	a)	A delta connected load as shown in figure is connected across 3 phase 100 volt supply. Determine all line currents.	8 Marks	L3	CO4



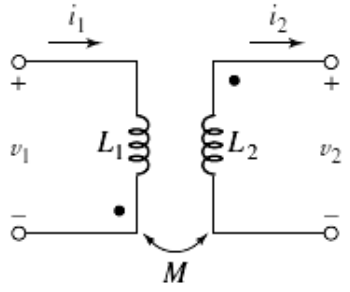
	b)	Two wattmeters connected to measure the input to a balanced, three-phase circuit indicate 2000 W and 500 W respectively. Find the power factor of the circuit i) when both readings are positive and ii) when the latter is obtained after reversing the connection to the current coil of one instrument.	8 Marks	L3	CO4

(OR)

9.	a)	Derive the relation between the power factor and wattmeter readings in two-wattmeter method of power measurement.	8 Marks	L2	CO4
	b)	The power input measurement to a synchronous motor is done using two wattmeter method. Each of the wattmeter reads 40 kW at a certain operating condition. If now, the PF is changed to 0.8 lagging, what would be the new wattmeter readings?	8 Marks	L3	CO4

MODULE-V

10.	a)	Two coils with coeffi cient of coupling 0.5 are connected in such a way that they magnetise i) in the same direction, and ii) in opposite directions. The corresponding equivalent inductances are 1.9 H and 0.7 H. Find self inductances of the two coils and the mutual inductance between them.	8 Marks	L3	CO5
	b)	For the coupled coils of Fig. 13.53, $L_1 = L_2 = 10$ H, and M is equal to its maximum possible value. i) Compute the coupling coefficient k. ii) Calculate the energy stored in the magnetic field linking the two coils at $t = 200$ ms if $i_1 = 10\ cos4t$ mA and $i_2 = 2\ cos4t$ mA	8 Marks	L3	CO5



(OR)

11.	a)	What is the DOT convention? Explain how it helps in determining the polarity of induced voltages in coupled circuits.	8 Marks	L2	CO5
	b)	Two coils have inductances L_1=5H and L_2 = 2H, and mutual inductance M=1.2H. Calculate the coefficient of coupling k.	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 – 2025

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

[Computer Science and Engineering, Information Technology, Computer Science and Engineering (Cyber Security)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State Faraday's laws of electromagnetic induction.	2 Marks	L1	CO1
	b)	A 230 V, 80 W lamp is connected in series with a 230 V, 40 W lamp across 230 V supply. What will be the current drawn by the lamps? What will be the power consumed by each lamp?	2 Marks	L2	CO1
	c)	What is stepper motor? Classify the stepper motors.	2 Marks	L1	CO1
	d)	The synchronous motor has no starting torque. Justify.	2 Marks	L1	CO2
	e)	State the Laws of illumination	2 Marks	L1	CO2
	f)	List the components of UPS.	2 Marks	L1	CO3
	g)	Differentiate active and passive transducers.	2 Marks	L2	CO3
	h)	Define see back effect and Thompson effect.	2 Marks	L2	CO4
	i)	Explain the function of Zener diode with V-I characteristics.	2 Marks	L2	CO4
	j)	Compare half and full wave rectifiers	2 Marks	L1	CO5

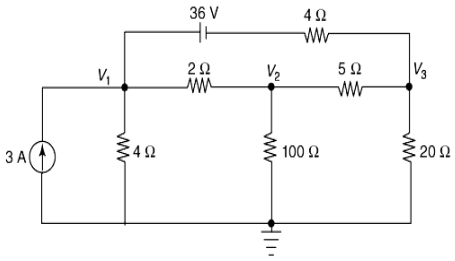
PART - B

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

5 x 16 = 80 Marks

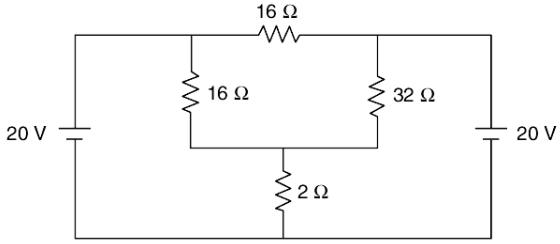
MODULE-I

2.	a)	Explain KVL with suitable examples in detail.	8 Marks	L1	CO1
	b)	Using Nodal Analysis, Determine the current through the 5 Ω resistor for the network shown in Fig.	8 Marks	L3	CO1



(OR)

3.	a)	Explain KCL with suitable examples in detail.	8 Marks	L1	CO1
	b)	Using mesh Analysis, find the current flowing through the 2 Ω resistor for the network shown in Fig.	8 Marks	L3	CO1



MODULE-II

4.	a)	What is a transformer? Explain the construction and working of a single-phase transformer.	8 Marks	L2	CO2
	b)	What is a stepper motor? Explain the construction and working with neat sketches.	8 Marks	L2	CO2
		(OR)			
5.	a)	Classify different types of Motors. Sketch the equivalent circuit for various types of motors.	8 Marks	L2	CO2
	b)	Suggest a suitable device which is working on a tripping mechanism. Explain the principle of operation with neat sketch.	8 Marks	L1	CO2
		MODULE-III			
6.	a)	Find the total saving in electrical load and percentage increase in illumination instead of using twelve 150 W tungsten filament lamps, twelve 80 W fluorescent tubes are used. It may be assumed that i) There is a choke loss of 25% of rated lamp wattage. ii) Average luminous efficiency throughout life for each lamp is 15 Lumen/W and for each tube 40 Lumen/W and The coefficient of utilization remains the same in both cases.	8 Marks	L3	CO3
	b)	Discuss in detail the following i) Industrial Lighting ii) Flood Lighting	8 Marks	L1	CO3
		(OR)			
7.	a)	Define UPS. Explain the operation of different types of UPS with neat sketch.	8 Marks	L3	CO3
	b)	An area of 30mX40m is to be illuminated for 15 Lux. Initially 35 Lumen/m^2. Is required to maintain an average illumination of 15 Lux considering wastage. Determine the number of 70 W high-pressure sodium vapour lamps required having an efficiency of 50 Lumens /Watt.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	With a neat sketch, explain how the temperature and humidity sensors work. Mention its advantages and disadvantages.	8 Marks	L2	CO4
	b)	With a neat sketch, explain how the distance is measured using ultrasound sensor. Mention its advantages and disadvantages.	8 Marks	L2	CO4
		(OR)			
9.	a)	Define Passive transducer. With neat sketch, explain the operation of LVDT.	8 Marks	L2	CO4
	b)	With neat block diagram discuss about Data Acquisition System. And Clarify the various parts of Analog Data Acquisition System.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain in detail the full wave rectifier with suitable diagram.	8 Marks	L2	CO4
	b)	Draw the characteristics of Zener diode and list the applications of it.	8 Marks	L2	CO4
		(OR)			
11.	a)	With neat sketch, Explain the operation of Op-am as i) Square Wave Generator ii) Zero Cross Detector iii) Level Detector	8 Marks	L2	CO4
	b)	With neat sketch, Explain the operation of R-2R type DAC with an example.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

NETWORK ANALYSIS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

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

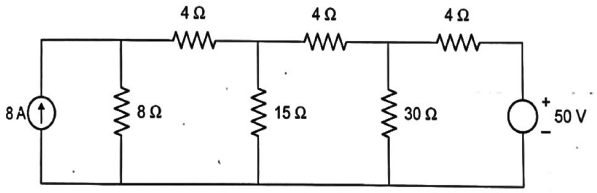
PART - B

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

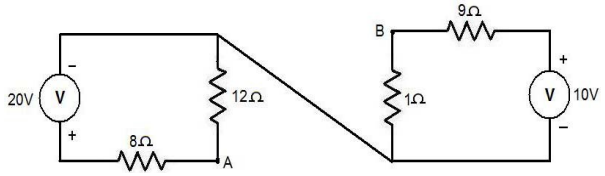
5 X 16 = 80 Marks

MODULE-I

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

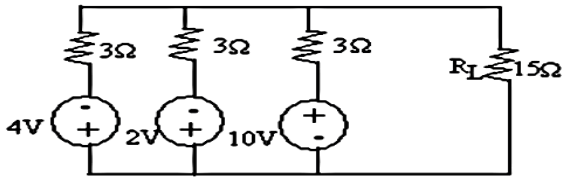


	b)	Determine Thevenin's equivalent across the terminals AB for the circuit shown in figure below.	8 Marks	L3	CO1

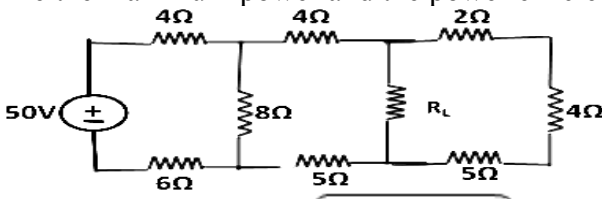


(OR)

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



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



MODULE-II

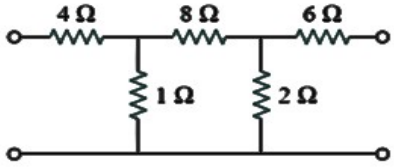
4.	a)	Two watt meters connected to measure the input to a balanced, three-phase circuit indicate 2000 W and 500 W respectively. Find the power factor of the circuit i) when both readings are positive and ii) when the latter is obtained after reversing the connection to the current coil of one instrument.	8 Marks	L3	CO2
	b)	A Y-connected load, with Z_A =10 $\underline{/0^0}$ Ω, Z_B =10 $\underline{/60^0}$ Ω, and Z_C=10 $\underline{/-60^0}$ Ω is connected to a three phase, three-wire, ABC system having effective line voltage 141.4 V. Find the load voltages V_{AO}, V_{BO}, V_{CO} and the displacement neutral voltage V_{ON}. Construct a phasor diagram.	8 Marks	L2	CO2

(OR)

5.	a)	A balanced star-connected load is supplied by a 415 V, 50 Hz three-phase system. Current in each phase is 20 A and lags 30° behind its phase voltage. Find the i) phase voltage, ii) power, and iii) circuit parameters. Also, find power consumed when the same load is connected in delta across the same supply.	8 Marks	L2	CO2
	b)	Obtain the readings of two watt meters in a three-phase, three-wire system having effective line voltage 320V and balanced, Δ connected load impedances Z=30 $\underline{/60^0}$ Ω	8 Marks	L2	CO2

MODULE-III

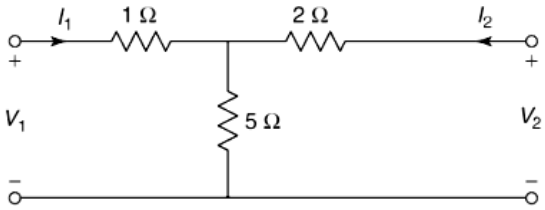
6.	a)	Find the transmission parameters for the circuit in Figure.	8 Marks	L3	CO3



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

(OR)

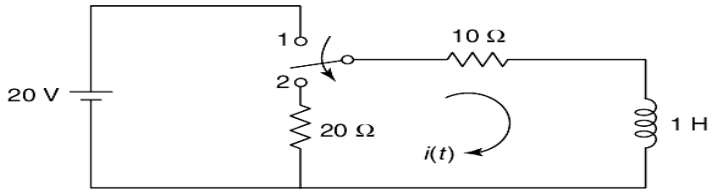
7.	a)	Find the transmission parameters for the network	8 Marks	L3	CO3



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

MODULE-IV

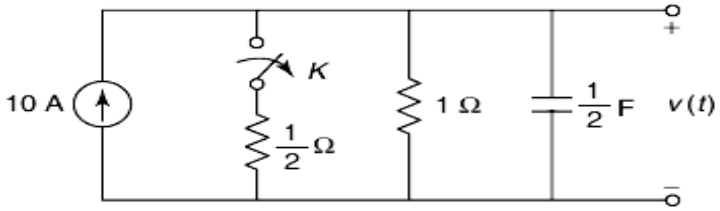
8.	a)	The switch in the circuit in figure has been closed for a long time. At t = 0, the switch is opened find v0(t) and i0(t) for t > 0 using Laplace transformation method.	8 Marks	L4	CO4



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

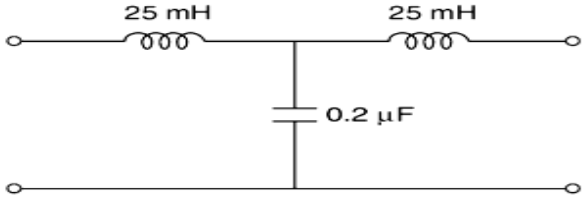
(OR)

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



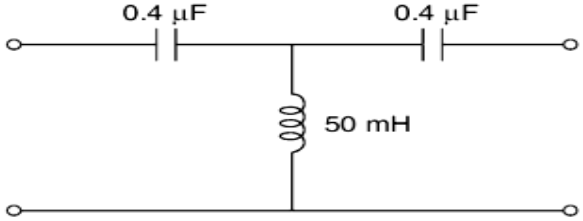
MODULE-V

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



(OR)

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



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

PROFESSIONAL ETHICS AND HUMAN VALUES

[Computer Science and Engineering, Computer Science and Engineering (Cyber Security), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is meant by moral autonomy?	2 Marks	L1	CO1
	b)	Mention the various types of inquiries.	2 Marks	L1	CO1
	c)	Define professionalism.	2 Marks	L1	CO2
	d)	Define integrity.	2 Marks	L1	CO2
	e)	What is the importance of experimentation?	2 Marks	L2	CO3
	f)	List some of the importance of learning from the past topic of experimentation.	2 Marks	L1	CO3
	g)	What is meant by whistle blowing.	2 Marks	L1	CO4
	h)	Define collegiality.	2 Marks	L1	CO4
	i)	How does realization and understanding lead to definiteness of human conduct?	2 Marks	L2	CO5
	j)	Recite the transition from the present state to Universal Human Order	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Explain the gillian's theory for moral development.	16 Marks	L2	CO1
	(OR)			
3.	Write a brief notes on the types of inquiries.	16 Marks	L1	CO1

MODULE-II

4.	Explain the need of tolerance for different customs and ethical pluralism in a diverse society with suitable example.	16 Marks	L2	CO2
	(OR)			
5.	Write short notes of moral dilemma.	16 Marks	L1	CO2

MODULE-III

6.	What are the different roles and functions of codes of ethics.	16 Marks	L1	CO3
	(OR)			
7.	Compare and contrast engineering experiments with standard experiments.	16 Marks	L3	CO3

	MODULE-IV			
8.	Discuss the human rights and professional rights in engineering field.	16 Marks	L2	CO4
	(OR)			
9.	Explain in detail about collegiality and loyalty.	16 Marks	L2	CO4
	MODULE-V			
10.	Describe the concept of an undivided society and the universal order and explain how both these can help to create a world family.	16 Marks	L2	CO5
	(OR)			
11.	Explain how production activities can be enriching to all the orders of nature.	16 Marks	L2	CO5



B

CODE No.: 22LG107601 **MBU-22**

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

PROFESSIONAL ETHICS AND HUMAN VALUES

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the models of professional roles?	2 Marks	L1	CO1
	b)	Define ethics?	2 Marks	L1	CO1
	c)	Define civic virtue?	2 Marks	L1	CO2
	d)	Differentiate Morality and Ethics	2 Marks	L1	CO2
	e)	What is meant by valid consent?	2 Marks	L1	CO3
	f)	What are the responsibilities of engineers to society?	2 Marks	L1	CO3
	g)	What is agency loyalty?	2 Marks	L1	CO4
	h)	Define collective bargaining?	2 Marks	L1	CO4
	i)	List the importance of Ethical Human Conduct?	2 Marks	L1	CO5
	j)	What is the meaning of Acceptance of human values?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Explain the theory of human right ethics and its classification?	16 Marks	L2	CO1
	(OR)			
3.	What are inquiries, classify them and Write a brief notes on the types of inquiries?	16 Marks	L2	CO1

MODULE-II

4.	What is moral issue? Explain in detail about variety of moral issues.	16 Marks	L2	CO2
	(OR)			
5.	List the ethical theories? Discuss in detail about uses and limitation of ethical theories	16 Marks	L2	CO2

MODULE-III

6.	Define Standards and name few organization of standard? Explain in briefly the role of industrial standard.	16 Marks	L2	CO3
	(OR)			
7.	Explain the responsibilities of engineers to society. Given one example.	16 Marks	L2	CO3

MODULE-IV

8.	What is authority? List the types of authorities with suitable examples? Also, Write a brief note on institutional authority.	16 Marks	L2	CO4
	(OR)			
9.	Explain the concept of safety with a suitable case study.	16 Marks	L2	CO4

MODULE-V

10.	What are the Basics for Humanistic Education and Humanistic Constitution. Explain with suitable examples.	16 Marks	L2	CO5
	(OR)			
11.	Explain a case study of Management Models and Production Systems.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

BASIC ENGINEERING MECHANICS

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	In Lami's theorem, what do the terms F1,F2,F3F_1, F_2, F_3F1,F2,F3 represent?	2 Marks	L1	CO1
	b)	Write the conditions for equilibrium in a plane.	2 Marks	L1	CO1
	c)	How is Varignon's theorem applied in mechanics?	2 Marks	L1	CO2
	d)	Name the different types of supports used in structures.	2 Marks	L1	CO2
	e)	What is wedge friction?	2 Marks	L1	CO3
	f)	What forces act on a body placed on an inclined plane?	2 Marks	L1	CO3
	g)	Define the moment of inertia (MI) of an area.	2 Marks	L1	CO4
	h)	What is the section modulus of a beam?	2 Marks	L1	CO4
	i)	What is simple harmonic motion (SHM)?	2 Marks	L1	CO5
	j)	What is the relation between linear velocity and angular velocity?	2 Marks	L1	CO5

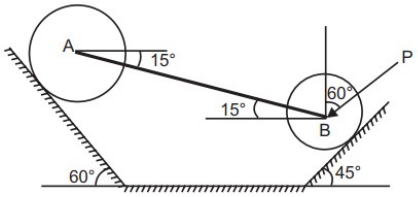
PART - B

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

5 x 16 = 80 Marks

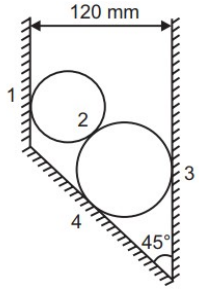
MODULE-I

2.	Two cylinders, A of weight 4000 N and B of weight 2000 N rest on smooth inclines as shown in figure. They are connected by a bar of negligible weight hinged to each cylinder at its geometric centre by smooth pins. Find the force P to be applied as shown in the figure such that it will hold the system in the given position.	16 Marks	L2	CO1



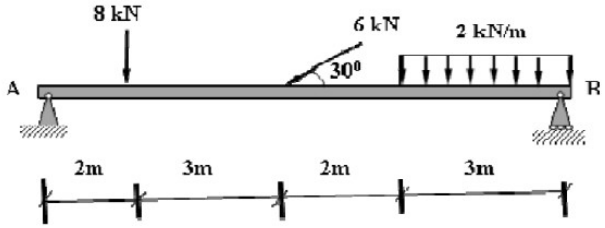
(OR)

3.	Two cylinder of diameters 100 mm and 50 mm, weighing 200 N and 50N, respectively are placed in a trough as shown in Fig. 2a. Neglecting friction, find the reactions at contact surfaces 1, 2, 3 and 4.	16 Marks	L2	CO1



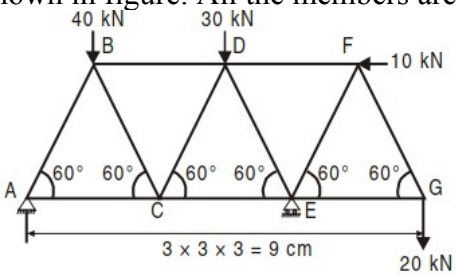
MODULE-II

4. Determine the reactions at supports A and B for the loaded beam as shown in figure. 16 Marks L3 CO2



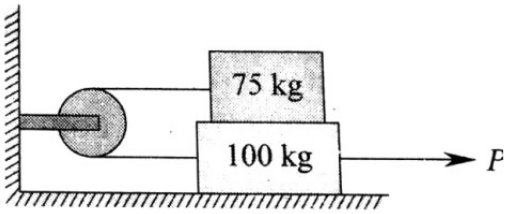
(OR)

5. Analyze the truss shown in figure. All the members are of 3 m length. 16 Marks L3 CO2



MODULE-III

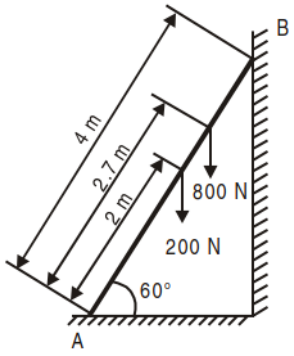
6. a) In the figure, determine the horizontal force P applied to the lower block to just pull it to the right. The coefficient of friction between the blocks is 0.2 and that between the lower block and the plane is 0.25. Assume the pulley to be friction less. 8 Marks L3 CO3



b) Explain the following terms: 8 Marks L1 CO3
   i) Friction
   ii) Angle of friction
   iii) Limiting friction
   iv) Cone of friction

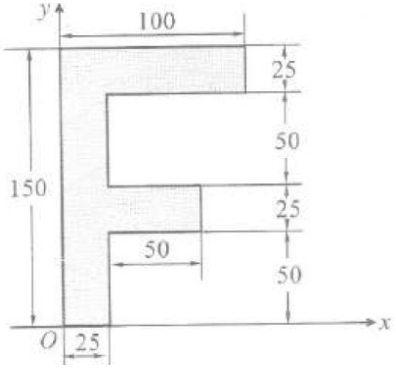
(OR)

7. A 4 m ladder weighing 200 N is placed against a vertical wall as shown in Figure. as a man weighing 800 N, reaches a point 2.7 m from A, the ladder is about to slip. Assuming that the coefficient of friction between the ladder and the wall is 0.2, determine the coefficient of friction between the ladder and the floor. 16 Marks L2 CO3



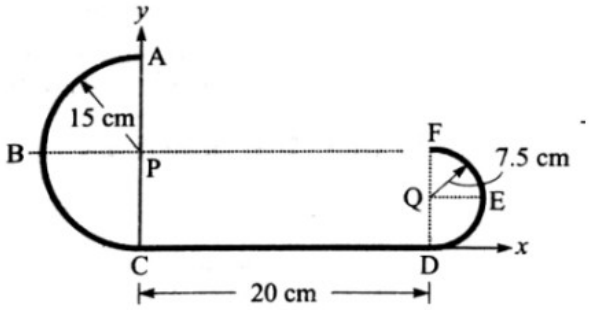
MODULE-IV

8. Find the Moment of Inertia of the centroidal axis as shown in the figure. 16 Marks L2 CO4



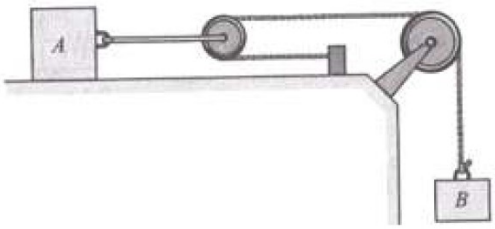
(OR)

9. A wire has been bent into the shape as shown in figure. Determine the position of the centroid of the wire. 16 Marks L2 CO4



MODULE-V

10. Two blocks A and B of masses 10 kg and 5 kg are connected with cord and pulley system as shown in the figure. Determine the velocity of each block when the system is started from rest and block B gets displacement by 2 m. Consider μk=0.2 between block A and horizontal surface. 16 Marks L2 CO5



(OR)

11. A particle, moving with simple harmonic motion, performs 10 complete oscillations per minute and its speed, when at a distance of 80 mm from the centre of oscillation is 3/5 of the maximum speed. Find the amplitude, the maximum acceleration and the speed of the particle, when it is 60 mm from the centre of the oscillation. 16 Marks L2 CO5

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CODE No.: 22ME101401 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

BASIC CIVIL & MECHANICAL ENGINEERING

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List the sub-disciplines of civil engineering.	2 Marks	L2	CO1
	b)	Distinguish between English bond and Flemish bond.	2 Marks	L4	CO1
	c)	What are the constituents of concrete?	2 Marks	L1	CO2
	d)	Define bearing capacity of soil for safe construction of structure.	2 Marks	L2	CO2
	e)	What is impulse turbine? Give example.	2 Marks	L2	CO3
	f)	What is meant by Priming?	2 Marks	L1	CO3
	g)	What are the advantages and disadvantages of gear drive?	2 Marks	L1	CO4
	h)	Discuss briefly the various types of belts used for the transmission of power.	2 Marks	L1	CO4
	i)	Briefly explain the need for rapid prototyping.	2 Marks	L2	CO5
	j)	Is there a difference between 3D printing and additive manufacturing?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	A series of offsets were taken from a chain line to a curved boundary line at an interval of 5 m. in the following order: 0, 3.25, 4.10, 6.45, 8.90, 5.75, 8.50, 0 m. Calculate the area between the chain line and the boundary line using both Trapezoidal Rule and Simpson's Rule.	8 Marks	L4	CO1
	b)	Discuss various tests performed on bricks to check their quality	8 Marks	L2	CO1

(OR)

3.	a)	Describe briefly with neat sketches: i) Workability of concrete ii)Segregation of Concrete	8 Marks	L2	CO1
	b)	What are the principles of surveying? Explain.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain types of bridges and List the examples for each.	8 Marks	L2	CO2
	b)	Define i) Stress ii) Strain iii) Young's modulus iv) Hooke's law.	8 Marks	L2	CO2

(OR)

5.	a)	What is settlement of foundation? Explain its types.	8 Marks	L2	CO2

	b)	Briefly explain various rainwater harvesting systems in practice and its working principle.	8 Marks	L2	CO2
		MODULE-III			
6.	a)	Write short notes on specialized sub-disciplines in Mechanical Engineering.	6 Marks	L2	CO3
	b)	Explain the working principle of 4 stroke petrol engine with neat sketch.	10 Marks	L2	CO3
		(OR)			
7.		Define turbine. Describe the working principle of impulse turbine with a neat sketch.	16 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain centrifugal tension and Initial tension in belt drives.	8 Marks	L2	CO4
	b)	Derive an expression for maximum power transmitted in flat belt drive.	8 Marks	L2	CO4
		(OR)			
9.		Define a gear train and explain the different gear tooth terminologies with a neat sketch.	16 Marks	L2	CO4
		MODULE-V			
10.		What are the three phases of rapid prototyping? Contrasting these with those of geometric modeling, what similarities can be drawn?	16 Marks	L2	CO5
		(OR)			
11.		Discuss the advantages and disadvantages of powder based rapid prototyping system and compare with liquid based and solid based rapid prototyping systems.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

MATERIAL SCIENCE ENGINEERING

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Sketch screw dislocation.	2 Marks	L2	CO1
	b)	What is an alloy.	2 Marks	L1	CO1
	c)	What are the objectives of Heat treatment.	2 Marks	L2	CO2
	d)	Sketch tempering process.	2 Marks	L1	CO2
	e)	What are Had field manganese steels.	2 Marks	L1	CO3
	f)	What are low alloy steels.	2 Marks	L1	CO3
	g)	What are Refractory metals.	2 Marks	L2	CO4
	h)	List out the applications of titanium alloys.	2 Marks	L1	CO4
	i)	What are the applications of Glass-ceramics.	2 Marks	L2	CO5
	j)	Classify composite materials.	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe Burger's vector for the Edge and Screw Dislocation.	8 Marks	L2	CO1
	b)	List out different type's imperfections in crystals and briefly explain Schottkey, Frenkel defects, Edge and Screw dislocations.	8 Marks	L2	CO1

(OR)

3.	a)	Draw Iron-Iron-Carbide diagram neatly and explain cooling of steel from Liquid phase to room temperature for 0.4% C and 0.8% C.	8 Marks	L1	CO1
	b)	Explain the expression for the Gibb's Phase rule with suitable example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write short notes on surface hardening techniques. Explain any two methods with neat sketches.	8 Marks	L2	CO2
	b)	Define annealing and recall the types of annealing.	8 Marks	L2	CO2

(OR)

5.	a)	Differentiate the CCT and TTT diagram. Explain the construction method of TTT and CCT diagrams.	8 Marks	L3	CO2
	b)	Define carburizing and describe the types of carburizing in detail.	8 Marks	L1	CO2

MODULE-III

6.	a)	Classify the types of carbon steels with their specific features and applications.	8 Marks	L4	CO3
	b)	Explain the structure, properties and applications of White and Malleable cast iron.	8 Marks	L3	CO3

(OR)

7.	a)	Recall the designations of steels and mention the types, composition, properties, and applications of tool steels.	8 Marks	L2	CO3
	b)	What is stainless steel? How they are classified and give their applications.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Compare brass and bronze materials.	8 Marks	L2	CO4
	b)	List the properties and applications of copper.	8 Marks	L2	CO4

(OR)

9.	a)	What is aluminum? Explain the types, properties and uses of aluminum alloys in detail.	8 Marks	L3	CO4
	b)	List the properties and applications of Nickel.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define composite materials. What unique properties have they, over the conventional materials?	8 Marks	L2	CO5
	b)	Discuss the properties and applications of particle reinforced composites, and fiber reinforced composites.	8 Marks	L3	CO5

(OR)

11.	a)	Write short notes on Metal Matrix composites and Ceramic-matrix composites.	8 Marks	L3	CO5
	b)	Describe properties and applications of polymers.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

MANUFACTURING TECHNOLOGY

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

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

PART - B

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

5 X 16 = 80 Marks

MODULE-I

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

MODULE-II

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

MODULE-III

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

MODULE-IV

8.	a)	What are Ceramics? List and briefly explain five important properties of Ceramics that make them useful engineering materials	8 Marks	L4	CO4
	b)	Illustrate the different mechanical methods of metal powder production	8 Marks	L3	CO4
		(OR)			
9.	a)	With suitable applications explain the following ceramic materials. i) Alumina, Silica, Silicon carbide, Silicon nitride	8 Marks	L3	CO4
	b)	Paraphrase the application of powder metallurgy products in automobile and power generation industries	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain the working principles and application of compression Moulding.	8 Marks	L4	CO5
	b)	Explain various types of Blow molding process with a diagram	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the working principles and application of Rotational Moulding	8 Marks	L3	CO5
	b)	Describe thermoforming and transfer molding process.	8 Marks	L2	CO5



A

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

CALCULUS AND TRANSFORMATION TECHNIQUES

[Computer Science and Engineering, Computer Science and Engineering (Cyber Security), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Determine the value of c for the function $f(x) = x^2$ in [2,3]	2 Marks	L1	CO1
	b)	Find the Maclaurin's series of $f(x) = e^x$	2 Marks	L1	CO1
	c)	Find $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$, if $f(x,y) = \ln(7x + 5y)$	2 Marks	L1	CO2
	d)	When the function f(x, y) has saddle point at (a, b)	2 Marks	L1	CO2
	e)	Find the Laplace transform of the $f(t) = te^{-t}$.	2 Marks	L1	CO3
	f)	Find inverse Laplace transform of $L^{-1}\left\{\frac{1}{s^2}\right\}$.	2 Marks	L2	CO3
	g)	Find the Laplace transform of the $f(t) = e^{-t}\sin t$.	2 Marks	L1	CO4
	h)	Find inverse Laplace transform of $L^{-1}\left\{\frac{1}{(s-2)^2}\right\}$.	2 Marks	L1	CO4
	i)	Define periodic function.	2 Marks	L1	CO5
	j)	If $F[f(x)] = f(p)$ then $F[f(ax)]$?	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)	If $f(x) = \sin^{-1} x$ (if $0 < x < b < 1$), Use mean value theorem to prove that $\frac{b-a}{\sqrt{1-a^2}} < \sin^{-1} b - \sin^{-1} a < \frac{b-a}{\sqrt{1-b^2}}$.	8 Marks	L3	CO1
	b)	Verify Rolle's theorem for $f(x) = e^x(\sin x - \cos x)$ in $\left(\frac{\pi}{4}, \frac{5\pi}{4}\right)$	8 Marks	L2	CO1

(OR)

3.	a)	Expand $\log(1+x)$ by Maclaurin's series up to the term containing x^4.	8 Marks	L3	CO1
	b)	Expand $\log_e x$ in the powers of $x-1$ and hence evaluate $\log_e(1.1)$	8 Marks	L3	CO1

MODULE-II

4.	a)	If $u = \log(x^3 + y^3 + z^3 - 3xyz)$. Prove that $\left(\frac{\partial}{\partial x} + \frac{\partial}{\partial y} + \frac{\partial}{\partial z}\right)^2 U = \frac{-9}{(x+y+z)^2}$.	8 Marks	L2	CO2
	b)	If $u = x + y + z, uv = y + z, uvw = z$, show that $\frac{\partial(x,y,z)}{\partial(u,v,w)} = u^2 v$	8 Marks	L2	CO2
		(OR)			
5.		Discuss the extreme values for $f(x,y) = x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$	16 Marks	L3	CO2
		MODULE-III			
6.	a)	Find the Laplace transformation of $f(t) = t^3 e^{-3t}$.	8 Marks	L2	CO3
	b)	Prove that $\int_0^\infty e^{-3t} t \sin t \, dt = \frac{3}{50}$.	8 Marks	L3	CO3
		(OR)			
7.	a)	Find the Laplace transformation of the following (i) $f(t) = \begin{cases} 0 & if \ 0 < t < 2 \\ 4 & if \ t > 2 \end{cases}$ (ii) $f(t) = \sin t - \cos t$	8 Marks	L2	CO3
	b)	Show that $\int_0^\infty e^{-x^2} dx = \frac{\sqrt{\pi}}{2}$	8 Marks	L3	CO3
		MODULE-IV			
8.		Solve $y'' - 3y' + 2y = 1 - e^{2t}, y(0) = 1, y'(0) = 0$ using Laplace Transformations.	16 Marks	L3	CO4
		(OR)			
9.	a)	Find the inverse Laplace transformation of $L^{-1}\left\{\frac{s^2 - 3s + 4}{s^3}\right\}$.	8 Marks	L2	CO4
	b)	Find solution of differential equation $y'' + y = t$ with initial condition $y(0) = 1, y'(0) = 2$ by using Laplace transformation.	8 Marks	L3	CO4
		MODULE-V			
10.	a)	Express f(x) = x – π as Fourier series in the interval – π < x < π	8 Marks	L2	CO5
	b)	Obtain the Fourier series for the function f(x) = |x| in – π < x < π	8 Marks	L3	CO5
		(OR)			
11.	a)	Find the Fourier transform of $f(x) = \begin{cases} 1 - x^2 & for \ \|x\| \le 1 \\ 0 & for \ \|x\| > 1 \end{cases}$. Hence evaluate $\int_0^\infty \frac{x\cos x - \sin x}{x^2} \cos\frac{x}{2} \, dx$	16 Marks	L2	CO5

B

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

CALCULUS AND TRANSFORMATION TECHNIQUES

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State the Rolle's theorem.	2 Marks	L1	CO1
	b)	State the Cauchy's mean value theorem.	2 Marks	L1	CO1
	c)	Compute the Jacobian of the polar coordinates transformation $x = r\cos\theta$, $y = r\sin\theta$.	2 Marks	L1	CO2
	d)	Write down two properties of Jacobian.	2 Marks	L1	CO2
	e)	Discuss first shifting theorem with example.	2 Marks	L1	CO3
	f)	Use the definition to find the Laplace transform of e^{-at} .	2 Marks	L1	CO3
	g)	Find $L^{-1}\left\{\frac{6}{s^2+9}\right\}$	2 Marks	L1	CO4
	h)	Find the inverse Laplace transform of $\frac{s}{(s-a)^2+b^2}$	2 Marks	L1	CO4
	i)	What are the Dirichlet conditions for a function to have a Fourier Series?	2 Marks	L1	CO5
	j)	What are the differences between Fourier series and Fourier transform.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Verify Rolle's theorem for the function $f(x) = x^3 - 3x^2 + 2$ in the interval $[0,2]$. Also find all points where f'(x) = 0 and interpret the result graphically.	10 Marks	L2	CO1
	b)	For $f(x) = e^x$, find the Taylor polynomial of degree 2 about $x = 1$ and prove that the error in using this approximation at any point in [0,2] is less than 0.1.	6 Marks	L2	CO1
		(OR)			
3.	a)	Prove that between any two real roots of $x^3 - 6x + 2 = 0$, there lies a root of $x^2 - 2 = 0$	10 Marks	L2	CO1
	b)	Find the Taylor series expansion of $f(x) = \ln(1+x)$ about $x = 0$ up to third order with Lagrange's form of remainder. Also find the bound of error when $x = 0.5$.	6 Marks	L2	CO1

MODULE-II

4.	a)	Find the maximum and minimum values of $f(x,y) = x^2 + y^2 - 2x - 4y + 5$ in the region bounded by $x \geq 0, y \geq 0, x + y \leq 4$.	10 Marks	L2	CO2
	b)	Find $\frac{du}{dt}$ as a total derivative if $u = x^2 + y^2 + z^2$ and $x = e^{2t}$ $y = e^{2t}\cos(3t), z = e^{2t}\sin(3t)$	6 Marks	L2	CO2
		(OR)			
5.	a)	Find the maximum value of xy subject to the constraint $x^2 + y^2 = 25$.	10 Marks	L2	CO2
	b)	Find the total differential coefficient $x^2 y$ w.r.t. x when x and y are connected by $x^2 + xy + y^2 = 1$	6 Marks	L2	CO2

MODULE-III

6.	a)	Find $L[\sin(at + b)], L[\cos(at + b)], L[\sin^2(t)], L[\cos^2(t)]$	8 Marks	L2	CO3
	b)	Evaluate $L[te^{2t}\sin(3t)]$	8 Marks	L2	CO3
		(OR)			
7.	a)	Find $L[e^{2t} + 4t^3 + \sin(2t)\cos(3t)], L[\sin^3(2t)]$	8 Marks	L2	CO3
	b)	Evaluate $L[te^{-t}\cos^2 t]$	8 Marks	L2	CO3

MODULE-IV

8.	a)	Find the following i) $L^{-1}\left\{\frac{2}{s^3} + \frac{1}{s} + \frac{1}{s^4}\right\}$ ii) $L^{-1}\left\{\frac{3s + 4}{s^2 + 16}\right\}$	8 Marks	L2	CO4
	b)	By using convolution theorem, find $L^{-1}\left\{\frac{16}{(s-2)(s+2)^2}\right\}$	8 Marks	L2	CO4
		(OR)			
9.	a)	Find the following i) $L^{-1}\left\{\frac{3s + 5\sqrt{2}}{s^2 + 8}\right\}$ ii) $L^{-1}\left\{\frac{1}{4s - 5}\right\}$	8 Marks	L2	CO4
	b)	By using convolution theorem, find $L^{-1}\left\{\frac{1}{s^2(s^2 + 1)}\right\}$	8 Marks	L2	CO4

MODULE-V

10.	a)	Examine the given function is even or odd and hence obtain Fourier series for the function $f(x) = x^2$ in $(-\pi, \pi)$	8 Marks	L2	CO5
	b)	Find the half range cosine series $f(x) = \sin x$ in $0 < x < \pi$.	8 Marks	L2	CO5
		(OR)			
11.	a)	Find the half range sine series $f(x) = x(\pi - x)$ in $0 < x < \pi$	8 Marks	L2	CO5
	b)	Find the Fourier series for $f(x) = x - x^2$ in $(-\pi, \pi)$.	8 Marks	L2	CO5

B

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

TRANSFORMATION TECHNIQUES AND LINEAR ALGEBRA

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List any two Dirichlet's conditions for a function to be expanded as a Fourier series.	2 Marks	L1	CO1
	b)	Define Fourier transform.	2 Marks	L1	CO1
	c)	Write the condition for the existence of the Laplace transform.	2 Marks	L1	CO2
	d)	Define unit step function.	2 Marks	L1	CO2
	e)	Find the inverse Laplace transform of $\frac{1}{(s+1)(s+2)}$.	2 Marks	L1	CO2
	f)	Find the inverse Laplace transform of $\frac{e^{-s}}{(s+1)}$.	2 Marks	L1	CO2
	g)	Define rank of a matrix.	2 Marks	L1	CO3
	h)	Find the characteristic polynomial of the matrix $A = \begin{bmatrix} 8 & -4 \\ 2 & 2 \end{bmatrix}$.	2 Marks	L1	CO3
	i)	Define vector space.	2 Marks	L1	CO4
	j)	Write the properties of 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)	Find the Fourier series for $f(x) = x - x^2$ in $(-\pi, \pi)$.	8 Marks	L1	CO1
	b)	Obtain the half range Fourier cosine series for the function $f(x) = x^2$ in $(0, \pi)$.	8 Marks	L3	CO1

(OR)

3.	a)	Applying Fourier integral theorem, Show that $e^{-ax} - e^{-bx} = \frac{2(b^2 - a^2)}{\pi} \int_0^\infty \frac{\lambda \sin \lambda x}{(\lambda^2 + a^2)(\lambda^2 + b^2)} d\lambda$.	8 Marks	L3	CO1
	b)	Find the Fourier cosine transform of $f(x) = e^{-ax}, a > 0$ and hence deduce the integral $\int_0^\infty \frac{\cos px}{a^2 + p^2} dp$.	8 Marks	L3	CO1

MODULE-II

4.	a)	Determine the Laplace transform of $t\sin t\cos t$.	8 Marks	L3	CO2
	b)	Find the Laplace transform of $g(t)$, where $g(t) = \begin{cases} \cos\left(t - \frac{\pi}{3}\right), if\ t > \frac{\pi}{3} \\ 0 \qquad\qquad , if\ t < \frac{\pi}{3} \end{cases}$.	8 Marks	L1	CO2

(OR)

5.	a)	Determine the Laplace transform of $\frac{\sin 3t\cos t}{t}$.	8Marks	L3	CO2
	b)	Find the Laplace transform of the saw-toothed wave of period T defined by $f(t) = \frac{k}{T}t$, where $0 < t < T$.	8 Marks	L1	CO2

MODULE-III

6.	a)	Find the inverse Laplace transform of $\log\left(\frac{s+3}{s+5}\right)$.	8 Marks	L1	CO2
	b)	Evaluate $L^{-1}\left[\frac{1}{\left(s^2+a^2\right)^2}\right]$ using convolution theorem.	8 Marks	L5	CO2

(OR)

7.		Applying the technique of Laplace transforms, solve the differential equation $\left(D^2+1\right)y = t\cos 2t$ given that $y(0) = 0, y'(0) = 0$.	16 Marks	L3	CO2

MODULE-IV

8.	a)	Find the rank of matrix by reducing it to echelon form. $\begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$	8 Marks	L1	CO3
	b)	Test for consistency and solve $x + y + z = 6; x - y + 2z = 5; 2x - 2y + 3z = 7$.	8 Marks	L4	CO3

(OR)

9.	a)	Determine the Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}$.	8 Marks	L3	CO3
	b)	Using Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$, find A^4.	8 Marks	L3	CO3

MODULE-V

10.	a)	Show that the set of all $m \times n$ matrices forms a vector space with the usual operations matrix addition and matrix scalar multiplication.	8 Marks	L2	CO4
	b)	In vector space P_2, determine whether the set of vectors $B = \{1+x, 1+x^2, 1-x+x^2\}$ form a basis or not.	8 Marks	L3	CO4

(OR)

11.	a)	Prove that the given transformation is a linear transformation $T: R^2 \to R^3$ defined by $T\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} x \\ 2x-y \\ 3x+4y \end{bmatrix}$.	8 Marks	L5	CO4
	b)	Determine the matrix of linear transformation $T: P_2 \to P_2$ defined by $T(p(x)) = p(2x-1)$ with respect to the basis $B = \{1, x, x^2\}$, here P_2 is the vector space of all polynomials of degree atmost 2.	8 Marks	L3	CO4



A

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech II Semester (MBU-22) Regular Examinations, May – 2025

TRANSFORMATION TECHNIQUES AND LINEAR ALGEBRA

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

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

PART - B

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

5 X 16 = 80 Marks

MODULE-I

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

(OR)

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

MODULE-II

4.	a)	Find the Laplace Transform of $f(t)$ defined as	8 Marks	L1	CO2

$$f(t) = \begin{cases} 0, & 0 < t < 1 \\ 1, & 1 < t < 2 \\ 2, & t > 2 \end{cases}.$$

b) Determine the Laplace transform of $f(t)$ where $f(t) = e^{4t} \sin 2t \cos t$. 8 Marks L3 CO2

(OR)

5. 8Marks L1 CO2

a) Find the Laplace transform of $e^{-4t} \int_0^t \frac{\sin 3t}{t} dt$.

b) Find $L\{f(t)\}$, where $f(t)$ is a periodic function of period 2π and it is given by $f(t) = \begin{cases} \sin t, & if\ 0 < t < \pi \\ 0, & if\ \pi < t < 2\pi \end{cases}$. 8 Marks L1 CO2

MODULE-III

6. a) Find the inverse Laplace transform of $\log\left(\frac{s^2+4}{s^2+9}\right)$. 8 Marks L1 CO2

b) By using Convolution theorem, find $L^{-1}\left[\frac{s^2}{(s^2+a^2)(s^2+b^2)}\right]$. 8 Marks L3 CO2

(OR)

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

MODULE-IV

8. a) Find the rank of matrix $A = \begin{bmatrix} 1 & 2 & 1 & 0 \\ -2 & 4 & 3 & 0 \\ 1 & 0 & 2 & -8 \end{bmatrix}$ by reducing it to echelon form. 8 Marks L1 CO3

b) Determine whether the following equations will have a non-trivial solution, if so solve them $x + 3y - 2z = 0; 2x - y + 4z = 0; x - 11y + 14z = 0$. 8 Marks L3 CO3

(OR)

9. a) Determine the Eigen values and Eigen vectors of the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$. 8 Marks L3 CO3

b) Show that the matrix $A = \begin{bmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & 1 \end{bmatrix}$ satisfies Cayley-Hamilton theorem. 8 Marks L2 CO3

MODULE-V

10. a) In vector space P_2, determine whether $r(x) = 1 - 4x + 6x^2$ is in 8 Marks L3 CO4

span $\left(p(x), q(x)\right)$, here $p(x) = 1 - x + x^2$ and $q(x) = 2 + x - 3x^2$.

b) Find the dimension of the vector space $V = P_2$ of the given set $B = \left\{x, 1 + x, x - x^2\right\}$ and give a basis for V. 8 Marks L1 CO4

(OR)

11. a) Find the kernel and Range of the differential operator $D : P_3 \to P_2$ defined by $D\left(p(x)\right) = p'(x)$. 8 Marks L1 CO4

b) Let $T : P_2 \to P_2$ be a linear transformation for which $T(1 + x) = 1 + x^2, T\left(x + x^2\right) = x - x^2, T\left(1 + x^2\right) = 1 + x + x^2$. Find $T\left(4 - x + 3x^2\right)$. 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 – 2025

PHYSICS FOR COMPUTING

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Recall the polarized and un-polarized light.	2 Marks	L1	CO1
	b)	Calculate the refractive index of water when the angle of polarization was 53°.	2 Marks	L3	CO1
	c)	Define Fermi energy.	2 Marks	L1	CO2
	d)	Find the de-Broglie wavelength for a ball of 50 g moving with a velocity of 20 m/sec.	2 Marks	L1	CO2
	e)	What is degeneracy?	2 Marks	L1	CO3
	f)	Sketch the energy band diagram of conductors, semiconductors, and insulators based on the origin of Energy band formation in solids.	2 Marks	L1	CO3
	g)	Illustrate the direct and indirect band gap of semiconductors.	2 Marks	L2	CO4
	h)	Predict the wavelength of a semiconductor laser whose energy gap is found to be 1.44 eV.	2 Marks	L3	CO4
	i)	Sketch the structure of optical fiber.	2 Marks	L1	CO5
	j)	What is the sensor?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Why does a center portion of Newton's rings appear in the dark? Why they are circular? Develop an expression for the wavelength of monochromatic light by forming Newton's rings.	12 Marks	L3	CO1
	b)	Newton's rings are observed in the reflected light 5900Å. The diameter of 15^{th} ring is 0.5 cm, then find the curvature of the lens used.	4 Marks	L1	CO1

(OR)

3.	a)	Classify the diffraction. Describe the Fraunhofer diffraction due to double single slits. How this experiment is different from the Youngs double slight experiment.	10 Marks	L2	CO1
	b)	Explain the how the Nicols prism works as both polarizer and analyzer.	6 Marks	L2	CO1

		MODULE-II			
4.		Define matter waves. Explain de Broglie's hypothesis of matter waves. Obtain the expression for de-Broglie's wavelength of a material particle. Prove the de-Broglie's hypothesis with any one suitable experiment.	16 Marks	L3	CO2
		(OR)			
5.	a)	Deduce the Schrödinger's time-independent wave equation. Recall the physical significance of the wave function.	10 Marks	L3	CO2
	b)	Explain the Fermi Dirac distribution function along with its temperature dependence.	6 Marks	L2	CO2
		MODULE-III			
6.	a)	Obtain an expression for a particle in a 1D potential box. Deduce the eigenvalues of energy, normalized wave functions, and probability functions for a particle.	12 Marks	L2	CO3
	b)	A particle having a mass of about 9.1 x 10^{-31} kg was bounded in a 1D box of width 10 Å, then estimate its minimum energy.	4 Marks	L1	CO3
		(OR)			
7.	a)	Describe the Kronig-Penny model to understand the behavior of an electron in a periodic potential.	12 Marks	L2	CO3
	b)	Summarize the tunneling effect with a suitable diagram	4 Marks	L2	CO3
		MODULE-IV			
8.	a)	Derive an expression for the density of electrons in intrinsic semiconductors.	12 Marks	L3	CO4
	b)	Differentiate drift and diffusion currents.	4 Marks	L4	CO4
		(OR)			
9.	a)	Explain the Hall effect, Derive the equation for the Hall coefficient.	8 Marks	L2	CO4
	b)	Describe the construction and working mechanism of the photodiode.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Build an expression for an optical fiber's acceptance angle and numerical aperture by using their refractive indices.	12 Marks	L3	CO5
	b)	The refractive indices of a given optical fiber are 1.54 and 1.45 respectively. Find the acceptance angle and acceptance cone values.	4 Marks	L1	CO5
		(OR)			
11.	a)	Classify the optical fibers. Discuss the propagation of light through various fibers with neat sketch.	12 Marks	L2	CO5
	b)	List any four applications of optical fibers in various fields.	4 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

THEORY OF COMPUTATION

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Finite Automata.	2 Marks	L1	CO1
	b)	Differentiate between NFA and DFA.	2 Marks	L1	CO1
	c)	List any two identity rules of regular languages.	2 Marks	L1	CO2
	d)	State Arden's Theorem.	2 Marks	L1	CO2
	e)	Define Context-Free Grammar.	2 Marks	L1	CO3
	f)	What is ambiguity in a CFG?	2 Marks	L1	CO3
	g)	Define Pushdown Automata.	2 Marks	L1	CO1
	h)	Differentiate between Pushdown Automata by Final State and Pushdown Automata by Null Store.	2 Marks	L1	CO2
	i)	List variants of Turing Machine.	2 Marks	L1	CO2
	j)	Write representation of Linear Bounded Automata.	2 Marks	L1	CO2

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define the following terms of automata theory: String, Prefix, Suffix. Also give examples for each.	8 Marks	L3	CO1
	b)	Convert the following NFA to DFA.	8 Marks	L2	CO2

State/ Σ	a	b
→ q0	q0, q1	q2
q1	q0	q1
(q2)		q0, q1

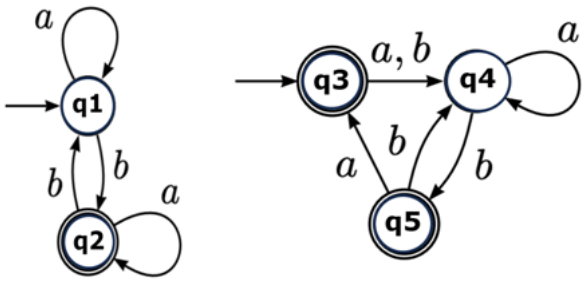
(OR)

3.	a)	Design a DFA which accepts all strings containing two consecutive zeros over Σ = { 0 , 1 }.	8 Marks	L4	CO1
	b)	Construct an equivalent Mealy Machine for the following Moore Machine.	8 Marks	L3	CO1

Present State	Next State		Output
	a = 0	a = 1	
→ q0	q3	q1	0
q1	q1	q2	1
q2	q2	q3	0
q3	q3	q0	0

MODULE-II

4.	a)	Prove that the following regular expressions are equivalent. R1 = ε + 1*(011)*(1*(011)*)*, R2 = (1+011)*	6 Marks	L3	CO2
	b)	Prove that the following two finite automata are equivalent.	10 Marks	L3	CO1



(OR)

5.	a)	Show that the set $\{a^{i^2}\}$ is not regular.	8 Marks	L3	CO1
	b)	Construct FA equivalent to the following regular expression R = ((10)* + 111) + 0	8 Marks	L3	CO2

MODULE-III

6.	a)	Eliminate Null Productions from the following CFG. S → aS | AB , A → Λ	8 Marks	L2	CO1
	b)	Show that the following CFG is ambiguous. E → E+E | E*E | (E)	8 Marks	L3	CO1

(OR)

7.	a)	Given the grammar G = S → S + S | S * S | a | b. Find derivation tree of the string a * b + a * b	8 Marks	L3	CO1
	b)	Reduce the following CFG to Chomsky Normal Form. S → aAD , A → aB | bAB , B → b , D → d	8 Marks	L3	CO1

MODULE-IV

8.	a)	Construct equivalent PDA for the following CFG. S → AA | a , A → SA | b	8 Marks	L3	CO2
	b)	Explain in detail the Chomsky hierarchy of languages.	8 Marks	L3	CO4

(OR)

9.	a)	Define Pushdown Automata. Draw the model of the Pushdown Automata. What is the purpose of Pushdown Store?	8 Marks	L3	CO2
	b)	Design a Pushdown Automata to accept the language: { $0^n 1^n$ | n > 0 }	8 Marks	L3	CO4

MODULE-V

10.	a)	Write about Turing Machine model and Representation of Turing Machine.	8 Marks	L3	CO1
	b)	Explain in detail the Recursive and recursively enumerable languages (REL) and their properties.	8 Marks	L2	CO5

(OR)

11.		Write short notes on i) Variants of Turing Machines ii) Universal Turing Machine	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

DATA MINING

[Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State the difference between data transformation and data cleaning.	2 Marks	L4	CO1
	b)	Name two preprocessing techniques commonly used in data mining.	2 Marks	L1	CO1
	c)	What is rule-based classification methods?	2 Marks	L2	CO2
	d)	What is linear regression used for in data mining?	2 Marks	L2	CO2
	e)	What is the difference between k-means and k-medoids clustering methods?	2 Marks	L4	CO3
	f)	Define agglomerative hierarchical clustering.	2 Marks	L1	CO3
	g)	What are complex data types in data mining?	2 Marks	L1	CO4
	h)	Give an example of a trend in data mining.	2 Marks	L2	CO4
	i)	Briefly explain the purpose of a 3D scattergram.	2 Marks	L2	CO5
	j)	What are Chernoff Faces used for in data visualization?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write about Dimensionality reduction methods?	8 Marks	L2	CO1
	b)	Data mining as a step in the process of knowledge discovery	8 Marks	L2	CO1

(OR)

3.	a)	Explain a scenario for various steps in data pre-processing	8 Marks	L3	CO1
	b)	What is Need for Preprocessing the data with examples?	8 Marks	L2	CO1

MODULE-II

4. 16 Marks L5 CO2

RID	age	income	student	credit_rating	Class: buys_computer
1	youth	high	no	fair	no
2	youth	high	no	excellent	no
3	middle_aged	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle_aged	low	yes	excellent	yes
8	youth	medium	no	fair	no
9	youth	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	youth	medium	yes	excellent	yes
12	middle_aged	medium	no	excellent	yes
13	middle_aged	high	yes	fair	yes
14	senior	medium	no	excellent	no

Calculate an Induction of a decision tree using information gain on income.

(OR)

5.	a)	Discuss the challenges of applying linear regression to real-world datasets.	8 Marks	L4	CO2
	b)	What is pattern evaluation in association mining? Discuss methods for evaluating the interestingness of patterns.	8 Marks	L5	CO2

MODULE-III

6.		Consider dataset is {2,4,10,12,3,20,30,11,25}, clusters are C1, C2 and initial centroids C1=2 and C2=4. Apply K-Means algorithm with absolute distance measure and represent final cluster centroid with neat sketch.	16 Marks	L4	CO3

(OR)

7.	a)	Discuss the challenges and limitations of hierarchical clustering methods.	8 Marks	L5	CO3
	b)	What is the DBSCAN algorithm? Explain how it works and its advantages over partitioning methods.	8 Marks	L2	CO3

MODULE-IV

8.	a)	How is text mining used for sentiment analysis? Include an example.	8 Marks	L3	CO4
	b)	Explain the applications of data mining in e-commerce and marketing. Provide examples.	8 Marks	L3	CO4

(OR)

9.	a)	Discuss the impact of data mining on society, particularly in terms of privacy and security.	8 Marks	L5	CO4
	b)	What are the advancements in data mining techniques for handling heterogeneous data sources? Provide examples.	8 Marks	L2	CO4

MODULE-V

10.	a)	Illustrate the construction of a volume rendering visualization using a dataset of your choice.	8 Marks	L3	CO5
	b)	Evaluate the effectiveness of 3D visualization techniques in decision-making.	8 Marks	L5	CO5

(OR)

11.	a)	Discuss the design and utility of Chernoff Faces for multidimensional data representation.	8 Marks	L2	CO5
	b)	Explain the concept of volume rendering and its importance in data visualization.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

ARTIFICIAL INTELLIGENCE

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List any two properties of environment?	2 Marks	L1	CO1
	b)	What is Rational Agent?	2 Marks	L1	CO1
	c)	Explain Blind search technique?	2 Marks	L2	CO2
	d)	Define Heuristic function?	2 Marks	L1	CO2
	e)	What is Global Maxima?	2 Marks	L1	CO2
	f)	What are the drawbacks of the Hill Climbing Algorithm?	2 Marks	L1	CO2
	g)	Define Hidden Markov Model?	2 Marks	L1	CO3
	h)	Explain Kalman Filter	2 Marks	L2	CO3
	i)	What measures can be taken to address bias in AI algorithms?	2 Marks	L1	CO5
	j)	Define Location Sensors?	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is PEAS? Explain different agent environment with their PEAS description.	8 Marks	L1	CO1
	b)	Write an agent program for Vacuum Cleaner World.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the properties of Task Environment?	8 Marks	L2	CO1
	b)	Write short notes on Goal based agent?	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain why problem formulation must follow goal formation.	8 Marks	L2	CO2
	b)	Discuss in detail about Iterative Deepening Search with an example?	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain A* algorithm with an example? What are the limitations of A* algorithm?	8 Marks	L2	CO2
	b)	Differentiate informed and uninformed search strategies.	8 Marks	L2	CO2

MODULE-III

6.	a)	How does the minimax algorithm work in the context of game trees?	8 Marks	L1	CO2
	b)	Explain the four main steps of the Monte Carlo tree search algorithm	8 Marks	L2	CO2
		(OR)			
7.	a)	Explain the alpha–beta pruning with example?	8 Marks	L2	CO2
	b)	Discuss the impact of the initial state on the performance of Hill-climbing.	8 Marks	L1	CO2

MODULE-IV

8.	a)	Explain how uncertainty is addressed in probabilistic AI models?	8 Marks	L2	CO3
	b)	What is temporal inference in the context of AI, and why is it important in modeling real-world scenarios	8 Marks	L1	CO3
		(OR)			
9.	a)	Explain the concept of hidden states in HMMs and their significance?	8 Marks	L2	CO3
	b)	Discuss the semantics of nodes and edges in a Bayesian network and how they represent variables and dependencies.	8 Marks	L1	CO3
		MODULE-V			
10.	a)	Name two essential components of robot hardware and their functions.	8 Marks	L1	CO4
	b)	What is robotic perception? Explain briefly?	8 Marks	L2	CO4
		(OR)			
11.	a)	How can transparency in AI decision-making be achieved?	8 Marks	L1	CO5
	b)	Discuss in detail about prime application domains for robotic technology.	8 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

ARTIFICIAL INTELLIGENCE

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the importance of Artificial Intelligence?	2 Marks	L1	CO1
	b)	List any two properties of environment?	2 Marks	L1	CO1
	c)	Define PEAS.	2 Marks	L1	CO2
	d)	List out any two uninformed search techniques.	2 Marks	L1	CO2
	e)	What are the drawbacks in hill climbing?	2 Marks	L2	CO3
	f)	What is the difference between local maximum and global maximum in a state space?	2 Marks	L2	CO3
	g)	What is uncertainty in the context of knowledge representation?	2 Marks	L1	CO4
	h)	What are the main components of a Bayesian network?	2 Marks	L1	CO4
	i)	Provide one example of a robot and explain its primary functionality.	2 Marks	L1	CO5
	j)	What are the limits of AI?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write about the limitations of Table Driven Agents.	8 Marks	L1	CO1
	b)	Discuss in detail about Simple Reflex Agent.	8 Marks	L2	CO1
		(OR)			
3.	a)	Write short notes on Goal based agent?	8 Marks	L1	CO1
	b)	List the areas of application of artificial intelligence.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain A* algorithm with an example.	8 Marks	L3	CO2
	b)	What are the limitations of A* algorithm?	8 Marks	L3	CO2
		(OR)			
5.	a)	How breadth first search works?	8 Marks	L3	CO2
	b)	What are the features and applications of breadth first search?	8 Marks	L3	CO2

MODULE-III

6.	a)	What is Simulated annealing search. Explain with an example	8 Marks	L3	CO3
	b)	Illustrate Hill climb search mechanism using 8Queens problem	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the importance of Alpha-Beta pruning to make optimal decisions in multiplayer games.	8 Marks	L3	CO3
	b)	What is the purpose of minimax search algorithm in making optimal decisions in games.	8 Marks	L3	CO3

MODULE-IV

8.	a)	How can knowledge be effectively represented in domains with inherent uncertainty?	8 Marks	L2	CO4
	b)	What are the key challenges in modeling uncertain knowledge, and how can they be addressed?	8 Marks	L2	CO4
		(OR)			
9.	a)	What is the underlying semantic framework of Bayesian networks?	8 Marks	L3	CO4
	b)	Explain the concept of conditional independence in the context of Bayesian networks?	8 Marks	L2	CO4

MODULE-V

10.	a)	What are the key components of robot hardware	8 Marks	L2	CO5
	b)	How do they contribute to the overall functionality of a robot?	8 Marks	L2	CO5
		(OR)			
11.	a)	What are some specific application domains where robots have made significant contributions	8 Marks	L2	CO5
	b)	How do they impact those domains?	8 Marks	L2	CO5



A

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

COMPUTER NETWORKS

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Discuss the use of computer networks.	2 Marks	L1	CO1
	b)	Mention the key components in an optical transmission system.	2 Marks	L1	CO1
	c)	List the drawbacks of simplex protocol.	2 Marks	L1	CO3
	d)	Discuss the necessity of medium access control sublayer.	2 Marks	L1	CO3
	e)	Write down the design issues of Datalink layer.	2 Marks	L1	CO2
	f)	Explain the disadvantages of Flooding.	2 Marks	L1	CO2
	g)	What is port addressing in transport layer?	2 Marks	L1	CO3
	h)	Draw the UDP Header format	2 Marks	L1	CO3
	i)	Define URL.	2 Marks	L1	CO4
	j)	Mention the responsibility of Message Transfer Agent in Email system.	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss about the various transmission media available at the physical layer.	8 Marks	L2	CO1
	b)	Classify computer networks and explain them in brief.	8 Marks	L2	CO1
		(OR)			
3.	a)	Outline the significance of layered architecture? Explain the functionalities of various layers in OSI reference model	8 Marks	L2	CO1
	b)	Explain the principal differences between connection-oriented communication and connectionless communication.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the conceptual model of CSMA with Collision Detection with relevant diagrams.	8 Marks	L2	CO3
	b)	Explain flow control mechanism using Go-Back-N protocol.	8 Marks	L2	CO3
		(OR)			
5.	a)	Recall traffic shaping and explain leaky bucket algorithm.	8 Marks	L2	CO3
	b)	With the help of neat diagrams explain Bit-map Protocol and Binary Countdown protocol.	8 Marks	L2	CO3

MODULE-III

6.	a)	Justify the statement "Hierarchical routing algorithm is a feasible solution for large networks" with example.	8 Marks	L4	CO2
	b)	Illustrate the shortest path routing algorithm with suitable example.	8 Marks	L4	CO2

(OR)

7.	a)	Explain various closed loop congestion control algorithms.	8 Marks	L2	CO2
	b)	Classify the static and dynamic routing algorithms? Explain the basic concept of flooding.	8 Marks	L2	CO2

MODULE-IV

8.	a)	With the help of a neat sketch, explain the management of sliding window in TCP.	8 Marks	L2	CO3
	b)	Explain the purpose and importance of the following header fields of TCP (i) Urgent pointer (ii) RST (iii) Header checksum (iv) Sequence number	8 Marks	L2	CO3

(OR)

9.	a)	Discuss in detail about Real time transport protocol (RTP) and Real-time Transport Control Protocol (RTCP)	8 Marks	L2	CO3
	b)	Explain the exponential increase, additive increase and multiplicative decrease congestion policies of TCP.	8 Marks	L2	CO3

MODULE-V

10.	a)	Explain how DNS service maps domain names to IP addresses.	8 Marks	L2	CO4
	b)	Discuss the features and working of HTTP.	8 Marks	L2	CO4

(OR)

11.	a)	Provide an architectural overview of the electronic mail (email) system, including the major components and their interactions.	8 Marks	L2	CO4
	b)	Provide an architectural overview of the World Wide Web (WWW), including its foundational components and principles.	8 Marks	L2	CO4

B

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

COMPUTER NETWORKS

[Computer Science and Engineering (Data Science), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Identify the key advantages of microwave transmission over fiber.	2 Marks	L1	CO1
	b)	Illustrate the major functions performed by the layers of the ISO - OSI model.	2 Marks	L1	CO1
	c)	List the drawbacks of the stop and wait protocol.	2 Marks	L1	CO3
	d)	Define the principle of 1-persistent CSMA.	2 Marks	L1	CO3
	e)	Enumerate admission control steps helps to prevent congestion in a network?	2 Marks	L1	CO2
	f)	How does the optimality principle influence the decision-making process in routing?	2 Marks	L1	CO2
	g)	What is POP?	2 Marks	L1	CO1
	h)	Discover the services provided by Transport layer protocol?	2 Marks	L1	CO1
	i)	Mention the different levels in domain name space.	2 Marks	L1	CO4
	j)	Explain FTP.	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the major functions performed by the layers of the ISO - OSI model.	8 Marks	L3	CO1
	b)	Briefly explain any three methods used for data communication using guided media.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize the various network topologies with examples.	8 Marks	L2	CO1
	b)	Explain in detail about TCP/IP protocol suite with neat diagram?	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the advantages and limitations of stop-and-wait ARQ (Automatic Repeat request) as an elementary data link protocol.	8 Marks	L2	CO3
	b)	Explain Cyclic Redundancy Check? Suppose we want to transmit the message 11001001 and protect it from errors using the CRC polynomial $x^4 + 1$. Use polynomial long division to determine the message that should be transmitted.	8 Marks	L4	CO3
		(OR)			
5.	a)	Examine Bit-map Protocol and Binary Countdown protocol With the help of neat diagrams. Explain the advantage of Binary Countdown over Bit-map protocol.	8 Marks	L3	CO3
	b)	Illustrate the sliding window protocols with neat sketches.	8 Marks	L4	CO3

MODULE-III

6.	a)	Discuss in detail about open source shortest path routing with neat diagrams.	8 Marks	L2	CO2
	b)	Explain the working of Link -state Routing in detail.	8 Marks	L2	CO2

(OR)

7.	a)	Why subnetting is necessary? With suitable example, develop the concept of subnetting in class B network.	8 Marks	L2	CO2
	b)	Interpret the frame format of IPV4 and IPV6 addresses.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Discuss various flow control mechanisms in transport layer.	8 Marks	L2	CO1
	b)	Describe about i) TCP connection Establishment. ii) TCP Connection Release	8 Marks	L2	CO1

(OR)

9.	a)	Illustrate the header format for a user datagram protocol	8 Marks	L3	CO1
	b)	Demonstrate the timer management of TCP in transport layer.	8 Marks	L2	CO1

MODULE-V

10.	a)	Discuss the protocols associated with WWW. Explain them.	8 Marks	L2	CO4
	b)	Analyze the structure and content of email message formats.	8 Marks	L2	CO4

(OR)

11.	a)	How does DNS caching improve the efficiency of DNS resolution? Discuss the benefits and potential challenges of caching.	8 Marks	L2	CO4
	b)	Elaborate the working of HTTP in detail with examples.	8 Marks	L2	CO4



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) (RA) Regular Examinations, May – 2025

COMPUTER NETWORKS

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the use of access point?	2 Marks	L1	CO1
	b)	What is broadcasting?	2 Marks	L1	CO1
	c)	What do you mean by reservation and polling in data link layer?	2 Marks	L1	CO1
	d)	Compare pure ALOHA and slotted ALOHA in terms of efficiency.	2 Marks	L1	CO2
	e)	What is the fundamental differences between IP version 4 and IP version 6 protocols?	2 Marks	L1	CO2
	f)	Provide examples of scenarios where hierarchical routing is particularly beneficial.	2 Marks	L1	CO1
	g)	What is the primary function of the Protocol field in the TCP Segment Header and its importance in data demultiplexing?	2 Marks	L1	CO1
	h)	What is the purpose of the three-way handshaking process during connection establishment?	2 Marks	L1	CO1
	i)	What is the purpose of the Recursive Query in DNS?	2 Marks	L1	CO1
	j)	Define the term "Name Resolution" in the context of DNS.	2 Marks	L1	CO1

PART - B

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

5 x 16 = 80 Marks

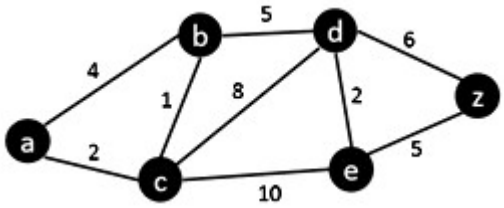
MODULE-I

2.	a)	Compare connection oriented and connection less service.	8 Marks	L2	CO1
	b)	Explain briefly about network software in computer networks.	8 Marks	L2	CO1
		(OR)			
3.		Explain in detail about IEEE 802.11 with examples.	16 Marks	L2	CO1

MODULE-II

4.	a)	Describe Byte count method with an example.	8 Marks	L4	CO3
	b)	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.	8 Marks	L4	CO3
		(OR)			
5.	a)	Illustrate the mechanism of sliding window protocol assuming window size of 4 to transmit 12 data frames.	8 Marks	L2	CO3
	b)	Explain about various Categories of CSMA Protocols.	8 Marks	L4	CO3

MODULE-III

6.	a)	Find the shortest path between a and z by giving details steps. 	8 Marks	L4	CO2
	b)	Explain Internet Protocol version 4 with the neat block diagram of IP header format.	8 Marks	L2	CO2
		(OR)			
7.	a)	Explain the concept of load shedding and admission control in congestion.	8 Marks	L2	CO1
	b)	Outline the concept of distance vector routing protocol with example.	8 Marks	L2	CO1
		MODULE-IV			
8.	a)	Write a short notes on i) retransmission timer ii) persistence timer iii) keepalive timer	8 Marks	L2	CO1
	b)	Explain in detail about UDP	8 Marks	L2	CO1
		(OR)			
9.	a)	Compare the TCP header and the UDP header. List the fields in the TCP header that are not part of the UDP header.	8 Marks	L2	CO1
	b)	With a neat diagram explain Remote Procedure Call.	8 Marks	L2	CO1
		MODULE-V			
10.	a)	Explain Hyper Text Transfer Protocol request and response messages in detail.	8 Marks	L2	CO4
	b)	Examine the concept of FTP protocol.	8 Marks	L2	CO4
		(OR)			
11.	a)	Demonstrate the working E-mail architecture with user formats.	8 Marks	L2	CO4
	b)	Classify the domains related to DNS and explain them with examples.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

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B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

INTERNET OF THINGS

[Computer Science and Engineering (Cyber Security)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define IoT and explain its conceptual framework.	2 Marks	L1	CO1
	b)	What is the architectural view of IoT?	2 Marks	L1	CO1
	c)	Define Sensor Technology and its importance in IoT.	2 Marks	L1	CO2
	d)	What are actuators in IoT and how do they function?	2 Marks	L1	CO2
	e)	Define embedded computing in IoT.	2 Marks	L1	CO3
	f)	What are embedded platforms in IoT?	2 Marks	L1	CO3
	g)	Define the purpose of design methodology in IoT.	2 Marks	L1	CO4
	h)	What is the role of requirements specification in IoT design?	2 Marks	L1	CO4
	i)	Define data analytics in the context of IoT.	2 Marks	L1	CO5
	j)	What is Apache Hadoop?	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 conceptual framework and architecture of IoT.	8 Marks	L2	CO1
	b)	Discuss the technologies that enable IoT.	8 Marks	L2	CO1
		(OR)			
3.	a)	Illustrate the concept of data enrichment and device management at Gateway in IoT.	8 Marks	L2	CO1
	b)	Compare IoT and M2M in terms of architecture, scope, and applications.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain Sensor Technology and its working principles with examples of common IoT sensors.	8 Marks	L2	CO2
	b)	Describe the functioning of actuators in IoT and their role in controlling physical systems.	8 Marks	L2	CO2
		(OR)			
5.	a)	Provide a detailed explanation of RFID technology, its components, and IoT applications.	8 Marks	L2	CO2
	b)	Discuss the importance of Internet connectivity in IoT and the different types of connectivity options used.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the basics of embedded computing and its significance in IoT.	8 Marks	L3	CO3
	b)	Discuss the various embedded platforms used for IoT prototyping, such as Arduino and Raspberry Pi.	8 Marks	L3	CO3
		(OR)			
7.	a)	Provide an overview of the prototyping process for IoT hardware systems.	8 Marks	L3	CO3
	b)	Analyze the importance of "Things always connected to the Internet/Cloud" in IoT, with examples.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the purpose and steps involved in IoT design methodology.	8 Marks	L3	CO4
	b)	Discuss the importance of requirements specification in IoT design with suitable examples.	8 Marks	L3	CO4
		(OR)			
9.	a)	Elaborate on process specifications in IoT design and their role in system functionality.	8 Marks	L3	CO4
	b)	Describe the concept and importance of domain model specification in IoT systems.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the importance of data analytics in IoT applications.	8 Marks	L3	CO5
	b)	Discuss the role of Apache Hadoop in IoT data processing and storage.	8 Marks	L3	CO5
		(OR)			
11.	a)	Provide a detailed explanation of how Hadoop Map Reduce is used for batch data analysis in IoT systems.	8 Marks	L3	CO5
	b)	Analyze the common vulnerabilities in IoT systems and their impact on security.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

STRUCTURAL ANALYSIS

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Discuss the double integration method.	2 Marks	L1	CO1
	b)	How does the conjugate-beam method help in solving beam deflection problems?	2 Marks	L1	CO1
	c)	What is the strain energy?	2 Marks	L1	CO1
	d)	What is the fixed end moment?	2 Marks	L1	CO2
	e)	Explain the basic principle behind Clapeyron's theorem.	2 Marks	L1	CO3
	f)	What are the advantages of using the slope deflection method in structural analysis?	2 Marks	L1	CO3
	g)	What role do carryover factors play in the Moment Distribution Method?	2 Marks	L1	CO3
	h)	Define the rotation factor in Kani's Method.	2 Marks	L1	CO3
	i)	Define moving loads in structural analysis.	2 Marks	L1	CO4
	j)	Define the term load factor in the plastic analysis.	2 Marks	L1	CO5

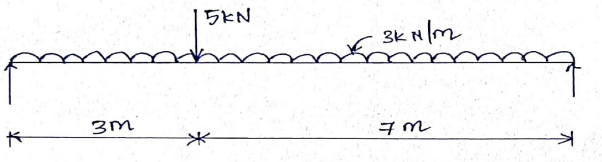
PART - B

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

5 x 16 = 80 Marks

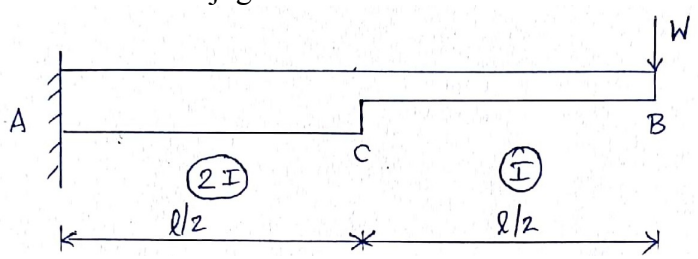
MODULE-I

2.	A simply supported beam 10 m long is loaded as shown in fig. Determine the deflection under the concentrated load using Macaulay's method.	16 Marks	L4	CO1



(OR)

3.	Find slope and deflection at the free end of a cantilever beam shown in fig. Moment of inertia of AC is twice the moment of inertia of BC. Use conjugate beam method.	16 Marks	L4	CO1



MODULE-II

4.	a)	A cantilever beam of length 5 meters carries a concentrated load of 30 kN at its free end. Calculate the deflection at the free end using the energy method. The flexural rigidity of the beam is 800 kN·m².	8 Marks	L4	CO1
	b)	A simply supported beam of length 8 meters carries a uniformly distributed load of 20 kN/m. Using the energy method, determine the maximum deflection at the midpoint of the beam if its flexural rigidity is 1000 kN·m².	8 Marks	L4	CO1

(OR)

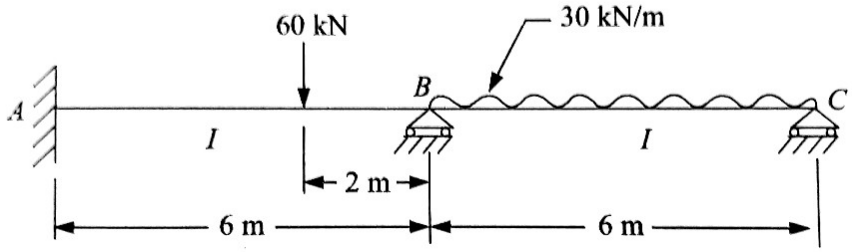
5.	A fixed beam of 8 m span carries a uniformly distributed load of 40 kN/m run over 4 m length starting from left end and a concentrated load of 80 kN at a distance of 6 m from the left hand end. Find: i) Moments at the supports ii) Deflection at the center of the beam. Take EI = 15000 kNm^2.	16 Marks	L4	CO2

MODULE-III

6.	Calculate the bending moment at the support of the middle span for a continuous beam with three equal spans of 12 meters each, subjected to a concentrated load of 40 kN at the mid-span of the middle span, using Clapeyron's Theorem.	16 Marks	L4	CO3

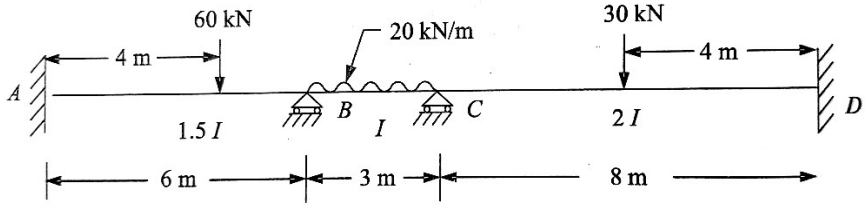
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7.	Analyse the continuous beam shown in figure by slope deflection method and draw the bending moment diagram.	16 Marks	L4	CO3



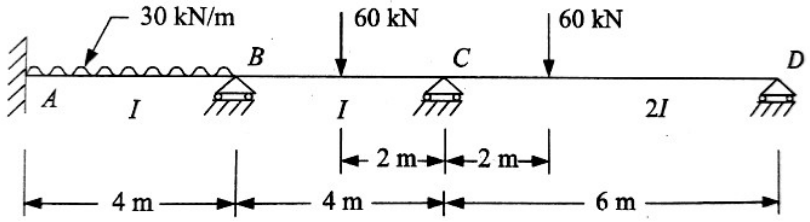
MODULE-IV

8.	Analyse the continuous beam shown in figure using moment distribution method and draw the bending moment diagram.	16 Marks	L4	CO3



(OR)

9.	Analyse the continuous beam shown in figure by Kani's method.	16 Marks	L4	CO3

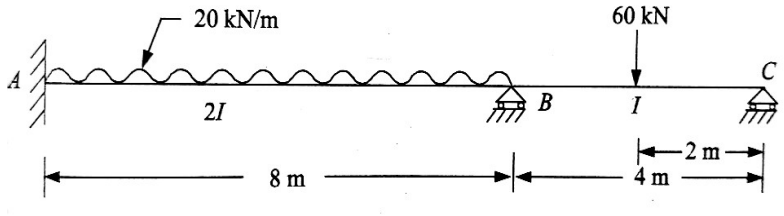


MODULE-V

10.	A train of 5-wheel loads 60 kN, 80 kN, 200 kN, 130 kN and 120 kN spaced 2.5 m between the consecutive loads crosses a beam of span 22.5 m with 120 kN load leading. Calculate the maximum positive and negative shear force values at the centre of the span and the absolute maximum bending moment anywhere in the span. Use Influence Lines method.	16 Marks	L4	CO4

(OR)

11.	Calculate the plastic moment capacity required for the continuous beam with working loads shown in figure.	16 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

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

CONSTRUCTION EQUIPMENT AND AUTOMATION

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out the factors that are considered in identification of construction equipment.	2 Marks	L1	CO1
	b)	What is meant by operating cost?	2 Marks	L1	CO1
	c)	Mention the various compaction equipment.	2 Marks	L1	CO2
	d)	What are the methods of compacting concrete?	2 Marks	L1	CO2
	e)	What are the methods of size reduction of aggregates?	2 Marks	L1	CO3
	f)	List out different types of ready mix concrete?	2 Marks	L1	CO3
	g)	What do meant by digital twin technology?	2 Marks	L2	CO4
	h)	How VR technology changes the construction industry?	2 Marks	L2	CO4
	i)	How construction safety is achieved using robots?	2 Marks	L2	CO5
	j)	Write the types of robots used in construction.	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)	Compare and contrast machines and manual labour.	8 Marks	L4	CO1
	b)	Enlist the considerable factors in selecting equipment.	8 Marks	L2	CO1
		(OR)			
3.		A Machine was purchased for Rs. 45,000/- on 1st November, 1970. The erection and installation works costs Rs. 7000/-, This was replaced by a new one on 31st December, 1995. If the scrap value was estimated as Rs. 15,000/-. What should be the rate of depreciation and depreciation fund on 15th June, 1985? Also find, if after 12years of running, some assemblies are replaced and replacement cost is Rs. 15,000/-, what will be the new rate of depreciation.	16 Marks	L4	CO1

MODULE-II

4.	a)	How would you calculate the output of rippers? How would you increase the ripping production from dozer?	8 Marks	L4	CO2
	b)	Discuss main components of a hydraulic excavator with neat sketch.	8 Marks	L2	CO2
		(OR)			
5.	a)	Name different portable bins. Write the uses and applications of different portable bins.	8 Marks	L2	CO2
	b)	What is dump truck? How will you calculate the number of dump trucks required for a project?	8 Marks	L4	CO2

MODULE-III

6.		How will you enhance the production capacity of: i) Jaw crushers. ii) Hammer mills. iii) Screening plants. iv) Crushing plants	16 Marks	L4	CO3

(OR)

7.	a)	Explain the different equipments involved in concrete manufacturing plant with neat sketches.	8 Marks	L2	CO3
	b)	How would you evaluate the differences between bitumen and asphalt.	8 Marks	L4	CO3

MODULE-IV

8.	a)	In which aspects the BIS is useful? Explain in detail.	8 Marks	L2	CO4
	b)	What is constriction life cycle? Explain it with a net sketch.	8 Marks	L2	CO4

(OR)

9.	a)	Demonstrate how Building automation system helps in the evolution of smart buildings.	8 Marks	L4	CO4
	b)	How do Engineers are trained in managing these autonomous applications in construction.	8 Marks	L4	CO4

MODULE-V

10.	a)	Compare and contrast autonomous robots and construction equipment.	8 Marks	L4	CO5
	b)	"Automation in pre-cast industry" give advantages and disadvantages.	8 Marks	L2	CO5

(OR)

11.	a)	Define a robot. Illustrate different types of robots.	8 Marks	L2	CO5
	b)	"The future of autonomous construction machines" you as a civil engineer, how would you evaluate this statement?	8 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

HYDROLOGY AND WATER RESOURCES ENGINEERING

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the term Hydrology.	2 Marks	L1	CO1
	b)	Mention the purpose of hydrologic cycle.	2 Marks	L1	CO1
	c)	List some aquifer parameters.	2 Marks	L1	CO2
	d)	Define confined aquifer.	2 Marks	L2	CO2
	e)	Mention the use of hydrograph	2 Marks	L1	CO3
	f)	State any two formulae to calculate design flood	2 Marks	L1	CO3
	g)	Classify environmental impacts in water resources planning.	2 Marks	L2	CO4
	h)	List any two management strategies in water resources planning.	2 Marks	L1	CO4
	i)	Differentiate reservoir and dam.	2 Marks	L2	CO5
	j)	Classify reservoir based on purpose.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	The network of ten stations in and around a river basin has the Theissen weights of 0.1, 0.06, 0.11, 0.07, 0.08, 0.09, 0.11, 0.12, 0.16 and 0.10, respectively. If the rainfalls recorded at these stations during a storm are 150, 168, 158, 135, 156, 207, 158, 162, 114 and 132 mm respectively. Determine mean precipitation over an area.	16 Marks	L3	CO1

(OR)

3.	For a drainage basin of 600 sq km, isohyets for a given storm having the following data. Calculate the average depth of precipitation over an area.	16 Marks	L2	CO1

Isohyets (cm)	15-12	12-9	9-6	6-3	3-1
Area (sq km)	92	128	120	175	85

MODULE-II

4.	Define evaporation and its process. Explain the various factors affecting evaporation.	16 Marks	L4	CO2

(OR)

5.	Explain the pan measurement method to estimate evaporation with a neat sketch.	16 Marks	L3	CO2

MODULE-III

6.	A 2-hour unit hydrograph with the following ordinates (m^3/s): [0, 10, 30, 50, 40, 20, 0]. Find a 4-hour unit hydrograph using the S-curve method.	16 Marks	L3	CO3

(OR)

7.	A hydrologist wants to estimate the 100-year flood for a river basin using the Log-Pearson Type III method. The recorded annual peak discharges for 10 years are as follows:	16 Marks	L3	CO3

Year	1	2	3	4	5	6	7	8	9	10
Discharge (m^3/s)	250	300	270	320	400	450	380	360	310	420

MODULE-IV

8.	Explain requirement of water resources schemes.	16 Marks	L3	CO4

(OR)

9.	Describe the principles and objectives of water resources planning.	16 Marks	L2	CO4

MODULE-V

10.	Define and classify reservoirs in detail.	16 Marks	L4	CO5

(OR)

11.	Discuss various investigations for selection of site for a reservoir.	16 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

SOIL MECHANICS

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	A sample of dry soil weighs 68 gm. Find the volume of voids if total volume of sample is 40 ml and the specific gravity of solids is 2.65. Also determine the void ratio.	2 Marks	L2	CO1
	b)	Explain the use of particle size distribution curve in soil engineering.	2 Marks	L2	CO1
	c)	The capillary rise in a soil A with an effective size of 0.02 mm was 60 cm. Estimate the capillary rise in a similar soil B with an effective size of 0.04 mm.	2 Marks	L2	CO2
	d)	Classify soil water.	2 Marks	L1	CO2
	e)	Explain the importance of effective stress.	2 Marks	L2	CO3
	f)	Define geostatic stress.	2 Marks	L1	CO3
	g)	Define compression index.	2 Marks	L1	CO4
	h)	Define pre consolidation pressure.	2 Marks	L1	CO4
	i)	A sample of dry cohesion less soil was tested in a triaxial machine. If the angle shearing resistance was 36^0 and the confining pressure, 100 kN/m^2. Determine the deviator stress at which the sample failed.	2 Marks	L2	CO5
	j)	Draw typical strength envelops for a clean sand.	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Draw the three phase diagram. Derive the relation between saturated unit weight (γ_{sat}), void ratio (e) and unit weight of water (γ_w).	8 Marks	L4	CO1
	b)	The porosity of a soil is 0.35. If specific gravity = 2.66, calculate: i) Saturated unit weight, ii) Saturated moisture content, and iii) Moisture content, when moist unit weight is 17.6 kN/m^3.	8 Marks	L4	CO1
		(OR)			
3.	a)	Define the terms: i) Liquidity index ii) Flow index iii) Toughness index iv) Activity. Write a brief note on the latest methods of moisture content determination in the field.	8 Marks	L1	CO1
	b)	The dry unit weights of sand in the loosest and densest states are respectively 13.34 kN/m^3 and 21.40 kN/m^3. Assuming the specific gravity of solids is 2.67, determine the relative density of sand with porosity of 30%. Comment on the relative density value with regard to compactness.	8 Marks	L4	CO1

MODULE-II

4.	a)	Define capillarity and permeability. List out the methods available for determination of permeability in the laboratory and in the field? Explain falling head method, in detail with the help of a neat sketch.	8 Marks	L3	CO2
	b)	Explain pumping out method in detail with the help of a neat sketch.	8 Marks	L4	CO2
		(OR)			
5.	a)	What is flow net? Explain the properties and uses of flow net.	8 Marks	L2	CO2
	b)	Determine the average vertical and horizontal permeability of a soil mass made up of three horizontal strata, each 1m thick, if the coefficient of permeability of three strata are $1x10^{-2}$ cm/s, $3x10^{-2}$ cm/s and $8x10^{-3}$ cm/s.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain how New mark's influence chart is constructed and how it is used to find the vertical stress at a point below the ground surface.	8 Marks	L4	CO3
	b)	A water tank is supported by a ring foundation having outer diameter of 10 m and inner diameter of 7.5 m. The ring foundation transmits uniform load intensity of 160 kN/m^2. Compute the vertical stress induced at depth of 4 m below the centre of ring foundation, using (i) Boussinesq analysis and (ii) Wester gaard's analysis, taking $\mu = 0$.	8 Marks	L4	CO3
		(OR)			
7.	a)	What are the different methods of compaction adopted in the field? How would you select the type of compaction equipment to be used?	8 Marks	L4	CO3
	b)	The following results were obtained in a compaction test: Bulk unit weight (kN/m^3) 18.5 19.50 20.0 21.00 20.50 20.00 Water content (%) 17.0 19.0 20.0 20.8 21.5 22.5 Determine the optimum moisture content and maximum dry density. Also draw 5% air voids line and 90% saturation line if G=2.67.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Discuss the spring analogy for primary consolidation. What are its uses?	8 Marks	L3	CO4
	b)	A layer of soft clay is 6 m thick and lies under a newly constructed building. The weight of sand overlying the clay layer produces a pressure of 2.6 kg/cm^2 and the new construction increases the pressureby1.0 kg/cm^2. If the compression index is 0.5. Compute the settlement. Water content is 40% and specific gravity of grains is 2.65.	8 Marks	L4	CO4
		(OR)			
9.	a)	Distinguish normally consolidated soils and over consolidated soils. What is over consolidation ratio?	8 Marks	L4	CO4
	b)	An undrained soil sample 30 cm thick got 50% consolidation in 20 minutes with drainage allowed at top and bottom in the laboratory. If the clay layer from which the sample was obtained is 3 m thick in field condition, estimate the time it will take to consolidate 50% with double surface drainage and in both cases, consolidation pressure is uniform.	8 Marks	L4	CO4

MODULE-V

10.	a)	Explain vane shear test with the help of neat sketch.	8 Marks	L2	CO5
	b)	A saturated specimen of cohesionless sand was tested in triaxial compression and the sample failed at a deviator stress of 482 kN/m^2 when the cell pressure was 100 kN/m^2 under the drained conditions. Find the effective angle of shearing resistance of sand. What would be the deviator stress and the major principal stress at failure for another identical specimen of sand, if it is tested under cell pressure of 200 kN/m^2. Use either Mohr's circle method or analytical method.	8 Marks	L4	CO5

(OR)

11.	a)	What is critical void ratio? Explain briefly Skempton's pore pressure coefficients.	8 Marks	L3	CO5
	b)	Following are the results of undrained triaxial compression test on two identical soil specimens, at failure: Lateral pressure,σ_3 (kN/m^2) : 100 300 Total vertical pressure,σ_1 (kN/m^2) : 440 760 Pore water pressure, u (kN/m^2) : - 20 60 Determine the cohesion and angle of shearing resistance a) referred to total stress, b) referred to effective stress.	8 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

ENVIRONMENTAL SCIENCE

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define environment.	2 Marks	L1	CO1
	b)	Mention the major objectives of environmental education.	2 Marks	L1	CO1
	c)	Define ecosystem.	2 Marks	L1	CO2
	d)	Draw the flowchart of biogeographical classification of India.	2 Marks	L2	CO2
	e)	Classify ait pollution sources.	2 Marks	L2	CO3
	f)	List any four prohibited wastes.	2 Marks	L1	CO3
	g)	Define sustainability.	2 Marks	L1	CO4
	h)	Explain environmental protection act in India.	2 Marks	L2	CO4
	i)	Mention the major cause of increased population growth in the 18^{th} century.	2 Marks	L1	CO5
	j)	Define birth rate and growth rate in connection with population growth.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the significance and scope of the environmental education.	8 Marks	L2	CO1
	b)	Explain the role of different disciplines that contribute to the environmental studies.	8 Marks	L2	CO1
		(OR)			
3.	a)	Analyze the environmental impacts of groundwater usage.	8 Marks	L2	CO1
	b)	Explain about the segments of atmosphere in detail.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the role of producers, consumers and decomposers in an ecosystem.	8 Marks	L2	CO2
	b)	Compare and contrast an ecosystem with an anthroposystem.	8 Marks	L4	CO2
		(OR)			
5.	a)	Explain the flow of energy through the various components of the ecosystem (producers, consumers and decomposers).	8 Marks	L2	CO2
	b)	Compare the flow of energy and nutrients through an ecosystem.	8 Marks	L4	CO2

MODULE-III

6.	a)	List the major air pollutants and explain their effects on human beings.	8 Marks	L2	CO3
	b)	Explain various strategies useful to control soil erosion.	8 Marks	L2	CO3

(OR)

7.	a)	Explain acid rain and its impacts.	8 Marks	L2	CO3
	b)	List the major pollutants in the automobile exhaust and discuss the ways and means to control the same.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the concept of sustainable development.	8 Marks	L2	CO4
	b)	Explain the major obstacles in the path of sustainable development in India.	8 Marks	L2	CO4

(OR)

9.	a)	Is it possible to sustain any developmental activity indefinitely? Explain your views.	8 Marks	L2	CO4
	b)	Is it practically possible to have an infinitely sustainable development with the limited resources of earth and the ever-increasing per capita resource consumption? Discuss.	8 Marks	L2	CO4

MODULE-V

10.		Describe the history of population growth on earth mentioning the factors contributing to it.	16 Marks	L2	CO5

(OR)

11.		Draw a typical population pyramid of a developing country and discuss how it is likely to differ from that of a developed country.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

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 python and illustrate the features of python.	2 Marks	L1	CO1
	b)	Explain the Identifiers, Keywords, Statements, Expressions, and Variables in Python programming language with examples.	2 Marks	L2	CO1
	c)	What is meant by selection, iteration and sequence control structures?	2 Marks	L1	CO2
	d)	Illustrate the use of join() and split() string methods with examples. Describe why strings are immutable with an example.	2 Marks	L2	CO2
	e)	Describe the use of str.upper() and str.lower() functions in string?	2 Marks	L1	CO3
	f)	Outline the concept of tupleand explain the difference between list and tuple.	2 Marks	L2	CO3
	g)	Write short note on Functional Programming Approach.	2 Marks	L1	CO4
	h)	Explain how the write method works on a file?	2 Marks	L2	CO4
	i)	List the types of Inheritance in OOPS.	2 Marks	L1	CO5
	j)	Illustrates Handling Exceptions with simple 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)	Write Python code to check if a given year is a leap year or not.	8 Marks	L2	CO1
	b)	Describe Arithmetic Operators, Assignment Operators, Comparison Operators, Logical Operators and Bitwise Operators in detail with examples.	8 Marks	L3	CO1
		(OR)			
3.	a)	Input five integers (+ve and −ve). Write Pythonic code to find the sum of negative numbers, positive numbers and print them. Also, find the average of all the numbers and numbers above average	8 Marks	L2	CO1
	b)	Explain the concept of scope and lifetime of variables in Python programming language with an example.	8 Marks	L3	CO1

MODULE-II

4.	a)	Demonstrate nested if-else with an example Python program	8 Marks	L2	CO2
	b)	Develop a Python program to perform matrix multiplication	8 Marks	L3	CO2
		(OR)			
5.	a)	List and explain various looping statements in Python	8 Marks	L2	CO2
	b)	Demonstrate the use of break and continue keywords in looping structure using a code snippet.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the following list methods with an example. a) append() b) extend() c) insert() d) index() e) sort().	8 Marks	L2	CO3
	b)	Write Python program to count the total number of vowels, consonants and blanks in a String.	8 Marks	L3	CO3

(OR)

7.	a)	Is String a mutable data type? Also explain the string operations length and slicing in detail with an appropriate example.	8 Marks	L2	CO3
	b)	Illustrate the concept of creating, inserting, updating and deleting elements in a list.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss the advantages of recursion and propose alternate solutions for recursion using a case study.	8 Marks	L2	CO4
	b)	Write a Python program that reads a text file and changes the file by capitalizing each character of file.	8 Marks	L3	CO4

(OR)

9.	a)	Demonstrate file operations with a suitable Python program.	8 Marks	L2	CO4
	b)	Write Python program to change the file extension from .txt to .csv of all the files (including from sub directories) for a given path.	8 Marks	L3	CO4

MODULE-V

10.	a)	How to implement method overriding in Python? Explain.	8 Marks	L2	CO5
	b)	Create a class Employee with data members name, department and salary. Create suitable methods for reading and printing employee information.	8 Marks	L3	CO5

(OR)

11.	a)	Describe various polymorphisms techniques in detail	8 Marks	L3	CO5
	b)	Consider a Rectangle Class and Create Two Rectangle Objects. Write Python program to Check Whether the Area of the First Rectangle is Greater than Second by Overloading > Operator.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define the term algorithm and state the criteria the algorithm should satisfy.	2 Marks	L1	CO1
	b)	Define asymptotic notations: big 'Oh', omega and theta.	2 Marks	L2	CO1
	c)	What is meant by divide and conquer? Give the recurrence relation for divide and conquer.	2 Marks	L1	CO2
	d)	Discuss about union operation on sets.	2 Marks	L1	CO2
	e)	Define general method of dynamic programming.	2 Marks	L2	CO3
	f)	State the time efficiency of floyd's algorithm.	2 Marks	L1	CO3
	g)	Write the control abstraction for greedy method.	2 Marks	L1	CO4
	h)	Define sum of subsets.	2 Marks	L2	CO4
	i)	What are NP- hard and Np-complete problems?	2 Marks	L1	CO5
	j)	Define the principle of FIFO branch and bound.	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

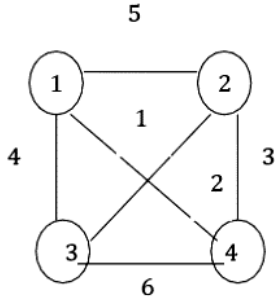
2.	a)	Describe the basic efficiency classes in detail .	8 Marks	L2	CO1
	b)	Explain in detail about asymptotic notations.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe the cost amortization. How it is used in performance analysis? Explain with an example.	8 Marks	L2	CO1
	b)	Explain: i) Time Complexity ii) Space Complexity with suitable examples	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain operations of disjoint sets with examples.	8 Marks	L2	CO2
	b)	Write an algorithm for Merge sort and solve for 310, 285, 179, 652, 351, 423, 861, 254, 450, 520.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain Strassen's Matrix Multiplication algorithm based on the Divide and Conquer approach.	8 Marks	L3	CO2
	b)	Write the binary search algorithm and illustrate the algorithm for the following input: 2, 32, 45, 56, 67, 73, 88, 89, 101, 125.	8 Marks	L4	CO2

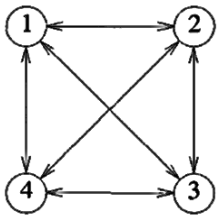
MODULE-III

6.	a)	Define the Matrix-Chain Multiplication problem. Develop a dynamic programming algorithm to find the optimal parenthesization for A1=5x4, A2=4x6, A3=6x2, A4=2x7 using matrix multiplication.	10 Marks	L3	CO3
	b)	Discuss the Floyd-Warshall algorithm for finding the shortest paths between all pairs of vertices in a weighted directed graph. Provide the algorithm steps and analyze its time complexity.	6 Marks	L3	CO3



(OR)

7.	a)	Find the minimum cost for a travelling sales person using dynamic programming for the following.	10Marks	L4	CO3



(a)

0	10	15	20
5	0	9	10
6	13	0	12
8	8	9	0

(b)

	b)	Solve the solution for 0/1 knapsack problem using dynamic programming(p1,p2,p3, p4) = (11, 21, 31, 33), (w1, w2, w3, w4) = (2, 11, 22, 15), M=40, n=4	6 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the solution to the 8 queen's problems using backtracking?	8 Marks	L2	CO3
	b)	Discuss the Single Source Shortest Paths problem and its significance and analyze the time complexity.	8 Marks	L3	CO3

(OR)

9.	a)	Write control abstraction for backtracking.	6 Marks	L3	CO3
	b)	Explain the Graph – coloring problem. And draw the state space tree for m= 3 colors n=4 vertices graph. Discuss the time and space complexity.	10 Marks	L3	CO3

MODULE-V

10.		Explain 0/1 knapsack problem in Branch and Bound technique and Discuss about general method of branch and bound technique.	16 Marks	L1	CO4

(OR)

11.		Explain the concepts of NP-Hard and NP-Complete classes. Define these complexity classes.	16 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

DATABASE MANAGEMENT SYSTEMS

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the difference between File system and a DBMS?	2 Marks	L1	CO1
	b)	What do you mean by data redundancy?	2 Marks	L1	CO1
	c)	What is the purpose of the **DIVISION** operation in Relational Algebra?	2 Marks	L1	CO2
	d)	What is a **Natural Join**?	2 Marks	L1	CO2
	e)	Define **DDL** and give two examples of DDL commands.	2 Marks	L1	CO3
	f)	Define **DML** and give two examples of DML commands.	2 Marks	L2	CO3
	g)	What are functional dependencies?	2 Marks	L2	CO4
	h)	What are anomalies in a database? List its types.	2 Marks	L1	CO4
	i)	What is concurrency control in DBMS?	2 Marks	L1	CO5
	j)	Why is concurrency control needed in a database?	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	What are database constraints? Provide examples of common constraints.	8 Marks	L2	CO1
	b)	What is a data model? Explain different types of data models in DBMS.	8 Marks	L2	CO1

(OR)

3.	a)	What are the different types of data models in DBMS? Which one is the most commonly used?	8 Marks	L3	CO1
	b)	What are client-server architectures in the context of DBMS?	8 Marks	L3	CO1

MODULE-II

4.	a)	How do negation and logical operators (AND, OR, NOT) work in TRC queries? Provide examples.	8 Marks	L2	CO2
	b)	Write a TRC query to find employees who do not work in the "Sales" department.	8 Marks	L2	CO2

(OR)

5.	a)	Explain the relationship between TRC and Relational Algebra. Can every query in TRC be expressed in Relational Algebra.	8 Marks	L2	CO2
	b)	Given the relations Student (StudentID, CourseID) and Course (CourseID, CourseName), write a relational algebra expression to find the StudentID of students who have enrolled in every course in the department "Computer Science". Use the Division operation and discuss its use in this context.	8 Marks	L4	CO2

MODULE-III

6.	a)	Write an SQL query to retrieve the first name, last name, and salary of all employees from the Employee table who earn more than 50,000.	8 Marks	L2	CO3
	b)	How would you modify the query to list only those employees whose last name starts with "A"?	8 Marks	L2	CO3

(OR)

7.	a)	Write an SQL query to find the average salary of employees in each department.	8 Marks	L3	CO3
	b)	Modify the query to list departments with an average salary greater than 40,000.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Consider the relation R(A, B, C, D) with the following functional dependencies: A → B, C B → D, Decompose the relation R into BCNF.	8 Marks	L3	CO4
	b)	For the relation R(A,B,C,D) with the functional dependencies: A→B B→C CD→A Find the closure of A	8 Marks	L3	CO4

(OR)

9.	a)	Describe the Two-Phase Locking (2PL) protocol. How does it ensure transaction isolation.	8 Marks	L3	CO4
	b)	What is a deadlock in a database system? Explain the conditions that lead to deadlock and discuss methods for detecting and resolving deadlocks.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the concept of locking in DBMS. What are shared locks and exclusive locks? Provide examples of when each type is used.	8 Marks	L2	CO5
	b)	Define deadlock in a DBMS context. What are the necessary conditions for a deadlock to occur in a transaction system?	8 Marks	L2	CO5

(OR)

11.	a)	What is a log-based recovery mechanism? Explain the concept of Write-Ahead Logging (WAL) and its role in ensuring durability and recoverability.	8 Marks	L2	CO5
	b)	Discuss the index maintenance operations (e.g., splitting and merging nodes) that occur during insertions and deletions in B- trees.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the conditions for a function to be a random variable?	2 Marks	L1	CO1
	b)	Define sample space and classify the types of sample space.	2 Marks	L1	CO1
	c)	Define the expression for distribution function of Rayleigh Random variable.	2 Marks	L1	CO2
	d)	Write the statement of Chebychev"s inequality.	2 Marks	L1	CO2
	e)	Define correlation coefficient with two properties.	2 Marks	L1	CO2
	f)	Show that var(X+Y) = var (x) + var (Y), if X & Y are statistical independent random variables.	2 Marks	L1	CO2
	g)	Define Power Spectrum Density.	2 Marks	L1	CO3
	h)	Give the statement of Wiener-Khinchin relation.	2 Marks	L1	CO3
	i)	What is White Noise?	2 Marks	L1	CO4
	j)	Give the expression for the thermal noise voltage across a resistor.	2 Marks	L1	CO4

PART - B

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

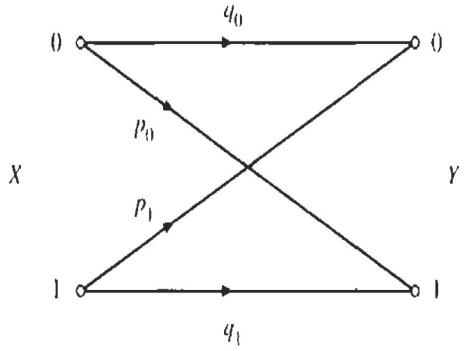
5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss about Bernoulli's Trails. Obtain the expression for Binomial Probability.	8 Marks	L2	CO1
	b)	In the experiment of throwing two fair dice, let ***A*** be the event that the first die is odd, B be the Event that the second die is odd, and C be the event that the sum is odd. Show that events ***A,*** B, and C are pair wise independent, but ***A, B,*** and C are not independent.	8 Marks	L3	CO1

(OR)

3.		Consider the binary communication channel shown in Fig. The channel input symbol X may assume the state 0or the state 1, and, similarly, the channel output symbol Y may assume either the state 0or the state 1. Because of the channel noise, an input 0may convert to anoutput 1and vice versa. i) Find Output Probabilities at 0 and 1 ii) If a 0 was observed at the output, what is the probability that a 0 was the Input state? iii) If a 1 was observed at the output, what is the probability that a 1 was the input state? iv) Calculate the probability of error	16 Marks	L2	CO1



MODULE-II

4. a) State and prove the properties of the probability density function. 8 Marks L1 CO2

   b) A random variable X has the following probability distribution. 8 Marks L3 CO2

x:	0	1	2	3	4	5	6	7
p(x):	0	K	2K	2K	3K	K2	2K2	7K2+K

Calculate

i) The value of k
ii) P(X>4.5)
iii) P(X≤4.5)
iv) P(X=4.5)
v) P(1.5<X<4.5/X>2)

(OR)

5. a) State and prove properties of characteristic function of a random variable X. 8 Marks L1 CO2

   b) Find the moment generating function of binomial distribution. Obtain the expression for variance and Mean 8 Marks L2 CO2

MODULE-III

6. a) State Central Limit theorem 8 Marks L1 CO2

   b) Consider an experiment of drawing randomly three balls from an urn containing two red, three white, and four blue balls. Let (X, Y) be a bivariate r.v. where X and Y denote, respectively, the number of red and white balls chosen. 8 Marks L2 CO2

i) Find the range of (X, Y).
ii) Find the joint pmf's of (X, Y).
iii) Find the marginal pmf's of X and Y.

(OR)

7. a) Discuss about Joint Density Function and mention its properties? 8 Marks L1 CO2

   b) The joint pdf of a bivariate r.v. (X, Y) is given by 8 Marks L2 CO2

$$F_{x,y}(x,y) = \begin{cases} k(x+y) 0 < x < 2, 0 < y < 2 \\ 0, elsewhere \end{cases}$$ where k is a constant.

i) Find the value of k.
ii) Find the marginal pdf's of X and Y.
iii) Are X and Y independent?
iv) Find P(X+Y≤1)

MODULE-IV

8. a) Define a K^{th}-order stationary random process. When it will become a SSS Process. 8 Marks L1 CO3

   b) A random process is defined by Y(t)= X(t) $\cos(\omega_o t+\theta)$ where X(t) is WSS random process that amplitude modulates a carrier of constant angular frequency ω_o with a random phase θ independent of X(t) and uniformly distributed on(-∏,∏). Is Y(t) a WSS random process. 8 Marks L1 CO3

(OR)

9.	a)	State and prove the properties of autocorrelation function.	8 Marks	L2	CO3
	b)	Model a random telegraph signal process Y(t) = λ(t) is a Wide Sense Stationary Process Where λ is a random variable which is X(t) independent of and assumes values -1 and +1 with equal probability and $R_{x_2,x_2}(t_1,t_2) = e^{-2\lambda\|t_1-t_2\|}$.	8 Marks	L3	CO3

MODULE-V

10.	a)	What type of noise associated with respect to presence of signal and explain it briefly	8 Marks	L1	CO5
	b)	For a nonlinear amplifier with two input frequencies 3KHz, and 8KHz , determine: i) First 3 harmonics present in the output for each input frequency. ii) Cross-Product frequencies produced for values of m & n of 1 & 2.	8 Marks	L3	CO4

(OR)

11.	a)	For a non-ideal amplifier having following parameters, Input Signal Power=$2X10^{-10}$W, Input Noise Power=$2X10^{-18}$ W, Power gain=60dB, Internal Noise =$6X10^{-12}$ W Determine: i) Input S/N Ratio(dB) ii) Output S/N Ratio(dB) iii) Noise Factor iv) Noise Figure	8 Marks	L2	CO5
	b)	Determine : i) 2^{nd} , 3^{rd} and 12^{th} harmonics for a 1KHz periodic wave. ii) Percent 2^{nd} order , 3^{rd} order and total harmonic distortion for a fundamental frequency with an amplitude of 8 Vrms, a 2^{nd} harmonic amplitude of 0.2Vrms and 3^{rd} harmonic amplitude of 0.1 Vrms	8 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

LINEAR IC APPLICATIONS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is an operational amplifier?	2 Marks	L1	CO1
	b)	A Differential amplifier has a differential voltage gain of 2000 and a common mode gain of 0.2. Determine CMRR.	2 Marks	L4	CO1
	c)	List the characteristics of the instrumentation amplifier	2 Marks	L1	CO2
	d)	What is a voltage regulator?	2 Marks	L1	CO2
	e)	What is a filter? List the types of filters.	2 Marks	L1	CO3
	f)	What are the comparative advantages and limitations of employing a Wien Bridge oscillator in contrast to an RC oscillator	2 Marks	L1	CO3
	g)	Explain the use of VCO.	2 Marks	L2	CO4
	h)	How does the internal flip-flop contribute to the operation of a 555 timer in Astable mode	2 Marks	L2	CO4
	i)	Define the resolution of the DAC converter.	2 Marks	L1	CO5
	j)	Name the types of resistive techniques for ADC converters.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Compare and contrast ideal and practical op-amp.	7 Marks	L4	CO1
	b)	Draw and explain the various functional blocks of an operational amplifier IC.	9 Marks	L2	CO1

(OR)

3.	a.	Draw the inverting and non-inverting amplifier circuits of an op-amp in a closed-loop configuration. Obtain the expression for the closed-loop gain for both amplifiers.	8 Marks	L3	CO1
	b.	Determine the output voltage of a differential amplifier for the input voltages of 300μV and 240μV. The differential gain of the amplifier is 5000 and the value of the CMRR is (i)100 (ii)105	8 Marks	L4	CO1

MODULE-II

4.	a)	What is an instrumentation amplifier? Give the important features of an instrumentation amplifier. Explain the working of three op-amp instrumentation amplifier. Give its application.	10 Marks	L2	CO2
	b)	Design a Schmitt trigger circuit for UTP and LTP of +3V and -3V respectively. Explain its hysteresis curve.	6 Marks	L3	CO2

(OR)

5.	a)	Explain the inverting and non-inverting AC amplifier	8 Marks	L2	CO2
	b)	Demonstrate the operation of the Sample and Hold circuit with a neat circuit diagram	8 Marks	L3	CO2

MODULE-III

6.	a)	Design a first-order low pass filter for a high cut-off frequency of 2KHz and passband gain of 2.	8 Marks	L3	CO3
	b)	How does the Wien bridge oscillator circuit operate, and what are its key components and design considerations?	8 Marks	L4	CO3

(OR)

7.	a)	Explain the basic principle of operation of RC phase shift oscillator using op-amp. Derive the condition for the frequency of oscillations.	8 Marks	L2	CO3
	b)	What are the various types of active filters implemented using operational amplifiers, and how do they differ in terms of their frequency response, circuit topology, and applications?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define PLL. Sketch its block diagram and explain its operation.	8 Marks	L2	CO4
	b)	Define timer. Draw and explain the functional diagram of the IC 555 timer.	8 Marks	L2	CO4

(OR)

9.	a)	Draw and explain the VCO working principle and derive an equation for its free running.	8 Marks	L4	CO4
	b)	Design an astable multivibrator to provide an output frequency of 1KHZ with a duty cycle of 60% with c=0.1μf.	8 Marks	L3	CO4

MODULE-V

10.	a)	Design a 4-bit weighted resistor DAC technique and explain its transfer characteristics.	8 Marks	L3	CO5
	b)	The basic step of a 9-bit DAC is 10mv. If 000000000 represents 0v, what output is produced if the input is 101011011.	8 Marks	L4	CO5

(OR)

11.	a)	Draw the block diagram of the R-2R ladder DAC. Explain its operation	8 Marks	L2	CO5
	b)	Discuss in detail Flash type ADC. Explain its operation	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

ANALOG COMMUNICATIONS

[Electronics and Communication Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Modulation and Categorize based on nature of signal.	2 Marks	L1	CO1
	b)	Define Quadrature Null Effect.	2 Marks	L1	CO1
	c)	Define Phase Modulation.	2 Marks	L2	CO1
	d)	Interpret the relation ship between phase and frequency modulation .	2 Marks	L1	CO1
	e)	Identify the Figure of Merit of DSBSC System.	2 Marks	L2	CO2
	f)	Identify the Figure of Merit of SSB System.	2 Marks	L2	CO2
	g)	Define Fidelity.	2 Marks	L1	CO3
	h)	Identify the Image Rejection Ratio in receivers.	2 Marks	L2	CO3
	i)	Classify analog pulse modulation techniques.	2 Marks	L1	CO4
	j)	Differentiate between PWM and PPM.	2 Marks	L2	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the principle of ring modulator to produce DSBSC signal and why this ring modulator is known as double balanced modulator.	8 Marks	L2	CO1
	b)	Explain the generation of AM wave using Square law Modulator.	8 Marks	L2	CO1
		(OR)			
3.	a)	The output power of an AM transmitter is 1KW when sinusoidal signal modulated to a depth of 75%. Calculate the power in each side band when the modulation depth is reduced to 25%.	8 Marks	L3	CO1
	b)	Derive the Time Domain expression of SSBS waveform.	8 Marks	L4	CO1

MODULE-II

4.	a)	Find the bandwidth and modulation index of a single tone modulated FM signal described by $S(t)=10\cos[2\Pi 10^8 t + 8\sin(2\Pi 10^3 t)]$.	8 Marks	L2	CO1
	b)	Derive the expression for NBFM if message is m(t) and carrier is $A_c\cos\omega_c t$. Draw the corresponding phasor diagram of NBFM and compare it with AM wave.	8 Marks	L1	CO1
		(OR)			
5.	a)	Explain generation FM using direct method.	8 Marks	L4	CO1
	b)	Explain the operation of limiter circuit in FM demodulation.	8 Marks	L1	CO1

		MODULE-III			
6.		Derive the expression of SNR & Figure of merit for AM.	16 Marks	L4	CO2
		(OR)			
7.	a)	Discuss the role of pre-emphasis and de-emphasis in the improvement of noise immunity in FM.	8 Marks	L4	CO2
	b)	Prove that the figure of merit of AM system for single stone modulation with 100% modulation is 1/3.	8 Marks	L1	CO2
		MODULE-IV			
8.		Classify radio transmitters based on the type of modulation and Service involved.	16 Marks	L1	CO3
		(OR)			
9.	a)	What is image frequency rejection ratio and what is its importance, explain how to reduce the affects cause by Image Frequency.	8 Marks	L4	CO3
	b)	In a broadcast super heterodyne receiver tuning at 1200 kHz having no RF amplifier, the loaded Q of the antenna coupling circuit is 100, By Considering standard IF frequency determine the Image frequency and its rejection ratio.	8 Marks	L1	CO3
		MODULE-V			
10.	a)	Write short notes on the following : i) Single polarity PAM ii) Double polarity PAM	8 Marks	L1	CO4
	b)	List out the applications of pulse Modulation techniques	8 Marks	L1	CO4
		(OR)			
11.		Define and distinguish between PTM and PAM schemes. Sketch and explain their waveform for a single tone sinusoidal input signal.	16 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

DIGITAL DESIGN

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Convert the $(426)_8$ into binary.	2 Marks	L1	CO1
	b)	Mention the gray code equivalent for the binary no $(101101101)_2$.	2 Marks	L2	CO1
	c)	Explain the duality theorem and find the duals for the following function $F = [(ab)'a][(ab)'b]$	2 Marks	L1	CO1
	d)	Minimize the Boolean function using k-map for the following function F(a, b, c)=∑m(1,3,5,7)	2 Marks	L2	CO1
	e)	Mention the importance of combinational circuit.	2 Marks	L1	CO2
	f)	Design one full adder using two half adders.	2 Marks	L3	CO2
	g)	Draw the SR-flipflop logic diagram.	2 Marks	L3	CO3
	h)	Distinguish any two points of Moore and Mealy machine	2 Marks	L2	CO3
	i)	Define Static-0 and Static-1 Hazards.	2 Marks	L1	CO4
	j)	Distinguish any two points sequential and combinational circuits	2 Marks	L2	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Convert the following numbers. i) $(1984)_{10}$ to base 8. ii)10010101.0101 to base 10. iii) $(0.427)_{10}$to binary. iv) $(ACE)_{16}$to binary.	8 Marks	L2	CO1
	b)	i) Using 16's complement method, design the subtraction procedure and find $(C16)_{16}$ from $(E9B)_{16}$ ii) Using 2's complement method, design and implement A-B for the binary numbers A = $(101101)_2$ and B = $(111001)_2$	8 Marks	L2	CO1

(OR)

3.	a)	Determine the error bit location for the received hamming code information $(0101011)_2$.	10 Marks	L4	CO1
	b)	Convert (A+B)(A+C)(B+C') into standard Product of sums(POS) and Sum of Products(SOP).	6 Marks	L2	CO1

MODULE-II

4.	a)	Design a full subtractor using two half subtractor.	6 Marks	L3	CO1
	b)	Minimize the function F(a, b, c, d)=∑m(0,2,5,7,8,13) + d(10,15). Implement the function using only NAND gates.	10 Marks	L3	CO1

(OR)

5.	a)	Minimize the following expression using tabular method Y(w,x,y,z)=∑m(1,3,5,6,12,14,15)+ ∑d(4,7,9,11, 13)	10 Marks	L2	CO1
	b)	Express the standard sum of products for the following expression	6 Marks	L2	CO1

F(A,B,C,D)=(AB)D+ABC'D'+A'BD+ABCD'

MODULE-III

6.	a)	Construct a 4 to 16 line decoder using 2 to 4 line decoder.	10 Marks	L4	CO2
	b)	Realize F(w, x, y, z)=∑m(1,4,6,7, 10,15) using 8 to1 Mux	6 Marks	L2	CO2

(OR)

7.	a)	Design a 4-line to 16-line decoder using 3-line to 8-line decoders.	10 Marks	L3	CO2
	b)	Implement the following Boolean function using 4:1 Mux: F(A,B,C,D)=∑m(0,1,3,4,8,9,15)	6 Marks	L2	CO2

MODULE-IV

8.	a)	Convert D Flip-Flop into T Flip-Flop.	8 Marks	L2	CO3
	b)	Design a 3bit synchronous counter which counts in the sequence 000, 001, 011, 100, 110, (repeat) 000, …using T flip flop.	8 Marks	L4	CO3

(OR)

9.	a)	Design Mod-10 Counter using D Flip-Flops.	8 Marks	L3	CO3
	b)	Explain the operation of Parallel input Series output universal shift register with neat block diagram.	8 Marks	L2	CO3

MODULE-V

10.	a)	Design 8 X 3 ROM with a suitable example.	6 Marks	L3	CO4
	b)	Determine minimal state equivalent of state table given below using megger table.	10 Marks	L2	CO4

Table.4

Present State	**Next State , Z**	
	X=0	**X=1**
A	B,1	H,1
B	F,1	D,1
C	D,0	E,1
D	C,0	E,1
E	D,1	C,1
F	C,1	C,1
G	C,1	D,1
H	C,0	A,1

(OR)

11.	a)	Design a combinational circuit using a ROM that accepts a three-bit number and outputs a binary number equal to the square of the input number	10 Marks	L3	CO1
	b)	Distinguish between PROM ,PLA,PAL	6 Marks	L2	CO1

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

INDUSTRIAL INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name any three units of viscosity.	2 Marks	L1	CO1
	b)	Describe the working principle of saybolt viscometer.	2 Marks	L2	CO1
	c)	Define the term pressure	2 Marks	L1	CO2
	d)	Explain the working principle of dead weight tester pressure gauge.	2 Marks	L2	CO2
	e)	Differentiate level transmitter and level measuring devices.	2 Marks	L3	CO3
	f)	Construct ultrasonic level measuring set up with the required instrumentation.	2 Marks	L2	CO3
	g)	Classify the head type flow measuring devices.	2 Marks	L2	CO4
	h)	Describe the working principle magnetic rotary vane flow meter.	2 Marks	L1	CO4
	i)	Construct R to V converter to convert (100-139) Ω to (0-5) V	2 Marks	L3	CO5
	j)	Describe the working principle of proximity sensors.	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the working of friction tube viscometer also mention its advantages, disadvantages and applications.	8 Marks	L2	CO1
	b)	Recall the building blocks of displacer type densitometer and mention its advantages, disadvantages and applications.	8 Marks	L2	CO1

(OR)

3.	a)	Describe the working of different hygrometers with neat sketch.	8 Marks	L2	CO1
	b)	Build searle's rotating cylinder viscometer and elaborate its applications.	8 Marks	L3	CO1

MODULE-II

4.	a)	Elaborate the working principle of elastic pressure measuring devices and mention their advantages and disadvantages with their applications.	8 Marks	L2	CO2
	b)	Interpret the conversion of high pressure in to electric signal using Bulk modulus Gage with neat construction.	8 Marks	L3	CO2

(OR)

5.	a)	Outline the construction of Ionization gage for measurement of low pressure and compare its working with Pirani gauge.	8 Marks	L2	CO2
	b)	, "Sound level meters are used for pressure measurement" Justify the statement with necessary proof.	8 Marks	L3	CO2

MODULE-III

6.	a)	Differentiate Float–and– tape method and Float–and– shaft method with respect to construction and working.	8 Marks	L2	CO3
	b)	Describe the working principle of Air-Purge type level measurement with neat sketch.	8 Marks	L2	CO3
		(OR)			
7.	a)	With a neat block diagram explain the working of Fibre - optic level sensor.	8 Marks	L3	CO3
	b)	Mention the different level sensors used in milk processing industries and explain the working principle of any one sensor in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Select a suitable flow measuring device to measure flow rate of non-conducting liquids and explain its working in detail.	8 Marks	L3	CO4
	b)	Differentiate Head type flow meters with respect working principle.	8 Marks	L3	CO4
		(OR)			
9.	a)	Construct a Coriolis flow meter and explain its working principle in detail. Mentions its applications	8 Marks	L3	CO4
	b)	Interpret the conversion process of flow of liquid in to voltage using Electromagnetic flow meter and also mentions its applications.	8 Marks	L3	CO4

MODULE-V

10.	a)	How is a composite amplifier different from electrometer amplifier? Explain the working of composite amplifier with a neat sketch.	8 Marks	L3	CO5
	b)	Elaborate the Explosion hazards & intrinsic safety measure to avoid hazardous conditions in industries	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the working of low drift amplifiers with a neat sketch.	8 Marks	L2	CO5
	b)	Describe construction and working of proximity sensor in detail.	8 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

VLSI SYSTEM DESIGN

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Fan-in and Fan-out.	2 Marks	L1	CO1
	b)	What is propagation delay?	2 Marks	L2	CO1
	c)	Write the formula for threshold voltage V_{TH} of a CMOS.	2 Marks	L2	CO2
	d)	Define trans conductance and figure of merit.	2 Marks	L2	CO2
	e)	What is Stick diagram?	2 Marks	L3	CO3
	f)	List out the color codes used for NMOS design style.	2 Marks	L2	CO3
	g)	Write the full adders output in terms of propagate and generate.	2 Marks	L2	CO4
	h)	Draw the structure of 4*4 barrel shifter	2 Marks	L3	CO4
	i)	What is field programmable logic array?	2 Marks	L3	CO4
	j)	Define Static RAM and dynamic RAM.	2 Marks	L4	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Design CMOS transistor circuit for 2-input NOR gate. With the help of function table explain the circuit.	8 Marks	L2	CO1
	b)	Explain the terms transition time and propagation delay with reference to CMOS logic.	8 Marks	L3	CO1

(OR)

3.	a)	Explain in detail about CMOS steady state electrical behaviour.	8 Marks	L2	CO1
	b)	Analyse DTL, RTL and CMOS logic families.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the fabrication steps of CMOS P-well process with neat diagram and write the mask sequence.	8 Marks	L3	CO2
	b)	Derive an equation for Trans-conductance of an n channel enhancement MOS- FET operating in active region.	8 Marks	L4	CO2

(OR)

5.	a)	Discuss about figure of merit of MOSFETs.	8 Marks	L3	CO2
	b)	Design full adder circuit using pass transistor logic with necessary diagrams.	8 Marks	L2	CO2

MODULE-III

6.	a)	Construct NMOS inverter layout with the help of λ-based rules. Clearly mention the design rules used in the layout.	8 Marks	L4	CO3
	b)	Design a symbolic layout for a complementary CMOS circuit that implements Y= (A+BC)'.	8 Marks	L3	CO3

(OR)

7.	a)	Explain the concept of sheet resistance and apply it to compute the ON resistance (VDD to GND) of an NMOS inverter having pull up to pull down ratio of 4:1,if n channel resistance is R**sn** = 10^4 per square.	8 Marks	L2	CO3
	b)	Calculate the gate capacitance value of 5μm technology minimum size transistor with gate to channel capacitance value is **4 x 10^{-4}pF/μm^2.**	8 Marks	L4	CO3

MODULE-IV

8.	a)	Determine the propagation delay of n-bit carry select adder.	8 Marks	L3	CO4
	b)	Explain in detail about the operation of 4 bit carry look ahead adder.	8 Marks	L4	CO4

(OR)

9.	a)	Outline the features of 4 x 4 barrel shifter using complementary transmission gates. Sketch its circuit diagram and explain its shifting operation.	8 Marks	L1	CO4
	b)	Explain the general arrangement of a 4 bit ALU.	8 Marks	L2	CO4

MODULE-V

10.	a)	Draw the architecture of CPLD and explain in detail.	8 Marks	L3	CO4
	b)	Design a 4-bit ripple counter and draw the timing diagram of that counter.	8 Marks	L2	CO4

(OR)

11.	a)	Sketch the diagram of basic one row and one column RAM architecture and explain its operation.	8 Marks	L3	CO4
	b)	Explain the CMOS system design based on the memory elements with suitable example.	8 Marks	L2	CO4



CODE No.: 22EE101008 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

TRANSMISSION AND DISTRIBUTION

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How does the inductance of overhead lines differ from underground cables?	2 Marks	L2	CO1
	b)	What are the primary types of insulating materials used in cable construction?	2 Marks	L1	CO1
	c)	How does terminating a transmission line with a resistor affect signal propagation?	2 Marks	L2	CO2
	d)	What factors influence signal transmission when a transmission line is connected to a cable?	2 Marks	L1	CO2
	e)	Define overhead line insulators.	2 Marks	L2	CO3
	f)	Define line supports and give an example.	2 Marks	L1	CO3
	g)	What factors affect voltage drop in AC distribution systems?	2 Marks	L2	CO4
	h)	Why is it necessary to refer power factors to receiving end voltage?	2 Marks	L1	CO4
	i)	What are the key safety considerations in the design and operation of gas insulated substations?	2 Marks	L2	CO5
	j)	Why is it important for substations to be compliant with environmental regulations?	2 Marks	L1	CO5

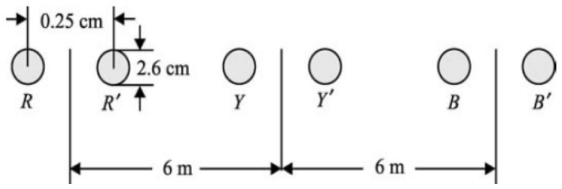
PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Justify why the cables should be graded and explain in detail about the capacitance grading of cables?	8 Marks	L2	CO1
	b)	The arrangement of conductors in a three-phase transmission line using bundled conductors is shown in figure. Assuming the line to be fully transposed, calculate capacitance to neutral in μF/km.	8 Marks	L3	CO1



(OR)

3.	a)	Two conductors of a single phase line each of 1 cm diameter are arranged in a vertical plane with one conductor mounted 1m above the other. A second identical line is mounted at the same height as the first and spaced horizontally 0.25 m apart from it. The two upper and the two lower conductors are connected in parallel. Determine the inductance per km of the resulting double circuit line.	8 Marks	L1	CO1

	b)	Determine the maximum and minimum stress in the insulation of a 33 kV single core cable which has a core diameter of 1.5 cm and a sheath of inside diameter 5 cm.	8 Marks	L3	CO1

MODULE-II

4.	a)	A medium-length power transmission line is represented as a nominal pi-equivalent circuit with lumped parameters. Determine the ABCD constants of the line and Prove AD - BC = 1.	8 Marks	L2	CO2
	b)	A balanced 3-phase load of 30MW is supplied at 132kV, 50Hz and 0.85 p.f. lagging by means of a transmission line. The series impedance of a single conductor is (20 + j52) ohms and the total phase-neutral admittance is 315×10^{-6} mho. Using nominal-T method, determine: i) The A, B, C and D constants of the line, ii) Sending end voltage, iii) Regulation of the line.	8 Marks	L3	CO2

(OR)

5.	a)	What is refraction and reflection of travelling waves and determine its coefficients when the transmission line is terminated with a resistance.	8 Marks	L2	CO2
	b)	A 100 Km long ttransmission Line is terminated by a resistance of 200 ohms. The characteristics impedance of the line is Zo=600 ohms. Find the reflection and refraction Coefficients.	8 Marks	L4	CO2

MODULE-III

6.	a)	Define sag-template and explain it in brief.	8 Marks	L2	CO3
	b)	A transmission line conductor crossing a river is supported from two towers at heights of 30m and 80m above the water level. The horizontal distance between the towers is 450 m. If the tension in the conductor is 1500 kg and weight of the conductor is 1.4 kg/m length, find: i) the minimum safe clearance between conductor and water ii) safe clearance mid-way between the supports.	8 Marks	L4	CO3

(OR)

7.	a)	A 3-phase, 220 kV, 50 Hz transmission line has an equilateral triangular spacing of 2m side. The conductor diameter is 3cm. The air density factor and surface irregularity factors are 0.95 and 0.83 respectively. Find critical disruptive voltage and corona loss per kilometre.	8 Marks	L3	CO3
	b)	Explain the phenomenon of corona. How can the corona loss be minimized in transmission lines?	8 Marks	L2	CO3

MODULE-IV

8.	a)	A single phase distributor 2 kms long supplies a load of 120 A at 0·8 p.f. lagging at its far end and a load of 80 A at 0·9 p.f. lagging at its mid-point. Both power factors are referred to the voltage at the far end. The resistance and reactance per km (go and return) are 0·05 Ω and 0·1 Ω respectively. If the voltage at the far end is maintained at 230 V, calculate : i) voltage at the sending end ii)phase angle between voltages at the two ends.	8 Marks	L2	CO4
	b)	A single phase distributor one km long has resistance and reactance per conductor of 0·1 Ω and 0·15 Ω respectively. At the far end, the voltage VB = 200 V and the current is 100A at a p.f. of 0·8 lagging. At the mid-point M of the distributor, a current of 100 A is tapped at a p.f. of 0·6 lagging with reference to the voltage VM at the mid-point. Calculate : i) voltage at mid-point ii) sending end voltage VA iii) phase angle between VA and VB	8 Marks	L3	CO4

(OR)

9.	a)	A 2-wire DC distributor 200 metres long is uniformly loaded with 2A/metre. Resistance of single wire is 0·3 Ω/km. If the distributor is fed at one end, calculate : i) the voltage drop upto a distance of 150 m from the feeding point ii) the maximum voltage drop	8 Marks	L2	CO4
	b)	A single phase distributor 2 kilometres long supplies a load of 120 A at 0·8 p.f. lagging at its far end and a load of 80 A at 0·9 p.f. lagging at its mid-point. Both power factors are referred to the voltage at the far end. The resistance and reactance per km (go and return) are 0·05 Ω and 0·1 Ω respectively. If the voltage at the far end is maintained at 230 V, calculate : i) voltage at the sending end ii) phase angle between voltages at the two ends.	8 Marks	L3	CO4

MODULE-V

10.	a)	How do you analyze a substation service area with 'n' primary feeders?	8 Marks	L3	CO5
	b)	Explain the benefits derived through optimal location of substations.	8 Marks	L2	CO5

(OR)

11.	a)	Explain the factors affecting the loading of a primary feeder.	8 Marks	L2	CO5
	b)	Discuss in detail the design practice of secondary distribution system.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

LINEAR CONTROL SYSTEMS

[Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What do you meant by sensitivity of the control system?	2 Marks	L1	CO1
	b)	What are the two major types of control systems?	2 Marks	L1	CO1
	c)	Define step signal and ramp signal.	2 Marks	L1	CO2
	d)	How is system classified depending on the value of damping?	2 Marks	L1	CO2
	e)	List the necessary conditions for stability?	2 Marks	L1	CO3
	f)	What is characteristic equation and write characteristic equation of a second order system.	2 Marks	L1	CO3
	g)	List the Frequency domain specifications?	2 Marks	L1	CO4
	h)	Define gain margin and phase margin in Bode plot.	2 Marks	L1	CO4
	i)	What are phase variables?	2 Marks	L1	CO5
	j)	Define controllability and observability.	2 Marks	L1	CO5

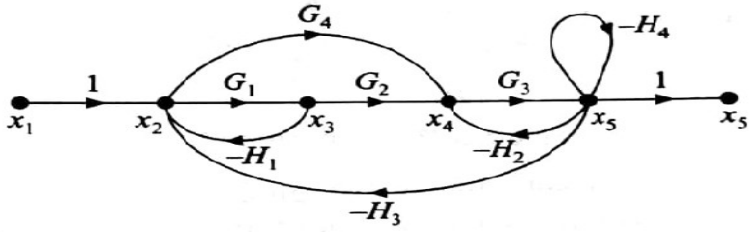
PART - B

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

5 x 16 = 80 Marks

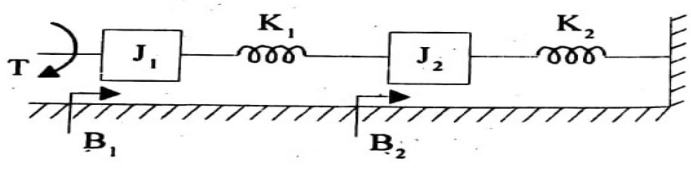
MODULE-I

2.	a)	Compare open loop and closed loop control systems.	8 Marks	L2	CO1
	b)	Determine the overall gain of the system whose signal flow graph is shown below by applying Mason's gain formula.	8 Marks	L3	CO1



(OR)

3.	a)	For the given mechanical system, Obtain the differential equations governing the system and find Torque-Current Analogy.	8 Marks	L3	CO1



	b)	Deduce Manson's gain formulae for the given control system.	8 Marks	L1	CO1

MODULE-II

4.	a)	Derive the expressions for time response of first order unity feedback system with impulse and step as input.	8 Marks	L3	CO2
	b)	Find the posistion, velocity and acceleration error coefficents for the following unity feedback systems having forward loop transfer function $G(S) = \frac{100}{(1+0.5S)(1+2S)}$.	8 Marks	L3	CO2

(OR)

5.	a)	Explain the effect of PID controller in improving the dynamic response of a second order system.	8 Marks	L2	CO2
	b)	A unity feedback system is characterized by an open loop transfer function $G(S) = \frac{K}{S(S+10)}$. Determine the gain k, so that the system will have a damping ratio of 0.5. For this value of K determine peak time, percentage peak over shoot and settling time.	8 Marks	L3	CO2

MODULE-III

6.	a)	Sketch the root locus of a unity feedback system whose open loop transfer function is $G(S) = \frac{K}{S(S+2)(S+4)}$.	8 Marks	L3	CO3
	b)	Discuss the stability of a system by the addition of pole and/or zero to the original transfer function	8 Marks	L2	CO3

(OR)

7.	a)	Discuss break away and break in points in Root locus.	8 Marks	L1	CO3
	b)	By means of Routh-Hurwitz stability criterion, determine the range of value of K for the system to be stable, whose characteristic equation is given by $S^3 + 3KS^2 + (K+2)S + 4 = 0$.	8 Marks	L4	CO3

MODULE-IV

8.	a)	What is a lag compensator? Obtain the transfer function of lag compensator and draw the pole-zero plot.	8 Marks	L4	CO4
	b)	Explain the procedure to design a lead compensator in frequency domain.	8 Marks	L4	CO4

(OR)

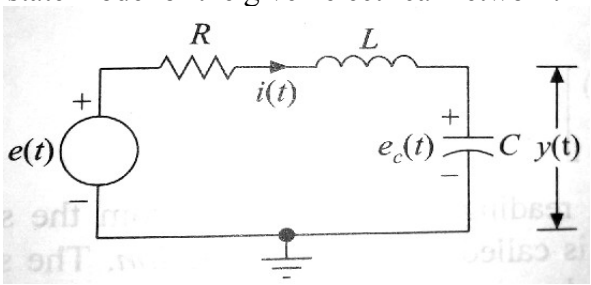
9.	a)	Draw the Bode plot for the system, whose open loop transfer function is $G(S)H(S) = \frac{10}{S(1+0.4S)(1+0.1S)}$ and obtain phase margin, gain margin, phase cross over frequency and gain cross over frequency.	8 Marks	L4	CO4
	b)	Explain Lag and Lead Compensators using Bode Plot.	8 Marks	L2	C04

MODULE-V

10.	a)	Apply Kalman's test to assess the controllability and observability of the system described by: $\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\end{bmatrix} = \begin{bmatrix}1 & 1\\ -3 & -2\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix} + \begin{bmatrix}0\\ 1\end{bmatrix}u \text{ and } y = \begin{bmatrix}1 & 0\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix}$.	8 Marks	L3	CO5
	b)	Obtain the state model of the system described by the transfer function $\frac{Y(S)}{U(S)} = \frac{1}{S^3 + 6S^2 + 10S + 5}$	8 Marks	L3	CO5

(OR)

11. a) Obtain the state model of the given electrical network. 8 Marks L3 CO5



b) Compare the transfer function and state variable approach for analysis of control system. 8 Marks L2 CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

ELECTRICAL MACHINES-II

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Describe the power factor at a standstill and running conditions in an Induction Motor	2 Marks	L1	CO1
	b)	Elaborate on the analogy of an Induction Motor functioning as a generalized transformer	2 Marks	L1	CO1
	c)	What techniques can be employed to control the speed of induction motors?	2 Marks	L1	CO2
	d)	In what way do star-delta starters reduce starting current and torque?	2 Marks	L1	CO2
	e)	Name methods employed to suppress harmonics in generated EMF.	2 Marks	L1	CO3
	f)	Describe the key characteristics and effects associated with salient pole alternators.	2 Marks	L1	CO3
	g)	Describe the principle behind load sharing between two alternators in parallel operation	2 Marks	L1	CO4
	h)	How is the rigidity factor utilized when synchronizing two alternators?	2 Marks	L1	CO4
	i)	What is the fundamental principle of operation for synchronous motors	2 Marks	L1	CO5
	j)	Discuss the role and importance of excitation and power circles in synchronous motor analysis.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the factors that affecting the sustainability of three phase induction machine.	8 Marks	L2	CO1
	b)	A 3-phase squirrel cage induction motor has a starting torque of 150% and a maximum torque of 300% with respect to rated torque at rated voltage and frequency. Neglect the stator resistance and rotational losses. Calculate the value of slip at maximum torque.	8 Marks	L3	CO1

(OR)

3.	a)	Explain the terms slip s, air-gap powerP_g, internal mechanical power developed P_m and shaft power P_{sh} of an induction motor. Hence show that P_g: rotor Ohmic loss: P_m : : 1 : s : (1-s).	8 Marks	L2	CO1
	b)	A 3-phase induction motor is wound for 6-poles and is supplied from 50 Hz system. Calculate the synchronous speed, the rotor speed when slip is 3% and rotor frequency when motor runs at 800 rpm.	8 Marks	L3	CO1

MODULE-II

4.	a)	Identify the speed control methods used to control three phase induction motor below its rated speed and discuss those methods.	8 Marks	L2	CO2
	b)	Find the ratio of starting current to full load current for a 10 kW, 400 V, 3-phase induction motor with a star - delta starter if the full load efficiency is 0.86, the full load power factor is 0.8 and short circuit current is 30A at 100 V.	8 Marks	L3	CO2

(OR)

5.	a)	Derive a relation between full load torque and maximum torque of a three phase Induction Motor.	8 Marks	L2	CO2
	b)	An 8-pole, 50 Hz, 3 - Ø slip ring induction motor has effective resistance of 0.08 Ω/phase. The speed corresponding to maximum torque is 650 rpm. What is the value of resistance to be inserted in rotor circuit to obtain maximum torque at starting?.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the effect of harmonics on the operation and sustainability of synchronous generator.	8 Marks	L2	CO3
	b)	A 3-phase, 8-pole, 750 rpm star connected alternator has 72 slots on the armature. Each slot has 12 conductors and winding is short pitched by 2 slots. Find the induced emf between lines, given the flux per pole is 0.06 Wb.	8 Marks	L3	CO3

(OR)

7.	a)	List the various causes of harmonics in the emf waveform of synchronous generator and discuss the various ways to minimize them.	8 Marks	L2	CO3
	b)	An 8-pole, 3-phase, 600 phase spread, double layer winding has 72 coils in 72 slots. The coils are short-pitched by two slots. Calculate the winding factor for the fundamental and 5^{th} harmonic.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Give the necessity of synchronization? Explain the way of synchronizing an alternator to the infinite bus bars.	8 Marks	L2	CO4
	b)	A 12 kVA, 440V, 50 Hz, star connected synchronous generator supplies rated load at 0.8 power factor lagging. The armature resistance and synchronous reactance are 0.3 Ω and 8 Ω respectively. Determine the torque angle and the voltage regulation.	8 Marks	L3	CO4

(OR)

9.	a)	Discuss about Short Circuit Ratio and its significance. Explain the method to determine short circuit ratio of a synchronous machine.	8 Marks	L2	CO4
	b)	An industry takes 600 kVA at a lagging power factor of 0.8. A synchronous motor is to be installed to raise the p.f. of 0.9 lagging when the motor is taking 400 kW. Compute the corresponding kVAR taken by synchronous motor and the power factor at which the motor will be operating.	8 Marks	L3	CO4

MODULE-V

10.	a)	Develop the power circles for a cylindrical rotor synchronous motor. Show that efficiency of maximum power output is equal to 50%.	8 Marks	L1	CO5
	b)	A 6600 V, star connected, 3 phase synchronous motor works at constant voltage and constant excitation. Its synchronous reactance is 20 ohms per phase and armature resistance negligible when the input power is 1000 kW, the power factor is 0.8 leading. Find the power angle and the power factor when the input is increased to 1500 kW.	8 Marks	L3	CO5

(OR)

11.	a)	Discuss the factors that affecting the sustainability of synchronous motor.	8 Marks	L2	CO5
	b)	A factory has an average load of 300 kW at a power factor of 0.6 lagging. A synchronous motor with an efficiency of 88% is used to raise the combined power factor to 0.9 lagging and at the same time supply a mechanical load of 60kW. Calculate i) total load kVA ii) kVA capacity of the synchronous motor.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May– 2025

CONTROL SYSTEMS

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Mention some rules in block diagram algebra.	2 Marks	L1	CO1
	b)	Why is negative feedback is preferred in closed loop system?	2 Marks	L1	CO1
	c)	What is the importance of time constant in time response?	2 Marks	L1	CO2
	d)	Define steady state error.	2 Marks	L1	CO2
	e)	What is root locus?	2 Marks	L1	CO3
	f)	What are frequency domain specifications?	2 Marks	L1	CO3
	g)	What is the need for compensation in feedback control system?	2 Marks	L1	CO4
	h)	Draw the electrical lag compensator network.	2 Marks	L1	CO4
	i)	Define phase margin and gain margin in polar plot.	2 Marks	L1	CO5
	j)	Write the expression for solution of homogenous state equation.	2 Marks	L1	CO5

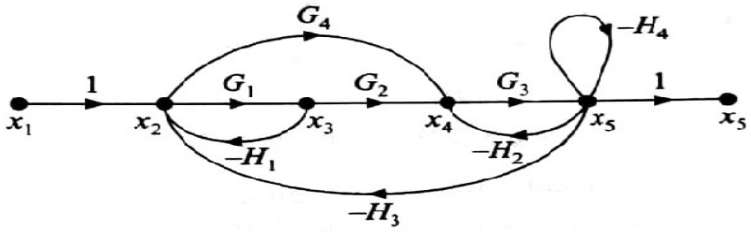
PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Differentiate between open loop and closed loop control system.	8 Marks	L2	CO1
	b)	Determine the overall gain of the system whose signal flow graph is shown below by applying Mason's gain formula.	8 Marks	L2	CO1



(OR)

3.	a)	Determine the transfer function of a armature controlled DC servomotor.	8 Marks	L2	CO1
	b)	Explain closed loop control system with one real time example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Obtain the unit step response of a unity feedback system whose open loop transfer function is $G(s) = \frac{4}{s(s+5)}$	8 Marks	L3	CO2
	b)	Sketch the response of a second order under damped system.	8 Marks	L2	CO2

(OR)

5.	a)	Derive the system response for a second order system with unit step input for an under damped case.	8 Marks	L3	CO2
	b)	Determine the Rise time, peak time, Settling time and peak overshoot for ξ =0.6, w_n=5 rad/sec for a typical second order system.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write the necessary conditions for stability.	8 Marks	L2	CO3
	b)	Draw the root locus for the given open loop transfer function, $G(s) = \frac{k}{S(S+2)(s+4)}$	8 Marks	L3	CO3

(OR)

7.	a)	Discuss break away and break in points in Root locus	8 Marks	L2	CO3
	b)	Draw the pole locations and their impulse response to discuss the stability.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the different steps to be followed for the design of lead compensator using Bode plot.	8 Marks	L2	CO4
	b)	Sketch the polar plot for the transfer function and find Gain margin and Phase margin. $G(s) = \frac{1}{S(S+1)(2s+1)}$	8 Marks	L3	CO4

(OR)

9.	a)	Sketch the Bode plot and find gain margin and phase margin. for the open loop transfer function $G(s) = \frac{2}{S(S+1)(0.2s+1)}$	8 Marks	L3	CO4
	b)	Explain the frequency domain specifications.	8 Marks	L3	CO4

MODULE-V

10.	a)	Write the properties of state transition matrix.	8 Marks	L2	CO5
	b)	Compare the transfer function and state variable approach for analysis of control system.	8 Marks	L2	CO5

(OR)

11.	a)	Explain the Kalman's test for determining controllability and observability of a system.	8 Marks	L3	CO5
	b)	Find the state transition matrix (STM) for a given system matrix using Laplace transform method. $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$	8 Marks	L3	CO5

B

CODE No.: 22IT101001 **MBU-22**

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

SOFTWARE ENGINEERING

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the advantages of adhering to life cycle models for software?	2 Marks	L1	CO1
	b)	Define design Pattern.	2 Marks	L1	CO3
	c)	Define debugging.	2 Marks	L1	CO4
	d)	Define functional requirement.	2 Marks	L1	CO2
	e)	What are the objectives of testing?	2 Marks	L1	CO4
	f)	Analyze on how are the software risks assessed.	2 Marks	L1	CO5
	g)	What are the characteristics of good software design?	2 Marks	L1	CO3
	h)	Classify the following as functional / non-functional requirements for a banking system: i) Verifying bank balance ii) Withdrawing money from bank iii) Completion of transaction in less than 1 sec iv) Extending system by providing more tellers for customers	2 Marks	L3	CO2
	i)	What are the various categories of software?	2 Marks	L2	CO1
	j)	Differentiate reverse engineering and forward engineering.	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	List the agile principles.	8 Marks	L1	CO1
	b)	Which process model is best suited for risk management? Discuss in detail with an example. Give its advantages and disadvantages?	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe the various Evolutionary Process Models with neat diagram.	10 Marks	L3	CO1
	b)	Describe about pair programming and refactoring.	6 Marks	L3	CO1

MODULE-II

4.	a)	Write short notes on Requirements discovery and Interviewing.	8 Marks	L2	CO2
	b)	Write the Software Requirement Specification document for the "online shopping" software	8 Marks	L5	CO2
		(OR)			
5.	a)	Explain scenarios and use cases.	8 Marks	L2	CO2
	b)	Describe about the requirement change management.	8 Marks	L3	CO2

MODULE-III

6.	a)	With an illustration explain layered architecture	8 Marks	L3	CO3
	b)	Explain in detail about process metrics	8 Marks	L2	CO3
		(OR)			
7.		Explain the need for software measures and describe various metrics.	16 Marks	L2	CO3

MODULE-IV

8.		What is black box testing? Is it necessary to perform this? Explain various test activities.	16 Marks	L2	CO4
		(OR)			
9.	a)	Explain testing strategies for object oriented software.	10 Marks	L2	CO4
	b)	With an illustration explain control structure testing.	6 Marks	L3	CO4

MODULE-V

10.		Define Risk. Explain the needs and activities or risk management.	16 Marks	L2	CO5
		(OR)			
11.	a)	Explain business process reengineering in detail.	8 Marks	L2	CO5
	b)	With an illustration explain reactive and proactive risk strategies.	8 Marks	L3	CO5

A

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

SOFTWARE ENGINEERING

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List out and define the different types of Software Myths.	2 Marks	L2	CO1
	b)	Sketch Software engineering layered technology.	2 Marks	L2	CO1
	c)	Define Requirement Engineering.	2 Marks	L2	CO2
	d)	Draw and describe the Flow Modelling notations.	2 Marks	L2	CO2
	e)	List out the relationships in UML with Notation.	2 Marks	L2	CO3
	f)	What is the role of design pattern?	2 Marks	L2	CO3
	g)	Define Alpha and Beta Testing.	2 Marks	L2	CO4
	h)	Write the purpose of verification and validation testing.	2 Marks	L2	CO4
	i)	Define Measures of Reliability and Availability with Formulae.	2 Marks	L2	CO5
	j)	Write the SQA Activities of Software.	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe five activities of a generic process framework for Software Engineering.	8 Marks	L2	CO1
	b)	Illustrate and Explain Incremental Model.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss the process of Extreme Programming (XP) in detail.	8 Marks	L2	CO1
	b)	State and explain the principles defined in Agile Process.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain in detail about four activities involved in Requirement Engineering Process.	8 Marks	L3	CO2
	b)	What is the use case technique of requirement elicitation? Describe its component.	8 Marks	L3	CO2
		(OR)			
5.	a)	Compare and contrast Functional and Non-Functional requirements with example.	8 Marks	L3	CO2
	b)	Discuss Flow-Oriented Modeling Concepts of Requirements modeling with Example.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss various design concepts.	8 Marks	L4	CO3
	b)	Design a sequence diagram that models the data processing involved when a customer withdraws cash from the bank ATM machine.	8 Marks	L4	CO3
		(OR)			
7.	a)	Discuss in detail about Metrics in the process and project domains.	8 Marks	L4	CO3
	b)	Describe in detail about class-based modelling.	8 Marks	L4	CO3
		MODULE-IV			
8.	a)	Compare between white-box testing and black-box testing.	8 Marks	L4	CO4
	b)	Explain the steps involved in Debugging Process with a neat sketch.	8 Marks	L4	CO4
		(OR)			
9.	a)	Discuss the analysis of two types of test strategies for object-oriented software.	8 Marks	L4	CO4
	b)	Explain Basis Path Testing with Example.	8 Marks	L4	CO4
		MODULE-V			
10.	a)	How Software Quality Assurance is useful to enhance quality? List out all the activities of it.	8 Marks	L3	CO5
	b)	Why do we use Defect Amplification Model?	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss the steps involved in Business process engineering model with a neat sketch.	8 Marks	L3	CO5
	b)	Explain the RMMM Plan and Risk Information Sheet with neat Diagram.	8 Marks	L3	CO5



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

FLUID MECHANICS

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define specific gravity and its significance in fluid mechanics.	2 Marks	L1	CO1
	b)	Define absolute pressure and give an example.	2 Marks	L1	CO1
	c)	Write the continuity equation one-dimensional flow.	2 Marks	L1	CO2
	d)	Difference between Venturimeter and orifice meter.	2 Marks	L1	CO2
	e)	Define drag and lift for submerged objects.	2 Marks	L1	CO3
	f)	Define the term “equivalent pipe.”	2 Marks	L1	CO3
	g)	What are the types of draft tubes?	2 Marks	L1	CO4
	h)	Differentiate between impulse and reaction turbine.	2 Marks	L1	CO4
	i)	What is meant by characteristic curves of a centrifugal pump?	2 Marks	L1	CO5
	j)	Define slip in reciprocating pumps.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss types of fluids based on Newton’s law of viscosity.	8 Marks	L2	CO1
	b)	Determine the kinematic viscosity of a plate 0.06 mm distant from a fixed plate moves at 1.5 m/s and requires a force of 5.2 N/m^2 to maintain this speed and density of fluid is $900kg/m^3$.	8 Marks	L3	CO1

(OR)

3.	The right limb of a simple differential manometer containing the mercury is open to the atmosphere while the left limb is connected to a pipe in which a fluid of specific gravity 0.9 is flowing. The centre of the pipe is 12cm below the level of mercury in the right limb. Find the pressure of fluid in the pipe if the difference of mercury level in the two limbs is 20 cm.	16 Marks	L3	CO1

MODULE-II

4.	Compare the following fluid flows: i) Steady and un-steady flow. ii) Uniform and non-uniform flow. iii) Compressible and incompressible flow. iv) Rotational and irrotational flow v) Laminar and turbulent flow.	16 Marks	L2	CO2

(OR)

5.	A pitot-static tube placed in the centre of a 300 mm pipe line has one orifice pointing upstream and other perpendicular it. The mean velocity in the pipe is 0.8 of the central velocity. Find the discharge through the pipe if the pressure difference between two orifices is 60 mm of water. Take the co-efficient of pitot tube as 0.98.	16 Marks	L3	CO2

MODULE-III

6.		Find head lost due to friction in a pipe of diameter 300mm and length 50m, through which water is flowing at a velocity of 3 m/s using: i) Darcy formula. ii) Chezy's formula, where C = 60.	16 Marks	L3	CO3

(OR)

7.	a)	What is boundary layer separation? Discuss its causes, effects, and control methods.	8 Marks	L2	CO4
	b)	Explain the concept of equivalent pipe and derive an expression for pipes in series and parallel.	8 Marks	L2	CO4

MODULE-IV

8.		A Kaplan turbine for the following data: Net head H = 60 m, Speed N = 700 rpm, shaft power = 264.3 kW, overall efficiency = 82%, hydraulic efficiency = 90%, flow ratio = 0.20, breadth ratio, n = 0.1, outer diameter of the runner = 2 x inner diameter of runner. The thickness of vanes occupies 5% of circumferential area of the runner, velocity of flow is constant at inlet and outlet and discharge is radial at outlet. Determine: i) Guide Blade angle ii) Runner vane angles at inlet and outlet iii) Diameters of runner at inlet and outlet iv) width of wheel at inlet.	16 Marks	L3	CO4

(OR)

9.		Discuss the construction, working principle, velocity triangle, and work done in a Francis turbine.	16 Marks	L2	CO4

MODULE-V

10.	a)	A centrifugal pump having outer diameter equal to two times the inner diameter and running at 1000 rpm works against a total head of 40 m. the velocity of flow through the impeller is constant and equal to 2.5 m/s. The vanes are set back at an angle of 40 degree at outlet. If the outer diameter of the impeller is 500 mm and width at outlet is 50 mm. Determine: i) Vane angle at inlet ii) Work done by impeller on water per second and iii) Manometric efficiency	8 Marks	L3	CO5
	b)	Obtain expressions for discharge and work done to drive a single acting reciprocating pump.	8 Marks	L2	CO5

(OR)

11.		Explain the construction, working principle, and performance characteristics of a double-acting reciprocating pump. Derive the expression for its discharge, work done, and slip.	16 Marks	L3	CO5



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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

DYNAMICS OF MACHINERY

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are differences between single plat and multi-plate clutch? Give two applications of each clutch	2 Marks	L1	CO1
	b)	How many design criteria's are there in cone clutch? Write the friction torque equation for each criteria.	2 Marks	L1	CO1
	c)	What is angle of heel?	2 Marks	L1	CO2
	d)	What are the applications of gyroscope? List the types of motion in each cases.	2 Marks	L1	CO2
	e)	Classify the various types of Governors?	2 Marks	L1	CO3
	f)	What is effort, hunting and power of a governor?	2 Marks	L1	CO3
	g)	State two satisfactory conditions which are to be satisfied in balancing of mass.	2 Marks	L1	CO4
	h)	What is primary and secondary unbalanced forces?	2 Marks	L1	CO4
	i)	What is resonance condition? Is it good to structural members? State reason	2 Marks	L1	CO5
	j)	How many force are involved in equation of motion of free single degree damped vibrating system. State the equation and each parameters.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe with a neat sketch a centrifugal clutch and deduce an equation for the total torque transmitted.	6 Marks	L2	CO1
	b)	A multi-disc clutch has three discs on the driving shaft and two on the driven shaft. The outside diameter of the contact surfaces is 240 mm and inside diameter 120 mm. Assuming uniform wear and coefficient of friction as 0.3, find the maximum axial intensity of pressure between the discs for transmitting 25 kW at 1575 r.p.m..	10 Marks	L3	CO1

(OR)

3.		A band and block brake, having 14 blocks each of which subtends an angle of 15° at the centre, is applied to a drum of 1 m effective diameter. The drum and flywheel mounted on the same shaft has a mass of 2000 kg and a combined radius of gyration of 500 mm. The two ends of the band are attached to pins on opposite sides of the brake lever at distances of 30 mm and 120 mm from the fulcrum. If a force of 200 N is applied at a distance of 750 mm from the fulcrum, find: i) maximum braking torque, ii) angular retardation of the drum, and iii) time taken by the system to come to rest from the rated speed of 360 r.p.m. The coefficient of friction between blocks and drum may be taken as 0.25.	16 Marks	L3	CO1

MODULE-II

4.	a)	Explain the application of gyroscopic principles to aircrafts.	6 Marks	L2	CO2
	b)	An aeroplane runs at 600 km / h. The rotor of the engine weighs 4000 N with radius of gyration of 1 metre. The speed of rotor is 3000 r.p.m. in anticlockwise direction when seen from rear side of the aeroplane. If the plane takes a loop upwards in a curve of 100 metres radius, find: i) Gyroscopic couple developed; and ii) Effect of reaction gyroscopic couple developed on the body of aeroplane.	10 Marks	L3	CO2
		(OR)			
5.	a)	What is the function of a flywheel? How does it differ from that of a governor?	6 Marks	L2	CO2
	b)	A punching press is required to punch 40 mm diameter holes in a plate of 15 mm thickness at the rate of 30 holes per minute. It requires 6 N-m of energy per mm^2 of sheared area. If the punching takes $1/10^{th}$of a second and the r.p.m. of the flywheel varies from 160 to 140, determine the mass of the flywheel having radius of gyration of 1 metre.	10 Marks	L3	CO2

MODULE-III

6.	a)	What are the differences between Porter and Proell Governors? Why the speed range of Proell governor is less than that of a similar Porter type?	8 Marks	L1	CO3
	b)	Porter governor has equal arms each 250mm long and pivoted on the axis of rotation. Each ball has a mass of 5Kg and the mass of the central load on the sleeve is 25Kg. The radius of rotation of the ball is 150mm when the governor begins to lift and 200mm when the governor is at maximum speed. Find the maximum and minimum speeds and range of speed of the governor.	8 Marks	L3	CO3
		(OR)			
7.	a)	With a neat sketch, explain the working of a Hartnell governor.	8 Marks	L1	CO3
	b)	Calculate the minimum speed, maximum speed and range of speed of a Porter governor, which has equal arms each 250 mm long and pivoted on the axis of rotation. The mass of each ball is 6 kg and the central mass on the sleeve is 18 kg. The radius of rotation of ball is 150 mm when the governor begins to lift and 200 mm when the governor is at the maximum speed.	8 Marks	L3	CO3

MODULE-IV

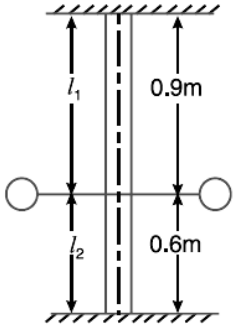
8.		Four masses m1, m2, m3 and m4 having 100, 175, 200 and 25Kg are fixed to cranks of 20 cm radius and revolve in places 1,2,3 and 4. The angular position of the cranks in planes 2,3 and 4 with respect to the crank in plane 1 are 750 , 1350 and 2000 taken in the same sense. The distance of planes 2,3 and 4 from plane 1 are 60cm, 186cm and 240 cm respectively determine the position and magnitude of the balance mass at radius of 60cm in plane L and M located at middle of the plane 1 and 2 and the middle of the planes 3 and 4 respectively.	16 Marks	L3	CO4
		(OR)			
9.		Three masses P, Q and R with masses 12 kg, 11 kg and 18 kg respectively revolve in the same plane at radii 120 mm, 144 mm and 70 mm respectively. The angular position of Q and R are 600 and 1350 from P. Determine the position and magnitude of mass S at radius 152 mm to balance the system.	16 Marks	L3	CO4

MODULE-V

10.		Derive an expression for natural frequency of longitudinal and lateral vibration by considering the mass attached to stiffed bar.	16 Marks	L2	CO5

(OR)

11.	a)	A flywheel is mounted on a vertical shaft as shown in Fig. The both ends of the shaft are fixed and its diameter is 50 mm. The flywheel has a mass of 500 kg. Find the natural frequencies of longitudinal and transverse vibrations. Take E = 200 GN/m2.	8 Marks	L3	CO5



	b)	A shaft of length 0.75 m, supported freely at the ends, is carrying a body of mass 90 kg at 0.25 m from one end. Find the natural frequency of transverse vibration. Assume E = 200 GN/m2 and shaft diameter = 50 mm.	8 Marks	L3	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech IV Semester (MBU-22) Regular Examinations, May – 2025

THERMAL ENGINEERING

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define compression ratio.	2 Marks	L1	CO1
	b)	What is valve overlap?	2 Marks	L1	CO1
	c)	List various methods available for finding the friction power of an engine.	2 Marks	L1	CO2
	d)	State the relation between BP and FP.	2 Marks	L1	CO2
	e)	What is meant by a closed-cycle gas turbine?	2 Marks	L1	CO3
	f)	State any two applications of rockets.	2 Marks	L1	CO3
	g)	Classify compressors.	2 Marks	L1	CO4
	h)	Define clearance ratio.	2 Marks	L1	CO4
	i)	What are the limitations of the Carnot cycle?	2 Marks	L1	CO5
	j)	Define the efficiency of a Rankine 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)	What are the differences between a Two-stroke engine and a four-stroke Engine?	8 Marks	L2	CO1
	b)	Explain the working principle of four-stroke C.I engine and draw its valve timing diagram.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the basic components and nomenclature of an IC engine with a neat sketch.	8 Marks	L2	CO1
	b)	Explain the phenomenon of knocking in the CI engine and SI engine.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define the terms: brake power, indicated power, piston speed, brake mean effective pressure and brake thermal efficiency.	8 Marks	L2	CO2
	b)	List out the Methods of obtaining Friction Power and explain any one of them in detail.	8 Marks	L2	CO2
		(OR)			
5.		A six-cylinder, gasoline engine operates on the four-stroke cycle. The bore of each cylinder is 80 mm and the stroke is 100 mm. The clearance volume per cylinder is 70 cc. At a speed of 4000 rpm, the fuel consumption is 20 kg/h and the torque developed is 150 Nm. Calculate i) the brake power ii) the brake mean effective pressure iii) brake thermal efficiency if the calorific value of the fuel is 43000 kJ/kg and iv) the relative efficiency on a brake power basis assuming the engine works on the constant volume cycle. $\gamma = 1.4$ for air.	16 Marks	L3	CO2

MODULE-III

6.	a)	Compare the relative advantages and disadvantages of gas turbines and IC engines.	8 Marks	L2	CO3
	b)	Distinguish between rocket propulsion engines and turbojet engines.	8 Marks	L2	CO3
		(OR)			
7.		Compute the indicated mean effective pressure and efficiency of a Joule cycle if the temperature at the end of combustion is 2000 K and the temperature and pressure before compression are 350 K and 1 bar. The pressure ratio is 1.3. Assume Cp = 1.005 kJ/kg K.	16 Marks	L3	CO3

MODULE-IV

8.		Air is to be compressed in a single-stage reciprocating compressor from1.013 bar and 15^{o}C to 7 bar. Calculate the indicated power required for afree air delivery of 0.3 m^{3}/min, when the compression process is i) Isentropic and ii) Polytropic with n = 1.25.	16 Marks	L3	CO4
		(OR)			
9.		2 kg/s of air enters the LP cylinder of a two-stage compressor. The overallpressure ratio is 9:1. The air at the inlet to the compressor is at 100 kPa and35^{o}C. The index of compression in each cylinder is 1.3. Find the intercoolerpressure for perfect inter-cooling. Also, find the maximum powerrequired for compression and the percentage of power saved over single-stagecompression.	16 Marks	L3	CO4

MODULE-V

10.	a)	Draw P-V and T-S diagrams of the Rankine cycle and derive its efficiency.	8 Marks	L2	CO5
	b)	Discuss the effect of operating variables on the performance of the Rankine cycle.	8 Marks	L2	CO5
		(OR)			
11.		A simple Rankine cycle works between pressures 28 bar and 0.06 bar, the initial condition of steam being dry saturated. Calculate the cycle efficiency, work ratio and specific steam consumption.	16 Marks	L3	CO5

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SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

NATURE INSPIRED ALGORITHMS

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define optimization and its importance in engineering applications.	2 Marks	L1	CO1
	b)	List the types of optimization problems and give one example for each.	2 Marks	L1	CO1
	c)	What is swarm intelligence?	2 Marks	L1	CO2
	d)	Give one example of an application of swarm intelligence.	2 Marks	L2	CO2
	e)	What are the key characteristics of an ant colony in nature?	2 Marks	L1	CO3
	f)	Explain the concept of pheromone in Ant Colony Optimization.	2 Marks	L1	CO3
	g)	What is the basic principle behind the Firefly Algorithm?	2 Marks	L1	CO3
	h)	How does Firefly Algorithm use light intensity for optimization?	2 Marks	L1	CO3
	i)	List few popular clustering algorithms.	2 Marks	L1	CO4
	j)	What is the role of support vector machines (SVM) in classification?	2 Marks	L2	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the fundamentals of optimization and its significance in real-world applications.	8 Marks	L2	CO1
	b)	Describe the types of optimization problems with suitable examples.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe optimization algorithms based on their characteristics and purpose.	8 Marks	L3	CO1
	b)	Illustrate the use of optimization in solving engineering problems with an example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the concept of swarm intelligence and its role in optimization problems.	8 Marks	L4	CO2
	b)	Illustrate the application of swarm intelligence in real-world scenarios.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the concepts of diversification and intensification in met heuristics.	8 Marks	L2	CO2
	b)	Analyze how these concepts contribute to improving algorithm performance.	8 Marks	L4	CO2

MODULE-III

6.	a)	Discuss the characteristics of ant colonies that are used in Ant Colony Optimization (ACO).	8 Marks	L2	CO3
	b)	Explain how Ant Colony Optimization is applied to solve the Traveling Salesman Problem.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss the behavior of honey bees and how it is applied in Bee Colony Optimization.	8 Marks	L2	CO3
	b)	Explain the algorithm of Bee Colony Optimization and its applications.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the behavior of bats in nature and how it is utilized in Bat Algorithm.	8 Marks	L3	CO3
	b)	Explain the steps involved in implementing the Bat Algorithm for a given optimization problem.	8 Marks	L2	CO3
		(OR)			
9.	a)	Explain the concept of Elephant Herding Optimization.	8 Marks	L2	CO3
	b)	Discuss the advantages of using Elephant Herding Optimization over other nature-inspired algorithms.	8 Marks	L2	CO3

MODULE-V

10.	a)	Differentiate between classification and clustering in machine learning.	8 Marks	L3	CO4
	b)	Explain with an example where clustering can be applied effectively.	8 Marks	L4	CO4
		(OR)			
11.	a)	Define vehicle routing and discuss its real-world applications.	8 Marks	L2	CO4
	b)	Discuss the importance of scheduling algorithms in industries such as manufacturing or transportation.	8 Marks	L3	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

ARTIFICIAL INTELLIGENCE

[Computer Science and Engineering (Data Science), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Agent and List different types of Agents.	2 Marks	L1	CO1
	b)	Name the Measuring parameters of problem-solving Algorithm performance.	2 Marks	L1	CO1
	c)	List the necessary conditions for Admissibility in A* Search.	2 Marks	L1	CO2
	d)	What do you mean by Consistency in A* Search?	2 Marks	L1	CO2
	e)	What are the characteristics of Systematic Algorithm?	2 Marks	L1	CO3
	f)	Define adversarial search.	2 Marks	L1	CO3
	g)	Draw a simple Bayesian network in which whether is independent of the other three variables (cavity, catch, and toothache).	2 Marks	L3	CO3
	h)	Distinguish between states and observations in probabilistic reasoning over time.	2 Marks	L2	CO3
	i)	What are the properties of robotic perception?	2 Marks	L1	C04
	j)	List out any three limitations of AI.	2 Marks	L1	C05

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the foundations and characteristics of Artificial Intelligence.	8 Marks	L2	CO1
	b)	Differentiate between goal based agents and utility based agents with example	8 Marks	L2	CO1
		(OR)			
3.	a)	Define a rational agent? Formulate a percept sequence for a house cleaning robot and explain in detail	8 Marks	L2	CO1
	b)	Write a short notes on agents and environments with Suitable examples.	8 Marks	L2	C01

MODULE-II

4.	a)	Analyze and apply heuristic Function (Manhattan distance) to a typical instance of the 8-puzzle to find the shortest solution	8 Marks	L3	CO2
	b)	Describe uninformed search strategies with example.	8 Marks	L2	CO2
		(OR)			
5.	a)	Construct a Tree by using greedy best-first Search- from Arab to Bucharest showing the least cost path, with the straight-line distance heuristic hSLD	8 Marks	L4	CO2
	b)	Construct a Tree by using A* Search from Arab to Bucharest showing the least cost path, with the straight-line distance heuristic hSLD.	8 Marks	L4	CO2

MODULE-III

6.	a)	Discuss in detail about Evolutionary algorithms with suitable example.	8 Marks	L2	CO3
	b)	Write a short note on Local Beam Search Algorithm with Characteristics.	8 Marks	L3	CO3
		(OR)			
7.	a)	Describe how Monto Carlo Tree search works with relevant examples.	8 Marks	L2	CO3
	b)	What is Alpha-Beta Pruning and Explain it?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the Conditional independence relations in Bayesian networks with neat sketch.	8 Marks	L2	CO4
	b)	Draw the both topology and the conditional probability tables (CPTs) in typical Bayesian network. In the CPTs, the letters B, E, A, J, and M stand for Burglary, Earthquake, Alarm, John Calls, and Mary Calls, respectively and explain it.	8 Marks	L3	CO4
		(OR)			
9.	a)	Illustrate the simplified matrix algorithm in Hidden Markov models.	8 Marks	L3	CO4
	b)	Write a short note on the Kalman filter algorithm with an example.	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe in detail the ethics and risks of developing artistic intelligence.	8 Marks	L2	CO5
	b)	Discuss the following terms: i) surveillance ii) security iii) Privacy.	8 Marks	L2	CO5
		(OR)			
11.	a)	Illustrate the dynamic decision network and draw the robot perception, which can be viewed as temporal inference from sequences of actions and measurements.	8 Marks	L3	CO5
	b)	Define robot hardware and Explain about various types of robots from the hardware perspective.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

ARTIFICIAL NEURAL NETWORKS

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write the difference between classification and regression tasks.	2 Marks	L1	CO1
	b)	What is the purpose of feature extraction in ANN?	2 Marks	L1	CO1
	c)	Define linear separability and give an example of a linearly separable dataset.	2 Marks	L1	CO2
	d)	What is the key limitation of the perceptron algorithm?	2 Marks	L1	CO2
	e)	Why are sigmoidal activation functions commonly used in neural networks?	2 Marks	L2	CO3
	f)	What is the main purpose of back-propagation in training MLPs?	2 Marks	L1	CO3
	g)	Why is gradient descent the most widely used optimization algorithm?	2 Marks	L2	CO4
	h)	What is entropy and why is it important in information theory and ANN?	2 Marks	L1	CO4
	i)	What is the purpose of pruning algorithms in neural networks?	2 Marks	L1	CO5
	j)	What is the idea behind soft weight sharing in neural networks?	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 curse of dimensionality and its impact on ANN models. Provide examples.	8 Marks	L2	CO1
	b)	Explain Bayes' theorem and discuss its applications in spam filtering or medical diagnosis.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe the role of regularization in controlling model complexity.	8 Marks	L2	CO1
	b)	Discuss techniques to mitigate overfitting and underfitting in ANN.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the role of linear discriminant functions in classification and describe how they define decision boundaries.	8 Marks	L2	CO2
	b)	Describe learning rate decay techniques. Compare fixed, exponential, and adaptive decay methods.	8 Marks	L2	CO2
		(OR)			
5.	a)	State and prove the perceptron convergence theorem.	8 Marks	L4	CO2
	b)	What are cliffs in the optimization landscape? How do they cause instability in gradient-based learning?	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain how a feed-forward network maps inputs to outputs. Provide examples of architectures.	8 Marks	L2	CO3
	b)	Derive the error back-propagation algorithm and explain each step with mathematical details.	8 Marks	L4	CO3
		(OR)			
7.	a)	Describe the purpose and functioning of threshold units in neural networks. Provide a mathematical representation.	8 Marks	L2	CO3
	b)	Explain weight-space symmetry in MLPs. Why can it make training neural networks challenging?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Derive the formula for the sum-of-squares error and explain how it is used in regression tasks.	8 Marks	L4	CO4
	b)	Discuss the concept of input-dependent variance and how it affects the performance of ANN models.	8 Marks	L2	CO4
		(OR)			
9.	a)	Compare and contrast entropy and cross-entropy in the context of classification tasks.	8 Marks	L4	CO4
	b)	Explain how entropy is used in ANN algorithms such as decision trees.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the bias-variance trade-off in machine learning. Provide examples of high-bias and high-variance models.	8 Marks	L2	CO5
	b)	Compare dropout, weight decay, and batch normalization as regularization techniques in neural networks.	8 Marks	L4	CO5
		(OR)			
11.	a)	Discuss the benefits and limitations of dynamically growing neural networks. Provide examples of real-world applications.	8 Marks	L2	CO5
	b)	Compare and contrast soft weight sharing with traditional regularization methods.	8 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

DEEP LEARNING

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is Deep Learning?	2 Marks	L1	CO1
	b)	Compare Deep Learning and Machine Learning	2 Marks	L2	CO1
	c)	List out the types of gradient clipping	2 Marks	L2	CO2
	d)	What are the gradient based strategies?	2 Marks	L1	CO2
	e)	Name any one type of penalty-based regularization technique used to prevent over fitting	2 Marks	L1	CO3
	f)	What is an ensemLe method?	2 Marks	L1	CO3
	g)	Why do we need RNN?	2 Marks	L2	CO5
	h)	What are the challenges of training Recurrent Networks?	2 Marks	L1	CO5
	i)	Identify the primary layers typically found in a Convolution Neural Network	2 Marks	L2	CO4
	j)	What is the purpose of the activation function in a CNN?	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Compare shallow neural network with deep neural network.	8 Marks	L2	CO1
	b)	Discuss about delta learning rule.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the basic principles of auto encoders.	8 Marks	L2	CO1
	b)	Illustrate how they can be used for dimensionality reduction.	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss the concept of learning rate decay and its role in training neural networks.	8 Marks	L2	CO2
	b)	Illustrate back propagation with computational graphs with an example.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain in detail about Momentum-Based Learning.	8 Marks	L2	CO2
	b)	Discuss the concept of gradient clipping.	8 Marks	L2	CO2

MODULE-III

6.	a)	Assess the following: i) Bias ii) Variance iii) Trade-off.	8 Marks	L4	CO3
	b)	Discuss penalty-based regularization method in detail.	8 Marks	L2	CO3
		(OR)			

7.	a)	List the generalization issues in model tuning and evaluation.	8 Marks	L2	CO3
	b)	Describe regularization in unsupervised applications.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Illustrate the architecture of RNN.	8 Marks	L3	CO5
	b)	Describe the architecture and function of Long Short-Term Memory (LSTM) networks.	8 Marks	L2	CO5

(OR)

9.	a)	Prepare an example of Encoder- Decoder or sequence-to-sequence RNN architecture.	8 Marks	L3	CO5
	b)	Explain various Gated RNNs.	8 Marks	L2	CO5

MODULE-V

10.	a)	Illustrate pooling stage in convolution network.	8 Marks	L3	CO4
	b)	Construct an architecture that shows all the layer terminology in convolution neural network.	8 Marks	L4	CO4

(OR)

11.	a)	Compare auto encoders and deep auto encoder.	8 Marks	L2	CO4
	b)	Interpret the applications of CNN.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

ADVANCED PYTHON PROGRAMMING

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is type conversion? Explain its types with an example	2 Marks	L1	CO1
	b)	Explain need of functions.	2 Marks	L2	CO3
	c)	Justify the choice of using Pandas over NumPy when working with tabular data.	2 Marks	L2	CO3
	d)	Discuss the relation between tuples and lists, tuples and dictionaries in detail.	2 Marks	L2	CO2
	e)	Explain the purpose of the __init__ method in a Python class.	2 Marks	L2	CO4
	f)	Identify two key differences between multithreading and multiprocessing.	2 Marks	L2	CO1
	g)	Define what an expression is in Python.	2 Marks	L1	CO1
	h)	Justify the need for custom exceptions in Python programming. Provide an example to illustrate your reasoning.	2 Marks	L6	CO4
	i)	Name two GUI toolkits available in Python for GUI development.	2 Marks	L1	CO5
	j)	Which method is used to get the current time in Python?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Write a python script to read the details of an employee (Name, emp_id, date of birth, basic, TA, DA) and print the salary along with given details of an employee.	8 Marks	L6	CO1
	b)	Illustrate the different types of control flow statements available in Python with flowcharts.	8 Marks	L3	CO1

(OR)

3.	a)	Write a function which receives a variable number of strings as arguments. Find unique characters in each string.	8 Marks	L3	CO1
	b)	Write python program to print the Fibonacci series up to n^{th} term.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define python lists. With a program, explain the concept of accessing Values in Lists, updating lists and deleting list elements.	8 Marks	L2	CO2
	b)	Demonstrate the use of Pandas to read, process, and analyze a CSV file.	8 Marks	L3	CO3

(OR)

5.	a)	Explain in brief about the in-built tuple functions with examples.	8 Marks	L2	CO2
	b)	Describe the process of handling missing data in Pandas. Include methods like fillna(), dropna(), and handling missing values during data analysis.	8 Marks	L3	CO3

MODULE-III

6.	a)	Write Python Program to Reverse Each Word in "input.txt" file.	8 Marks	L3	CO4
	b)	Discuss inheritance in Python programming language. Write a Python program to demonstrate the use of super() function.	8 Marks	L2	CO4
		(OR)			
7.	a)	Write a Python program to demonstrate operator overloading. Overload the + operator to concatenate two custom objects (e.g., Person objects with name attributes).	8 Marks	L3	CO4
	b)	Describe the steps involved in reading and writing to a binary file in Python. Include examples of writing and reading structured data (e.g., dictionaries).	8 Marks	L2	CO4

MODULE-IV

8.	a)	Define expression evaluation in Python. Explain the role of operator precedence and associativity with examples.	8 Marks	L1	CO1
	b)	What are daemon threads? Explain their purpose and how they differ from non-daemon threads.	8 Marks	L2	CO1
		(OR)			
9.	a)	Explain how Python evaluates boolean expressions with multiple logical operators. Illustrate with examples.	8 Marks	L2	CO1
	b)	Describe the significance of thread synchronization. Provide examples using locks in Python.	8 Marks	L2	CO1

MODULE-V

10.	a)	Develop a Python program to display the time left until a specific future date (e.g., countdown to New Year's Eve).	8 Marks	L3	CO5, CO6
	b)	Discuss the role of the Frame widget in Tkinter and how it helps with layout management.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the use of the listen() method in socket programming. How does it impact server behavior?	8 Marks	L2	CO5
	b)	Explain the difference between pack() and grid() geometry managers in Tkinter.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

COMPUTATIONAL LINGUISTICS AND NATURAL LANGUAGE PROCESSING

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the main components of linguistic analysis in NLP?	2 Marks	L2	CO1
	b)	What are the limitations of natural language generation (NLG)?	2 Marks	L3	CO1
	c)	What are the two main types of POS taggers?	2 Marks	L1	CO2
	d)	What is tree bank annotation?	2 Marks	L1	CO2
	e)	Define cosine similarity in text analysis.	2 Marks	L3	CO3
	f)	How does K-means clustering apply in text similarity?	2 Marks	L3	CO3
	g)	What is a learning-to-rank model in IR?	2 Marks	L3	CO4
	h)	List the challenges in sentiment analysis.	2 Marks	L3	CO4
	i)	What is opinion summarization?	2 Marks	L2	CO5
	j)	What is sentiment classification in NLG?	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 hybrid approaches in NLP, combining rule-based and statistical methods.	8 Marks	L6	CO1
	b)	Discuss the historical development and future directions of NLG.	8 Marks	L6	CO1
		(OR)			
3.	a)	Analyze the importance of text analysis in business intelligence.	8 Marks	L5	CO1
	b)	Analyze the scope and importance of semantic analysis in NLP.	8 Marks	L5	CO1

MODULE-II

4.	a)	What are Conditional Random Fields (CRFs), and where are they applied in NLP?	8 Marks	L4	CO2
	b)	Analyze the significance of N-grams in text prediction and auto complete systems.	8 Marks	L4	CO2
		(OR)			
5.	a)	Explain the development and usage of semantic labels in corpus annotation.	8 Marks	L2	CO2
	b)	How does corpus linguistics contribute to computational linguistics?	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the working principle of statistical machine translation (SMT)	8 Marks	L3	CO3
	b)	Explain the types of multiword expressions (MWEs) in NLP.	8 Marks	L3	CO3
		(OR)			

7.	a)	Discuss about probabilistic parsers with an example.	8 Marks	L2	CO3
	b)	Explain the working principles of voice recognition systems.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the significance of report generation in business intelligence.	8 Marks	L3	CO4
	b)	Explain how relation extraction works and its applications.	8 Marks	L3	CO4

(OR)

9.	a)	Describe the process of ontology construction and its importance in NLP.	8 Marks	L1	CO4
	b)	Explain the role of summarization techniques in report generation.	8 Marks	L1	CO4

MODULE-V

10.	a)	How is NLG applied in clinical decision support (CDS) systems?	8 Marks	L2	CO5
	b)	Discuss the role of NLG in enhancing problem-solving skills in ITS.	8 Marks	L2	CO5

(OR)

11.	a)	Describe the process of semantic representation in NLG.	8 Marks	L1	CO5
	b)	What are the key challenges in designing NLG systems for healthcare?	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

APPLICATIONS OF MACHINE LEARNING IN INDUSTRIES

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is a Cyber Threat Landscape in the context of machine learning?	2 Marks	L1	CO1
	b)	Define adversaries in machine learning. How do they impact machine learning models?	2 Marks	L1	CO1
	c)	Explain the basic concept of classification algorithms in machine learning.	2 Marks	L1	CO2
	d)	What is the role of clustering in machine learning? How is it different from classification?	2 Marks	L1	CO2
	e)	What are the different types of anomaly detection methods used in cybersecurity?	2 Marks	L1	CO3
	f)	Briefly explain the concept of host intrusion detection in anomaly detection.	2 Marks	L1	CO3
	g)	What is the purpose of feature generation in malware analysis?	2 Marks	L1	CO4
	h)	What is the importance of feature classification in malware analysis?	2 Marks	L1	CO4
	i)	Define the term "botnet" in the context of network traffic analysis.	2 Marks	L1	CO5
	j)	What is the significance of adversarial machine learning in protecting machine learning models?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	How can machine learning help detect and prevent phishing attacks in an organization's network?	8 Marks	L2	CO1
	b)	How can an adversary manipulate a machine learning model used by an organization to produce incorrect results?	8 Marks	L1	CO1
		(OR)			
3.	a)	What is the role of feature engineering in improving the performance of machine learning models for an organization's security applications?	8 Marks	L1	CO1
	b)	What steps would you follow to train a machine learning model for malware detection in an organization's network?	8 Marks	L1	CO1

		MODULE-II			
4.	a)	What is anomaly detection, and why is it important in identifying security breaches in an organization's systems?	8 Marks	L3	CO2
	b)	How can anomaly detection be applied to identify abnormal patterns in system logs within an organization's IT infrastructure?	8 Marks	L1	CO2
		(OR)			
5.	a)	What are some statistical measures used in anomaly detection to identify outliers or unusual patterns in organizational data?	8 Marks	L2	CO2
	b)	How can deep learning algorithms be applied for detecting complex anomalies in network traffic or system logs within an organization?	8 Marks	L2	CO2
		MODULE-III			
6.	a)	What is malware analysis, and why is it important for an organization's cybersecurity defense?	8 Marks	L2	CO3
	b)	How can sandbox environments be used within an organization to safely analyze and detect malware without risk to operational systems?	8 Marks	L2	CO3
		(OR)			
7.	a)	What is the role of machine learning in the classification of malware, and how does it improve detection accuracy and response times in an organization's cybersecurity systems?	8 Marks	L2	CO3
	b)	How can file entropy be used as a feature in identifying malware, and what does it indicate about the file's behavior within an organization's environment?	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	How can anomaly-based intrusion detection systems help in identifying malicious insiders or compromised users within an organization's network?	8 Marks	L1	CO4
	b)	What role does network traffic analysis play in detecting lateral movement of attackers within an organization's internal network?	8 Marks	L1	CO4
		(OR)			
9.	a)	What is data-centric security, and how does it enhance network security by focusing on protecting sensitive data within an organization?	8 Marks	L2	CO4
	b)	How does network traffic analysis help in enforcing data-centric security policies in an organization's IT infrastructure?	8 Marks	L2	CO4
		MODULE-V			
10.	a)	What are the ethical considerations for collecting and labeling data for abuse detection in an organization's web applications?	8 Marks	L1	CO5
	b)	How can organizations improve the accuracy of abuse detection models by refining the features used in supervised learning?	8 Marks	L2	CO5
		(OR)			
11.	a)	How can adversarial training be used to enhance the resilience of machine learning models against model poisoning and evasion attacks?	8 Marks	L1	CO5
	b)	What monitoring and detection strategies can organizations implement to identify and respond to adversarial attacks in real-time?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

CYBER SECURITY ESSENTIALS

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is cryptography?	2 Marks	L1	CO1
	b)	Give an example of a symmetric encryption algorithm.	2 Marks	L1	CO1
	c)	Why do attackers use proxy servers?	2 Marks	L1	CO2
	d)	What is HTTP tunneling?	2 Marks	L1	CO2
	e)	How does integer overflow affect a program's security?	2 Marks	L1	CO3
	f)	What is SQL injection?	2 Marks	L1	CO3
	g)	Define spyware.	2 Marks	L3	CO4
	h)	What is a rootkit?	2 Marks	L2	CO4
	i)	Give one advantage of using automated systems for malware analysis.	2 Marks	L1	CO5
	j)	What is intrusion detection?	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 Information Assurance (IA). How is it different from Information Security?	8 Marks	L2	CO1
	b)	What is the difference between symmetric and asymmetric encryption?	8 Marks	L2	CO1
		(OR)			
3.	a)	What is a firewall? Explain the different types of firewalls (packet filtering, stateful inspection, and proxy firewalls) with examples.	8 Marks	L2	CO1
	b)	Describe the difference between active and passive RFID systems. Highlight their applications and limitations.	8 Marks	L4	CO1

MODULE-II

4.	a)	Define antiviruses. Explain in detail about rogue antivirus.	8 Marks	L3	CO2
	b)	Explain pay per click business model.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain Remote Procedure Calls for network application.	8 Marks	L4	CO2
	b)	What is HTTP? Explain how software communicates over the protocol.	8 Marks	L4	CO2

MODULE-III

6.	a)	What is an SQL injection? Explain which variables are candidates for SQL Injection apart from username and password?	8 Marks	L2	CO3
	b)	Write a short note on: i) Race conditions ii) DOS conditions	8 Marks	L3	CO3
		(OR)			
7.	a)	Write the Steps for Protecting against Stack-Based Buffer Overflows.	8 Marks	L2	CO3
	b)	Define Buffer overflow prevention? Explain how it works.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Illustrate with an example explain Virtual Machine Obfuscation.	8 Marks	L2	CO3
	b)	Discuss the typical components of a virtual machine (VM)– obfuscated binary.	8 Marks	L3	CO3
		(OR)			
9.	a)	Explain with a visual representation of the token-kidnapping process.	8 Marks	L3	CO3
	b)	Discuss the typical components of a virtual machine (VM)– obfuscated binary.	8 Marks	L1	CO3
		MODULE-V			
10.	a)	Describe the features of Memory Forensics.	8 Marks	L2	CO5
	b)	List out the capabilities of Memory Analysis Framework.	8 Marks	L2	CO5
		(OR)			
11.	a)	Write a short note on honeypots in memory forensics.	8 Marks	L3	CO4
	b)	Explain Volatility Analyst Pack with an example.	8 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering (Cyber Security)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State active and passive attack	2 Marks	L1	CO1
	b)	Define integrity and non-repudiation.	2 Marks	L2	CO1
	c)	Compare stream cipher with block cipher	2 Marks	L4	CO1
	d)	List the design parameters of Feistel cipher network	2 Marks	L2	CO1
	e)	Distinguish between message integrity and message authentication.	2 Marks	L4	CO2
	f)	List the attacks to which MAC is vulnerable	2 Marks	L2	CO2
	g)	List the requirements of Kerberos	2 Marks	L1	CO3
	h)	Define PKI	2 Marks	L1	CO3
	i)	State Radix-64 text encoding	2 Marks	L1	CO4
	j)	Analyze how is replay attack prevented by IPSec	2 Marks	L4	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Determine the security services required to counter various types of Active and Passive attacks.	8 Marks	L2	CO1
	b)	Analyze the relation between security mechanisms and attacks.	8 Marks	L4	CO1
		(OR)			
3.	a)	Differentiate Poly and Mono Alphabetic cipher techniques with example.	8 Marks	L4	CO1
	b)	Explain the operations, requirements, components of Network security model.	8 Marks	L1	CO1

MODULE-II

4.	a)	Give the structure of AES. Explain how Encryption/Decryption is done in AES.	8 Marks	L2	CO1
	b)	Define Output Feedback (OFB) and list its advantages and disadvantages	8 Marks	L1	CO1
		(OR)			
5.	a)	Illustrate how expansion permutation function work in DES	8 Marks	L2	CO1
	b)	How do you convert a block cipher into a stream cipher by using the Cipher Feedback (CFB) mode? Explain.	8 Marks	L2	CO1

MODULE-III

6.	a)	Explain the compression of Secure Hash Algorithm	8 Marks	L1	CO2
	b)	Illustrate the requirements of hash functions	8 Marks	L2	CO2
		(OR)			
7.	a)	Give the structure of HMAC. List out the design objectives of HMAC.	8 Marks	L2	CO2
	b)	Explain the benefits/advantages of HMAC over other hash based schemes.	8 Marks	L1	CO2

MODULE-IV

8.	a)	Explain the authentication procedures defined by X.509 certificate.	8 Marks	L1	CO3
	b)	Explain the process of Symmetric Key Distribution using Symmetric Encryption	8 Marks	L2	CO3
		(OR)			
9.	a)	List and Explain the main features of Kerberos Version 5	8 Marks	L2	CO3
	b)	Illustrate the procedure for distribution of public keys using Public announcement and Publicly available directory Schemes	8 Marks	L2	CO3

MODULE-V

10.	a)	Explain the content types provided in S/MIME.	8 Marks	L1	CO4
	b)	Write a short notes on DNSSEC	8 Marks	L1	CO4
		(OR)			
11.	a)	Justify the need of compression after generating signatures and before message encryption in PGP	8 Marks	L4	CO4
	b)	Describe the architecture of IPSec	8 Marks	L1	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

ETHICAL HACKING

[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 two key impacts of hacking on organizations.	2 Marks	L1	CO1
	b)	Define exploitation and its role in ethical hacking.	2 Marks	L1	CO1
	c)	What are inherent limitations in penetration testing?	2 Marks	L1	CO1
	d)	Why is logistics planning critical for penetration testing?	2 Marks	L2	CO3
	e)	What is social engineering in the context of ethical hacking?	2 Marks	L1	CO1
	f)	How can physical security testing improve an organization's overall security posture?	2 Marks	L3	CO1
	g)	What is a Root Kit, and why is it significant in exploitation?	2 Marks	L2	CO4
	h)	Name two types of vulnerabilities that are commonly found in applications.	2 Marks	L1	CO4
	i)	Why is presenting penetration testing results crucial?	2 Marks	L2	CO2
	j)	What is the role of incident management in penetration testing?	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 various impacts of hacking on individuals, organizations, and society.	8 Marks	L2	CO1
	b)	Examine the importance of exploitation testing in understanding the real-world impact of vulnerabilities.	8 Marks	L3	CO4

(OR)

3.	a)	Discuss the key characteristics and roles of ethical hackers in improving cyber security.	8 Marks	L2	CO1
	b)	Outline the process of an information security program and its relevance to ethical hacking.	8 Marks	L2	CO1

MODULE-II

4.	a)	Compare inherent limitations and imposed limitations in the context of ethical hacking.	8 Marks	L2	CO2
	b)	Why are aligning security policies with business objectives critical for effective cyber security?	8 Marks	L3	CO5

(OR)

5.	a)	Explain the significance of identifying attack types and source points in penetration testing.	8 Marks	L2	CO2
	b)	Explain the role of previous test results in shaping future penetration testing strategies.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the tools and techniques used during the technical preparation phase of ethical hacking.	8 Marks	L3	CO3
	b)	Discuss the different types of social engineering attacks and their impact on an organization.	8 Marks	L2	CO1
		(OR)			
7.	a)	Explain the technical preparation steps required before starting a penetration test.	8 Marks	L3	CO3
	b)	How does proper documentation help in managing an ethical hacking engagement?	8 Marks	L2	CO6

MODULE-IV

8.	a)	Explain how identifying soft objectives can influence the success of ethical hacking engagements.	8 Marks	L2	CO4
	b)	Describe the process of "looking around" during enumeration and its role in identifying potential attack vectors.	8 Marks	L3	CO4
		(OR)			
9.	a)	What is war dialing, and how is it used in ethical hacking?	8 Marks	L2	CO4
	b)	List and explain the critical elements of enumeration in ethical hacking.	8 Marks	L2	CO4

MODULE-V

10.	a)	How does integrating the results of a penetration test contribute to an organization's security improvements?	8 Marks	L3	CO5
	b)	What is incident management, and how does it complement the findings of a penetration test?	8 Marks	L3	CO5
		(OR)			
11.	a)	What is the purpose of a deliverable in the context of ethical hacking, and why is it important?	8 Marks	L2	CO5
	b)	Explain the role of mitigation strategies in addressing vulnerabilities identified during penetration testing.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

WEB APPLICATION SECURITY

[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 difference between a web application and a cloud application in terms of hosting and accessibility.	2 Marks	L1	CO1
	b)	What is input validation, and why is it crucial for web application security?	2 Marks	L2	CO1
	c)	Describe two-factor authentication (2FA) and explain how it enhances security compared to traditional password-only methods.	2 Marks	L2	CO2
	d)	What are the key components of a secure password-based authentication system?	2 Marks	L4	CO2
	e)	Name one exception to the Same-Origin Policy.	2 Marks	L2	CO3
	f)	How does the Same-Origin Policy enhance web security?	2 Marks	L1	CO3
	g)	What are stored procedures, and how do they contribute to database security?	2 Marks	L1	CO4
	h)	Define Insecure Direct Object References (IDOR).	2 Marks	L2	CO4
	i)	List and explain any two HTTP methods.	2 Marks	L1	CO5
	j)	What is the purpose of HTTP headers?	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the concept of attack surface reduction. What strategies can developers implement to minimize the attack surface of a web application?	8 Marks	L2	CO1
	b)	Classify and prioritize threats to web applications. Discuss how this classification aids in developing a comprehensive security strategy.	8 Marks	L4	CO1
		(OR)			
3.	a)	Analyze the impact of web application frameworks on the development process. How have they contributed to both the accessibility and complexity of web applications?	8 Marks	L1	CO1
	b)	Discuss the role of user authentication and authorization in securing web applications. What are some common methods used to implement these security measures?	8 Marks	L4	CO1

		MODULE-II			
4.	a)	Compare and contrast two-factor authentication (2FA) and three-factor authentication (3FA). What are the advantages and disadvantages of each?	8 Marks	L2	CO2
	b)	Describe the process of web application authentication. What are the common methods used to authenticate users in web applications?	8 Marks	L4	CO2
		(OR)			
5.	a)	Discuss the importance of securing password-based authentication. What strategies can be employed to enhance the security of passwords?	8 Marks	L1	CO2
	b)	Explain the role of session management in web applications. Why is it critical to manage user sessions effectively?	8 Marks	L4	CO2
		MODULE-III			
6.	a)	Explain the Same-Origin Policy and its significance in web security.	8 Marks	L2	CO3
	b)	Describe the components that comprise an origin in web applications.	8 Marks	L5	CO3
		(OR)			
7.	a)	Identify and elaborate on at least three exceptions to the Same-Origin Policy.	8 Marks	L5	CO3
	b)	Analyze the impact of the Same-Origin Policy on AJAX requests.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Explain SQL Injection and its potential impact on database security.	8 Marks	L2	CO4
	b)	What are the best practices for setting database permissions?	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain the role of stored procedures in preventing SQL injection and managing database operations securely.	8 Marks	L4	CO4
	b)	Discuss how IDOR vulnerabilities can be exploited and the potential risks they pose to applications.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Explain the structure of an HTTP request and its components.	8 Marks	L2	CO5
	b)	Describe the structure of an HTTP response and its components.	8 Marks	L4	CO5
		(OR)			
11.	a)	Compare and contrast the different HTTP methods (GET, POST, PUT, DELETE).	8 Marks	L5	CO5
	b)	Define REST (Representational State Transfer) and explain how it utilizes HTTP for web services.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

STEEL STRUCTURES

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Mention the advantages and disadvantages of bolted connection.	2 Marks	L1	CO1
	b)	Name the different types of butt welds with sketches.	2 Marks	L1	CO1
	c)	Explain the class of sections in steel as per code.	2 Marks	L1	CO2
	d)	Distinguish web buckling and web crippling.	2 Marks	L1	CO2
	e)	List the types of failures of a tension member	2 Marks	L1	CO3
	f)	Draw different shapes of members used as compression members.	2 Marks	L1	CO3
	g)	Write any three codal provisions to be followed in the design of lacing system as per IS: 800-2007	2 Marks	L2	CO4
	h)	What is a column base?	2 Marks	L2	CO4
	i)	State any four component parts of roof truss with neat sketch.	2 Marks	L2	CO5
	j)	What is a tubular truss?	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.		Design a lap joint between the two plates of width 150 mm, if the thickness of one plate is 12 mm and the other is 10 mm. The joint has to transfer a working load of 100 kN. The plates are of Fe 410 grade. Use bearing type bolts.	16 Marks	L6	CO1

(OR)

3.	a)	Write neat sketches and explain about different types of welds.	8 Marks	L2	CO1
	b)	A 18 mm thick plate is joined to a 16 mm plate by 200 mm long butt weld. determine the strength of joint if i) A double V butt weld is used ii) A single V butt weld is used Assume that Fe410 grade plates and shop welds are used.	8 Marks	L4	CO1

MODULE-II

4.		A simply supported beam of span 5 m is subjected to a superimposed load of a concentrated load of 200 kN at mid span. Design the beam and check for deflection and shear. The beam is laterally supported throughout.	16 Marks	L6	CO2

(OR)

5.		Design a built-up beam using rolled I-section ISMB 350. The effective span of the beam is 5.5m, it carries a UDL of 40 kN/m for the whole span. The ends of the beam are framed to the column. Use fy= 250 MPa. Available thickness of plates: 12 mm and 14 mm.	16 Marks	L6	CO2

MODULE-III

6.	A single unequal angle ISA 90 x 60 x 6mm is connected to a 10mm gusset plates at the ends with 5nos of 16mm bolts to transfer tension. Determine the design tensile strength of the angle i) If the gusset is connected to 90mm leg ii) If the gusset is connected to 60mm leg	16 Marks	L4	CO3
	(OR)			
7.	A single angle section ISA 60 x 60 x 8 mm, 2.55 m long, is used as strut. The ends are welded to the gusset plates. Determine the design compressive strength and the service load that can be applied.	16 Marks	L4	CO3

MODULE-IV

8.	Design a built-up column consisting of two channels placed back to back to carry an axial factored load of 1900 kN. Design bolted single lacing system also. Length of the column is 10 m and both the ends of the column are effectively restrained in direction and position	16 Marks	L6	CO4
	(OR)			
9.	Design a gusseted base for a column ISHB 350 @72.4 kg/m with flange plates 450 mm × 20 mm carrying a factored axial force of 3000 kN. The column rests on M20 grade concrete pedestal. Design the bolted connection also. Assume Fe 410 grade steel and 4.6 grade bolts.	16 Marks	L6	CO4

MODULE-V

10.	A roof truss shed is to be built in Visakhapatnam for an industry. The size of the shed is 24 m X 40 m. The height of the building is 12 m at the ends. Determine the design wind speed and design wind pressure.	16 Marks	L4	CO5
	(OR)			
11. a)	State advantages & disadvantages of tubular sections in steel structure	8 Marks	L2	CO5
b)	A tie member in a roof truss is connected to the principal rafter at an angle of 900. Design the members and the connections for the following data. Use grade Yst=240 tubes	8 Marks	L6	CO5

S.No.	Member	Length	Force
1	Principal rafter panel	2.6 m	85 kN
2	Tie member	2.2 m	35 kN

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

GEOSPATIAL TECHNOLOGIES

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define aerial photogrammetry.	2 Marks	L1	CO1
	b)	List the advantages of terrestrial aerial photography.	2 Marks	L1	CO1
	c)	Define remote sensing.	2 Marks	L1	CO2
	d)	List the components of ideal remote sensing system.	2 Marks	L1	CO2
	e)	Mention the roots of GIS.	2 Marks	L1	CO3
	f)	Define GIS.	2 Marks	L1	CO3
	g)	Define DBMS.	2 Marks	L1	CO4
	h)	List the functions of DBMS.	2 Marks	L1	CO4
	i)	Explain the concept of synergy between remote sensing and GIS.	2 Marks	L2	CO5
	j)	Mention the thematic layers that should be prepared for study of groundwater potential estimation of a specific study area.	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 : i) Tilt ii) Focal length iii) Mosaic	8 Marks	L2	CO1
	b)	Calculate the scale of photographs, if the flying height of the aircraft is 1500m, the elevation of terrain is 500m and the focal length of the camera is 100mm.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain Categories of aerial photogrammetry	8 Marks	L2	CO1
	b)	Explain about scale of aerial photogrammetry and its determination	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain various elements of real remote sensing process with a neat sketch.	8 Marks	L2	CO2
	b)	Analyze the Electromagnetic spectrum in brief in view of remote sensing process.	8 Marks	L2	CO2
		(OR)			
5.	a)	Compare the spectral reflectance characteristics of water and vegetation	8 Marks	L2	CO2
	b)	Define Resolution. Classify and explain the resolutions of remote sensing sensors.	8 Marks	L2	CO2

		MODULE-III			
6.	a)	Analyze the fundamental operations of GIS in detail.	8 Marks	L4	CO3
	b)	Explain the components of GIS.	8 Marks	L2	CO3
		(OR)			
7.	a)	Distinguish between Raster GIS and vector GIS	8 Marks	L2	CO3
	b)	Explain spatial and non-spatial data in GIS.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Evaluate various surface analysis tools in GIS.	8 Marks	L4	CO4
	b)	Explain the slope analysis in GIS	8 Marks	L2	CO4
		(OR)			
9.		Evaluate the various network analysis tools used in GIS	16 Marks	L4	CO4
		MODULE-V			
10.		Discuss the process of Land use and Land cover mapping with help of RS and GIS.	16 Marks	L4	CO5
		(OR)			
11.		Discuss the role of RS and GIS and give suitable recommendations for sustainable watershed management	16 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

ADVANCED CONCRETE TECHNOLOGY

[Civil Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the primary components of Ordinary Portland Cement (OPC)?	2 Marks	L1	CO1
	b)	Define mineral admixtures.	2 Marks	L1	CO1
	c)	What is the nominal mix design of concrete?	2 Marks	L1	CO2
	d)	What is Ground Granulated Blast Furnace Slag (GGBS)?	2 Marks	L2	CO2
	e)	What is the meaning of high-performance concrete?	2 Marks	L1	CO3
	f)	What is the minimum grade of concrete as per IS 456: 2000?	2 Marks	L1	CO3
	g)	What causes frost damage in concrete?	2 Marks	L2	CO4
	h)	How does the corrosion of reinforcement affect concrete structures?	2 Marks	L1	CO4
	i)	What is the Non-Destructive Testing (NDT)?	2 Marks	L2	CO5
	j)	What is the Destructive Testing?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	What are the recent advancements in aggregate technology, and how do they enhance the performance of concrete?	16 Marks	L3	CO1
	(OR)			
3.	Illustrate the hydration process of Portland Cement, explaining the chemical reactions involved during different stages.	16 Marks	L2	CO1

MODULE-II

4.	Explain the IS method for mix proportioning in concrete.	16 Marks	L4	CO2
	(OR)			
5.	What is the Interfacial Transition Zone (ITZ) in concrete? Discuss its significance and how it affects the mechanical properties of concrete.	16 Marks	L3	CO2

MODULE-III

6.	Describe the role of bacterial concrete in self-healing processes and its potential impact on the durability of structures.	16 Marks	L3	CO3
	(OR)			
7.	Evaluate recycled aggregate concrete's mechanical and durability properties and its role in sustainable construction.	16 Marks	L3	CO3

MODULE-IV

8.	Discuss the primary factors affecting the durability of concrete.	16 Marks	L3	CO4
	(OR)			
9.	Describe the carbonation process in concrete. How does it lead to reinforcement corrosion?	16 Marks	L2	CO4

MODULE-V

10.	Discuss the electrical resistivity test for concrete and its importance in evaluating the durability of reinforced concrete structures.	16 Marks	L4	CO5
	(OR)			
11.	What is thermal imaging, and how can it be used to detect anomalies in concrete structures? Discuss its benefits and limitations in comparison to other NDT methods.	16 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

DISTRIBUTED SYSTEMS

[Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the primary difference between a multiprocessor and a multi computer system?	2 Marks	L1	CO1
	b)	How does asynchronous execution benefit performance in parallel systems?	2 Marks	L1	CO1
	c)	Define logical clock in distributed systems.	2 Marks	L1	CO2
	d)	What is matrix time, and how does it differ from vector time?	2 Marks	L1	CO2
	e)	What is meant by snapshot in the context of distributed systems.	2 Marks	L1	CO3
	f)	Mention one challenge of implementing snapshot algorithms in non-FIFO channels.	2 Marks	L1	CO3
	g)	Define the concept of logical clocks in Lamport's algorithm.	2 Marks	L1	CO4
	h)	What is the key feature of Maekawa's algorithm?	2 Marks	L1	CO4
	i)	What is the primary characteristic of the AND model of deadlock?	2 Marks	L1	CO5
	j)	Define Distributed Shared Memory (DSM).	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 message-passing systems and shared memory systems in detail.	8 Marks	L2	CO1
	b)	What are the differences between synchronous and asynchronous executions with examples.	8 Marks	L1	CO1

(OR)

3.	a)	What are the different models of communication networks in distributed systems? Explain.	8 Marks	L1	CO1
	b)	Discuss the models of process communication in distributed systems.	8 Marks	L1	CO1

MODULE-II

4.	a)	Discuss about the scalar time and vector time as methods for ordering events in a distributed system.	8 Marks	L3	CO3
	b)	Describe the efficient implementations of vector clocks.	8 Marks	L1	CO3

(OR)

5.	a)	Explain about the Jard–Jourdan's adaptive technique and its advantages.	8 Marks	L2	CO3
	b)	Explain how NTP (Network Time Protocol) ensures physical clock synchronization.	8 Marks	L2	CO3

MODULE-III

6.	a)	Discuss how a global snapshot can help in debugging distributed systems.	8 Marks	L2	CO2
	b)	Describe the steps of the Chandy–Lamport snapshot algorithm.	8 Marks	L2	CO2

(OR)

7.	a)	Compare and contrast the consistency guarantees provided by FIFO and non-FIFO snapshot algorithms	8 Marks	L2	CO2
	b)	Explain how monitoring global state contributes to fault-tolerant distributed systems.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Describe the Ricart–Agrawala algorithm and explain how it ensures mutual exclusion.	8 Marks	L1	CO3
	b)	What are the advantages of Lodha and Kshemkalyani's fair mutual exclusion algorithm? Explain.	8 Marks	L1	CO3

(OR)

9.	a)	Compare quorum-based mutual exclusion algorithms and token-based algorithms.	8 Marks	L2	CO3
	b)	Describe the Suzuki–Kasami broadcast algorithm with a step-by-step explanation.	8 Marks	L2	CO3

MODULE-V

10.	a)	Explain the system model in the context of deadlock detection in distributed systems.	8 Marks	L1	CO4
	b)	Discuss Knapp's classification of distributed deadlock detection algorithms.	8 Marks	L2	CO4

(OR)

11.	a)	Describe the Chandy–Misra–Haas algorithm for deadlock detection in the AND model.	8 Marks	L1	CO4
	b)	What is distributed shared memory (DSM), and how does it differ from traditional shared memory systems? Explain.	8 Marks	L1	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

COMPILER DESIGN

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	State the phases in analysis part of the compiler.	2 Marks	L1	CO1
	b)	Write the specifications of LEX program.	2 Marks	L1	CO1
	c)	Give the definition for left recursion.	2 Marks	L1	CO3
	d)	Define goto function in LR parser with an example.	2 Marks	L1	CO3
	e)	Define L-attributed definition and give an example.	2 Marks	L1	CO4
	f)	Explain the role of type expression in type checking.	2 Marks	L2	CO4
	g)	Define Constant folding.	2 Marks	L1	CO4
	h)	What is the role of goto statements in control flow translation?	2 Marks	L1	CO4
	i)	What is a basic block in compiler optimization?	2 Marks	L1	CO2
	j)	Define a flow graph in the context of compiler optimization.	2 Marks	L2	CO2

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the various phases of a compiler in detail. Also Write down the output for the following expression after each phase a=b*c-d.	8 Marks	L6	CO1
	b)	Describe how various phases could be combined as a pass in a compiler.	8 Marks	L2	CO1

(OR)

3.	a)	Write a LEX program for counting number of vowels and consonants present in a given string.	8 Marks	L6	CO1
	b)	Explain about input buffering in detail?	8 Marks	L2	CO1

MODULE-II

4.	a)	Consider the grammar E →TE' E'→+TE'|€ T→FT' T'→*FT'|€ F →(E) |id. Construct a predictive parsing table for the grammar given above.	8 Marks	L6	CO3
	b)	Consider the following grammar G: S→CC C→cC | d Construct LALR Parse Table	8 Marks	L6	CO3

(OR)

5.	a)	Analyze whether the following grammar is LR(1) or not. Explain your answer with reasons. S→L,R S→R L→ * R L → id R →L.	8 Marks	L6	CO3
	b)	Consider the grammar: E →E + E|E *E|(E)| id Show the sequence of moves made by the shift-reduce parser on the input id1+id2*id3 and determine whether the given string is accepted by the parser or not.	8 Marks	L6	CO3
		MODULE-III			
6.	a)	Differentiate between S-Attribute and L-Attribute with an Example.	8 Marks	L4	CO4
	b)	Construct a syntax directed translation scheme that translates arithmetic expression into infix and postfix notation.	8 Marks	L6	CO4
		(OR)			
7.	a)	Explain in detail about Overloading of functions and operators?	8 Marks	L2	CO4
	b)	Describe the method of generating syntax directed definition for control Statements?	8 Marks	L2	CO4
		MODULE-IV			
8.	a)	Explain about runtime storage organization.	8 Marks	L2	CO4
	b)	Differentiate between stack and heap storage?	8 Marks	L4	CO4
		(OR)			
9.	a)	Implement Three Address Code for an expression a=b*-c+b*-c.	8 Marks	L3	CO4
	b)	Discuss storage allocation for block structured languages.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Describe in detail about simple code generator algorithm.	8 Marks	L2	CO2
	b)	What are the principle sources of optimization? Give the classification of code optimization.	8 Marks	L2	CO2
11.	a)	Explain the concept of object code forms?	8 Marks	L2	CO2

	b)	Generate optimal machine code for the following C program.
		main()
		{
		int i, a[10]; while (i<=10) a[i] =0
		}
			8 Marks	L6	CO2



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

SOFTWARE TESTING AND QUALITY ASSURANCE

[Computer Science and Engineering (Data Science), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define agile testing and explain its significance in software development.	2 Marks	L1	CO1
	b)	Mention two key differences between traditional testing and agile testing	2 Marks	L2	CO1
	c)	Define the role of independent QA teams in software testing.	2 Marks	L2	CO2
	d)	What is the importance of integrating testers into an Agile project team?	2 Marks	L4	CO2
	e)	What are lightweight processes, and why are they preferred in Agile methodologies?	2 Marks	L2	CO3
	f)	Differentiate between test strategy and test planning.	2 Marks	L1	CO3
	g)	What is the purpose of using tools to elicit examples and requirements in software testing?	2 Marks	L1	CO4
	h)	How can mind maps be used effectively in test planning and design?	2 Marks	L2	CO4
	i)	What is the purpose of Quadrant 3 in Agile testing?	2 Marks	L1	CO5
	j)	How does scenario testing help in evaluating a product's functionality?	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 differences between traditional testing and agile testing, focusing on processes and team collaboration.	8 Marks	L2	CO1
	b)	What are the core principles of agile testing, and how do they ensure quality in software development?	8 Marks	L4	CO1

(OR)

3.	a)	Discuss the role of continuous feedback in agile testing and its impact on product quality.	8 Marks	L1	CO1
	b)	How does agile testing align with the Agile Manifesto values and principles? Provide examples.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain the importance of maintaining independent QA teams in software testing. What are the benefits and challenges?	8 Marks	L2	CO2
	b)	Discuss how testers can be effectively integrated into Agile project teams. Provide examples of their roles and responsibilities	8 Marks	L4	CO2

(OR)

5.	a)	How does collaboration between testers and developers improve the quality of deliverables in Agile projects?	8 Marks	L1	CO2
	b)	Describe the role of physical logistics and resource management in ensuring the success of Agile testing teams.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain the concept of lightweight processes in software testing and their advantages over traditional methods.	8 Marks	L2	CO3
	b)	Discuss the role of defect tracking in improving software quality. How do defect tracking tools contribute to this process?	8 Marks	L5	CO3

(OR)

7.	a)	Differentiate between test strategy and test planning. Provide examples to illustrate their unique roles.	8 Marks	L5	CO3
	b)	What is traceability in software testing? Explain its significance and how it impacts the testing lifecycle.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the importance of tools in eliciting examples and requirements during the software testing process. Provide suitable examples.	8 Marks	L2	CO4
	b)	Discuss how checklists and mind maps can be used to improve the efficiency of test planning and execution.	8 Marks	L2	CO4

(OR)

9.	a)	Illustrate the role of spreadsheets and mock-ups in test documentation and requirement analysis.	8 Marks	L4	CO4
	b)	How can flow diagrams aid in understanding and validating test scenarios? Provide examples.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the concept of Quadrant 3 in Agile testing and its role in critiquing the product.	8 Marks	L2	CO5
	b)	Discuss the importance of demonstrations in evaluating the quality of a software product.	8 Marks	L4	CO5

(OR)

11.	a)	What is scenario testing, and how does it help in critiquing the product? Provide relevant examples.	8 Marks	L5	CO5
	b)	Explain the process of exploratory testing and its advantages over traditional testing methods.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

BUSINESS PROCESSES IN FINANCE AND HR

[Computer Science and Engineering, Computer Science and Engineering (Data Science)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Expand SAP.	2 Marks	L2	CO1
	b)	What is SAP HANA?	2 Marks	L1	CO2
	c)	Write any 2 examples of Functional modules in SAP.	2 Marks	L1	CO2
	d)	Define Info-type.	2 Marks	L2	CO2
	e)	What is the T code to maintain HR Master data?	2 Marks	L1	CO3
	f)	Which Info type describes about Organizational Assignment?	2 Marks	L2	CO3
	g)	What is the business process cycle name of Human resource in SAP?	2 Marks	L2	CO2
	h)	What is SAP Success Factors?	2 Marks	L1	CO2
	i)	Name any five Sub modules in SAP HCM.	2 Marks	L1	CO2
	j)	Define Employee Self Service.	2 Marks	L1	CO2

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe Qualification Catalog in Personnel development.	8 Marks	L3	CO1
	b)	Explain ACTIVATE Implementation Methodology in detail.	8 Marks	L2	CO4
		(OR)			
3.	a)	Explain the Types of SAP Deployment models.	8 Marks	L3	CO1
	b)	Explain the types of SAP Projects.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the Enterprise Structures in detail.	8 Marks	L4	CO1
	b)	Explain the detailed steps covered in ASAP Implementation methodology.	8 Marks	L3	CO1
		(OR)			
5.	a)	Write the Various processes covered in Hire to retire process and brief each.	8 Marks	L3	CO3
	b)	Explain Personnel structure and organizational structure in detail.	8 Marks	L3	CO3

MODULE-III

6.	a)	What is the SPRO IMG path to create enterprise structure?	8 Marks	L4	CO1
	b)	Write down the Steps in SAP HCM to create employee master record.	8 Marks	L2	CO4
		(OR)			
7.	a)	List the Important Info types and explain each purpose.	8 Marks	L3	CO3
	b)	Describe SDLC model.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Why Learning and Development is important for an employee and the company? Explain any five points.	8 Marks	L2	CO4
	b)	Explain the important steps in the Payroll Process.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain Success Factors and its various solutions.	8 Marks	L3	CO3
	b)	Why we need a Centralized ERP system to be maintained and its features?	8 Marks	L3	CO3

MODULE-V

10.	a)	What is ESS and MSS? Explain each.	8 Marks	L3	CO3
	b)	What is the business process in Recruiting management?	8 Marks	L3	CO3
		(OR)			
11.	a)	Describe some reports which we can view from HRIS SAP Easy Menu Access.	8 Marks	L2	CO4
	b)	Why do we need SAP ERP solution for the companies? Explain in Detail.	8 Marks	L2	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

BUSINESS PROCESSES IN SOURCING AND PROCUREMENT

[Computer Science and Engineering, Computer Science and Engineering (Data Science)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is ERP?	2 Marks	L2	CO1
	b)	What is the T Code for goods movements?	2 Marks	L1	CO2
	c)	What is SAP S/4 HANA	2 Marks	L1	CO2
	d)	What are PR and PO?	2 Marks	L2	CO2
	e)	What are GR and GI?	2 Marks	L1	CO3
	f)	What is the T code for Purchase Order?	2 Marks	L2	CO3
	g)	What do you specify using the breakdown in the document overview of transaction ME21N?	2 Marks	L2	CO2
	h)	"ME59N", this Transaction code is for?	2 Marks	L1	CO2
	i)	Which organizational levels are relevant in the maintenance of a business partner with the supplier and FI vendor roles?	2 Marks	L1	CO2
	j)	What kind of data is a purchasing info record?	2 Marks	L1	CO2

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.		Explore the full business process of sourcing in S4 Hana, Explain with Transaction codes.	16 Marks	L4	CO1
		(OR)			
3.	a)	Explain the subcontracting process consists of 4 steps.	8 Marks	L4	CO3
	b)	Explain some of the predefined item categories.	8 Marks	L3	CO3

MODULE-II

4.		Explore the pricing determination process with an example.	16 Marks	L3	CO1
		(OR)			
5.	a)	Material valuation can be carried out in which ways? Explain.	8 Marks	L3	CO3
	b)	Which are the conditions system uses for price determination?	8 Marks	L3	CO3

MODULE-III

6.		Explain Self-Service Procurement Process.	16 Marks	L3	CO2
		(OR)			
7.		Explain Stock Types.	16 Marks	L2	CO3

MODULE-IV

8.		Distinguish between MRP Live and classic MRP?	16 Marks	L3	CO3
		(OR)			
9.		Explain Organizational Levels in the Procurement Process?	16 Marks	L2	CO4

MODULE-V

10.	Explain the different screen areas (header data, item overview, item details, document overview)?	16 Marks	L2	CO4
	(OR)			
11.	Discuss the P2P - Procurement to Payment Cycle Processes on SAP S/4HANA Business Suite.	16 Marks	L2	CO3



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

OBJECT ORIENTED MODELING AND DESIGN

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is object-oriented modeling, and why is it important in UML?	2 Marks	L1	CO1
	b)	What does the term "aggregation" refer to in UML?	2 Marks	L1	CO1
	c)	Differentiate Aggregation and Composition.	2 Marks	L4	CO2
	d)	when to create a subclass of a super class?	2 Marks	L2	CO2
	e)	Distinguish between activity and action state in UML.	2 Marks	L4	CO3
	f)	How is reverse engineering used with activity diagrams?	2 Marks	L1	CO3
	g)	What is the primary purpose of modeling a family of signals in a system?	2 Marks	L1	CO4
	h)	How can exceptions be handled in a signal-based system?	2 Marks	L1	CO4
	i)	List out the considerations when modeling documents in a system?	2 Marks	L1	CO5
	j)	How does a component diagram model source code?	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 basic building blocks of UML. How do its core concepts support the development of software systems?	8 Marks	L2	CO1
	b)	Explain the role of UML in the software development life cycle (SDLC). How does UML contribute to different phases of SDLC?	8 Marks	L2	CO1

(OR)

3.	a)	What are structural relationships in UML? Explain how they are used to model the interactions between different classes.	8 Marks	L3	CO1
	b)	Discuss common mechanisms in UML. How do these mechanisms support the modeling of complex software systems?	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the concept of simple collaboration in UML class diagrams. How does collaboration modeling help in understanding interactions between objects?	8 Marks	L2	CO2
	b)	Design a Class Diagram for an E-Learning Platform. Include classes like Course, Instructor, Student, and Enrollment.	8 Marks	L3	CO2

(OR)

5.	a)	Discuss the concepts of types and roles in UML. How do these concepts contribute to defining the responsibilities and behaviors of classes?	8 Marks	L2	CO2
	b)	Create a Object Diagram for a Travel Booking System. Incorporate classes such as Flight, Hotel, Booking, and Traveler.	8 Marks	L3	CO2
		MODULE-III			
6.	a)	State and explain the common modeling techniques of use case diagrams.	8 Marks	L4	CO3
	b)	Explain about forking and joining concepts in activity diagram with an example	8 Marks	L4	CO3
		(OR)			
7.	a)	Compare sequence versus collaboration diagram with suitable example.	8 Marks	L4	CO3
	b)	Draw the use case diagram and the activity diagram for an online airline reservation system. Summarize the purpose of each use case, actor, and its importance. Briefly explain various activity states and action states in the activity diagram.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	What is meant by state machine? Discuss about sequential sub states and history states with an example	8 Marks	L2	CO4
	b)	Explain the differences between processes and threads in terms of concurrency modeling. How does UML handle these differences?	8 Marks	L4	CO4
		(OR)			
9.	a)	What is an event? What are different types of events?	8 Marks	L2	CO4
	b)	Enumerate the steps in modeling timing constraints. Illustrate with a UML diagram.	8 Marks	L4	CO4
		MODULE-V			
10.	a)	How does a component diagram model source code? What are the key components and their interactions?	8 Marks	L2	CO5
	b)	Explain how an executable release is represented in a component diagram. What are the critical elements to include?	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain how files are represented in a system model. What are the considerations for modeling file structure and access?	8 Marks	L2	CO5
	b)	What is the purpose of modeling an API in system design? How does it help in understanding system interactions?	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

MOBILE APPLICATION DEVELOPMENT

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the difference between mobile web apps and native mobile applications?	2 Marks	L1	CO1
	b)	What are the key features of Android's architecture?	2 Marks	L1	CO1
	c)	What is an activity in Android, and why is it essential?	2 Marks	L2	CO2
	d)	What is the purpose of using intents to call built-in applications in Android?	2 Marks	L2	CO2
	e)	What is the purpose of a ListView in Android, and how is it used?	2 Marks	L1	CO3
	f)	How can you persist data to files in Android?	2 Marks	L2	CO3
	g)	How can SMS messaging be implemented in Android applications?	2 Marks	L1	CO4
	h)	How do you get the location data in Android?	2 Marks	L2	CO4
	i)	What is an Android service, and how does it communicate with an activity?	2 Marks	L2	CO5
	j)	What is threading in Android, and why is it important for performance?	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 concept of mobile web presence. How do mobile applications contribute to marketing?	8 Marks	L3	CO1
	b)	Provide an overview of Android's architecture. Explain the roles of key components like the application framework, libraries, and runtime.	8 Marks	L3	CO1

(OR)

3.	a)	Explain the significance of user interface (UI) design in mobile applications. How does effective use of screen real estate enhance user experience?	8 Marks	L3	CO1
	b)	Discuss the challenges of designing for mobile application users. How do mobile information design principles help address these challenges?	8 Marks	L3	CO1

MODULE-II

4.	a)	Define an Android activity. Discuss how activities are used to build the UI and manage the flow of an Android application.	8 Marks	L2	CO2
	b)	Describe the process of displaying notifications in Android applications. What are the different types of notifications, and how are they used?	8 Marks	L2	CO2

(OR)

5.	a)	Discuss the function of the action bar in Android. How can it be used to improve the user navigation experience?	8 Marks	L4	CO2
	b)	Discuss the importance of adapting Android applications to different display orientations. How can developers manage orientation changes effectively?	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the use of different types of views in Android, such as TextView, Button, and EditText. How do these views contribute to mobile application development?	8 Marks	L2	CO3
	b)	Discuss the purpose and implementation of Picker Views in Android applications. How are date and time picker views used in mobile apps?	8 Marks	L4	CO3

(OR)

7.	a)	Explain the process of creating and using databases in Android applications. What are the key steps in using SQLite for data storage?	8 Marks	L3	CO3
	b)	Describe how List Views are used to display dynamic data in Android. What are the key features of List View, and how can it be customized?	8 Marks	L4	CO3

MODULE-IV

8.	a)	Discuss the process of displaying maps in Android applications. How can developers integrate Google Maps into their apps and provide location-based services?	8 Marks	L3	CO4
	b)	What are the challenges involved in managing network connectivity in Android applications? How can developers handle network failures and retries?	8 Marks	L3	CO4

(OR)

9.	a)	Explain how Android applications can handle background tasks, such as fetching location data and sending SMS messages, without affecting the user experience.	8 Marks	L4	CO4
	b)	Describe how SMS messaging works in Android applications. How can developers send and receive SMS messages programmatically?	8 Marks	L5	CO4

MODULE-V

10.	a)	Describe the communication process between a service and an activity in Android. How can data be passed between them?	8 Marks	L5	CO5
	b)	What is threading in Android? Discuss the importance of threading for asynchronous tasks and how developers can implement it in their apps.	8 Marks	L5	CO5

(OR)

11.	a)	What is an Android service, and how does it differ from an activity? Explain the different types of services in Android.	8 Marks	L3	CO5
	b)	How do developers deploy APK files to the Google Play Store? Discuss the process of app submission, review, and approval.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

COMPUTER ARCHITECTURE AND ORGANIZATION

[Computer Science and Engineering (Data Science), Computer Science and Engineering (Cyber Security), Information Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define instruction sequencing.	2 Marks	L1	CO1
	b)	How is system performance measured?	2 Marks	L4	CO1
	c)	What is the function of the ALU in a CPU?	2 Marks	L2	CO2
	d)	Define hardwired control.	2 Marks	L1	CO2
	e)	What is a page fault in virtual memory?	2 Marks	L2	CO3
	f)	List two examples of secondary storage devices.	2 Marks	L1	CO3
	g)	List two examples of processor-based I/O devices.	2 Marks	L1	CO4
	h)	What is a hash table?	2 Marks	L2	CO4
	i)	What is instruction set architecture?	2 Marks	L2	CO5
	j)	Mention one example of a general-purpose multiprocessor.	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 bus structure and its importance in computer systems.	8 Marks	L2	CO1
	b)	Discuss the role of functional units in computer operations.	8 Marks	L2	CO1
		(OR)			
3.	a)	Compare multiprocessors and multicomputers with suitable examples.	8 Marks	L4	CO1
	b)	Describe the different addressing modes with examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	Solve: Add 123.45+67.89 using floating-point arithmetic.	8 Marks	L3	CO2
	b)	Perform signed operand multiplication using booth algorithm with following values 01101_2 and 01011_2	8 Marks	L3	CO2
		(OR)			
5.	a)	Perform the binary division of 101101_2 by 11_2.	8 Marks	L3	CO2
	b)	State the differences between half adders and full adders.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain the characteristics of semiconductor RAM and ROM with examples.	8 Marks	L2	CO3
	b)	Discuss the trade-off between speed, size, and cost in memory design.	8 Marks	L4	CO3

(OR)

7.	a)	Explain the working principle of cache memory and its mapping techniques.	8 Marks	L2	CO3
	b)	Compare static and dynamic RAM in terms of construction, speed, and usage.	8 Marks	L4	CO3
		MODULE-IV			
8.	a)	Explain the concept of direct memory access (DMA) with a suitable diagram.	8 Marks	L2	CO4
	b)	Discuss the different methods of accessing I/O devices.	8 Marks	L4	CO4
		(OR)			
9.	a)	Explain the role of interrupts in I/O operations and their importance.	8 Marks	L2	CO4
	b)	Write a detailed note on bus arbitration and its types.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain the concept of parallel processing with examples.	8 Marks	L2	CO5
	b)	Discuss the different types of data hazards.	8 Marks	L4	CO5
		(OR)			
11.	a)	Write a note on instruction hazards and their resolution.	8 Marks	L2	CO5
	b)	Explain the structure of a general-purpose multiprocessor.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

BUSINESS ANALYTICS FOR INDUSTRIES

[Computer Science and Engineering, Computer Science and Engineering (Data Science)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the IBM Business Analytics Maturity Model?	2 Marks	L2	CO1
	b)	List two key roles in the analytics workforce.	2 Marks	L1	CO1
	c)	Explain the importance of analyzing customer behavior for banks.	2 Marks	L2	CO2
	d)	Mention one benefit of a cloud-based solution for acquiring new customers.	2 Marks	L2	CO2
	e)	Analyze the role of customer insight in retaining and growing customers.	2 Marks	L2	CO3
	f)	Compare the effectiveness of traditional claims processing with analytics-enabled claims processing.	2 Marks	L2	CO3
	g)	Assess the importance of sentiment analysis derived from text analytics in marketing.	2 Marks	L5	CO4
	h)	Identify the purpose of IBM Churn Prediction Analytics.	2 Marks	L1	CO4
	i)	Analyze the importance of supporting physician productivity and satisfaction in healthcare.	2 Marks	L4	CO5
	j)	Assess the benefits of developing analytics solutions on a solid infrastructure in healthcare.	2 Marks	L5	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are the BAO capabilities for business performance management?	8 Marks	L2	CO1
	b)	Explain the role of BAO in driving innovation and operational efficiency across industries.	8 Marks	L5	CO1
		(OR)			
3.	a)	Discuss the IBM technology portfolio for BAO.	8 Marks	L2	CO1
	b)	Highlight the advantages of implementing BAO solutions in various industries.	8 Marks	L4	CO1

MODULE-II

4.	a)	Summarize how business analytics is transforming the banking industry with specific use cases.	8 Marks	L5	CO2
	b)	Analyze the use of cloud-based solutions in customer acquisition strategies for banks.	8 Marks	L3	CO2
		(OR)			

5.	a)	Analyze the role of customer care and insight analytics in improving customer satisfaction.	8 Marks	L4	CO2
	b)	Explain how BBVA uses social media monitoring to improve online reputation and its impact.	8 Marks	L3	CO2

MODULE-III

6.	a)	Appraise the benefits of using a 360-degree customer view for customer retention.	8 Marks	L5	CO3
	b)	Assess the role of IBM solutions in claims processing optimization.	8 Marks	L5	CO3

(OR)

7.	a)	Investigate the reasons behind difficulties in achieving an integrated channel enterprise.	8 Marks	L4	CO3
	b)	Justify the need for analytics to address risk management challenges in insurance.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Critique the effectiveness of IBM Churn Prediction Analytics in reducing customer churn.	8 Marks	L5	CO4
	b)	Assess the role of "next best action" capabilities in marketing optimization.	8 Marks	L5	CO4

(OR)

9.	a)	Examine the significance of integrating fragmented network insights.	8 Marks	L4	CO4
	b)	Investigate the reasons why customer advocacy is a differentiator for CSPs.	8 Marks	L4	CO4

MODULE-V

10.	a)	Critique the effectiveness of IBM's strategic focus on Business Analytics and Optimization for healthcare.	8 Marks	L2	CO5
	b)	Assess the role of infrastructure in enabling advanced analytics solutions in healthcare.	8 Marks	L2	CO5

(OR)

11.	a)	Examine the challenges faced by independent healthcare providers in implementing analytics solutions.	8 Marks	L3	CO5
	b)	Investigate how customer satisfaction influences analytics adoption in healthcare organizations.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

SATELLITE COMMUNICATIONS

[Electronics and Communication Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention two applications of satellites in broadcasting.	2 Marks	L1	CO1
	b)	What is the meaning of the term "eccentricity" in an orbital path?	2 Marks	L1	CO1
	c)	What is a beam footprint in the context of satellite antennas?	2 Marks	L1	CO2
	d)	Why is the uplink frequency typically higher than the downlink frequency?	2 Marks	L1	CO2
	e)	Explain the function of transmitters in an Earth station.	2 Marks	L1	CO3
	f)	What is intermodulation in satellite communication?	2 Marks	L1	CO3
	g)	Define system throughput in the context of satellite systems.	2 Marks	L1	CO4
	h)	How does coverage in LEO differ from geostationary satellites?	2 Marks	L1	CO4
	i)	Define GPS position location principles.	2 Marks	L1	CO5
	j)	What is IRNSS?	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 origin and historical background of satellite communications.	8 Marks	L2	CO1
	b)	Examine the different types of launch vehicles and their impact on satellite performance.	8 Marks	L2	CO1
		(OR)			
3.	a)	Interpret Kepler's laws of planetary motion and their relevance to satellite communication.	8 Marks	L2	CO1
	b)	Find the elevation and azimuth angles of Earth station latitude 52^0 N, longitude 0^0 and satellite latitude 0^0, longitude 66^0E	8 Marks	L4	CO1

MODULE-II

4.	a)	Summarize the significance of the G/T ratio in designing satellite communication links?	8 Marks	L2	CO2
	b)	Explain the process of designing uplink and downlink satellite links to achieve the specified C/N ratio.	8 Marks	L2	CO2
		(OR)			
5.		Discuss the equipment reliability and space qualification standards for satellite subsystems, providing examples from real-world satellite missions.	16 Marks	L2	CO2

MODULE-III

6.		Analyze the role of Earth station technology in satellite communication, focusing on transmitters, receivers, and antennas.	16 Marks	L4	CO3
		(OR)			
7.	a)	Compare and contrast the different multiple access techniques used in satellite communication (FDMA, TDMA and CDMA).	8 Marks	L2	CO3
	b)	Interpret the inter modulation problem in satellite communication and propose methods for its mitigation.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the operational design and performance factors of NGSO constellations	8 Marks	L2	CO4
	b)	Compare and contrast the operational performance of LEO satellites with geostationary satellites in terms of system throughput and coverage.	8 Marks	L2	CO4
		(OR)			
9.		Evaluate the system design considerations for Non-Geostationary Satellite Systems and their impact on satellite performance.	16 Marks	L5	CO4

MODULE-V

10.	a)	Analyze the role of the GPS C/A code and how it affects position accuracy.	8 Marks	L4	CO5
	b)	Discuss the satellite signal acquisition process in GPS systems and the methods used to improve accuracy.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss the functionality of GAGAN and IRNSS as satellite-based navigation systems in India.	8 Marks	L2	CO5
	b)	Explain how GPS receivers acquire satellite signals and their role in position location.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

POWER PLANT INSTRUMENTATION

[Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the primary energy source used in hydroelectric power plants?	2 Marks	L1	CO1
	b)	Name the two main types of nuclear reactions used in nuclear power plants.	2 Marks	L1	CO1
	c)	What is the primary purpose of the water circuit in a power plant?	2 Marks	L1	CO2
	d)	Name one device commonly used to measure water flow in a power plant.	2 Marks	L1	CO2
	e)	What is the purpose of single-element drum level control?	2 Marks	L1	CO3
	f)	Why is it important to control the temperature of superheated steam?	2 Marks	L1	CO3
	g)	Name any two principal parts of a steam turbine.	2 Marks	L1	CO4
	h)	What is the primary role of the rotor in a steam turbine?	2 Marks	L1	CO4
	i)	Name two types of maintenance strategies for measuring instruments.	2 Marks	L1	CO5
	j)	What is the primary goal of preventive maintenance?	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 wind power generation with the help of block diagram in detail.	8 Marks	L2	CO1
	b)	List conventional and non-conventional resources.	8 Marks	L4	CO1

(OR)

3.		Emphasize the objectives of instrumentation and control in power generation.	16 Marks	L4	CO1

MODULE-II

4.	a)	Illustrate the schematic diagram and explain the operations of pressurized water nuclear reactor boiling water reactor.	8 Marks	L2	CO2
	b)	Select a suitable circuit to measure flue gas presents in boiler and explain its working principle.	8 Marks	L2	CO2

(OR)

5.	a)	Design a measurement system setup to measure steam pressure and steam temperature.	8 Marks	L2	CO2
	b)	Justify how the differential pressure method is used for drum level measurement.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain single element drum level control in water circuit.	8 Marks	L2	CO3
	b)	Name the methods used in Combustion control and identify which method is most suitable for controlling combustion. Justify it.	8 Marks	L4	CO3
		(OR)			
7.		Elaborate the different methods for controlling superheated steam temperature.	16 Marks	L2	CO3

MODULE-IV

8.	a)	With neat block diagram, explain the principle parts of steam turbine.	8 Marks	L4	CO4
	b)	Design a system to measure mechanical parameters in the measurement of turbine in power plants.	8 Marks	L3	CO4
		(OR)			
9.		Illustrate the schematic diagram of turbo alternator cooling system and describe briefly .	16 Marks	L3	CO4

MODULE-V

10.	a)	Specify the importance of electrical safety and maintenance of measuring instruments in power plants.	8 Marks	L4	CO5
	b)	Write short notes on explosion hazards and intrinsic safety.	8 Marks	L2	CO5
		(OR)			
11.		Discuss in detail about interlocks for boiler operation.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

INTERFACING WITH MICROCONTROLLERS

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the major components of a computer system.	2 Marks	L1	CO1
	b)	What is the role of the CPU in a computer system?	2 Marks	L1	CO1
	c)	List two differences between the 8051 and 8052 microcontrollers.	2 Marks	L1	CO2
	d)	What is the function of the Program Counter (PC) in the 8051 architecture?	2 Marks	L1	CO2
	e)	Define immediate addressing mode in the 8051 microcontroller.	2 Marks	L1	CO3
	f)	What is the difference between direct and indirect addressing modes in the 8051?	2 Marks	L1	CO3
	g)	What are the operating modes of 8051 timers?	2 Marks	L1	CO4
	h)	Define Mode-1 operation of the 8051 timer.	2 Marks	L1	CO4
	i)	What is the purpose of the 8255 Programmable Peripheral Interface (PPI)?	2 Marks	L1	CO5
	j)	How does the 8051 microcontroller interface with an LED?	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 major components of a computer system and their functions.	8 Marks	L2	CO1
	b)	Describe the role of the CPU and its interaction with other components in a computer system.	8 Marks	L2	CO1
		(OR)			
3.	a)	Compare and contrast microprocessors and microcontrollers with examples.	8 Marks	L2	CO1
	b)	Discuss the concept of embedded systems, their characteristics, and examples of real-world applications.	8 Marks	L2	CO1

MODULE-II

4.	a)	Compare and contrast the features of the 8051, 8052, and 8031 microcontrollers.	8 Marks	L2	CO2
	b)	Draw and explain the architecture of the 8051 microcontroller in detail.	8 Marks	L2	CO2
		(OR)			

5.	a)	Describe the general-purpose and special-purpose registers in the 8051 microcontroller.	8 Marks	L2	CO2
	b)	Explain the pin configuration of the 8051 microcontroller and the function of each pin.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the various addressing modes of the 8051 microcontroller with suitable examples.	8 Marks	L3	CO3
	b)	Discuss the data transfer instructions in 8051 assembly language and provide examples for each.	8 Marks	L3	CO3

(OR)

7.	a)	Describe the arithmetic instructions available in the 8051 and illustrate their usage with examples.	8 Marks	L3	CO3
	b)	Explain the logical instructions in the 8051 microcontroller and provide assembly language examples.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the operation of 8051 timers and counters with the necessary registers.	8 Marks	L3	CO4
	b)	Describe Mode-1 operation of the 8051 timer and write an assembly language program to generate a pulse.	8 Marks	L3	CO4

(OR)

9.	a)	Explain the operation of Mode-2 of the 8051 timer and write an assembly program to generate a square wave on a port pin.	8 Marks	L3	CO4
	b)	Discuss the structure and functions of the TMOD and TCON registers in detail.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the architecture and operation of the 8255 Programmable Peripheral Interface (PPI).	8 Marks	L3	CO5
	b)	Describe the steps and write an assembly language program to interface an LED with the 8051 microcontroller.	8 Marks	L3	CO5

(OR)

11.	a)	Discuss the method of interfacing a 7-segment display with the 8051 and provide a sample program.	8 Marks	L3	CO5
	b)	Explain the process of interfacing an LCD with the 8051 microcontroller and write a program to display a message.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

ANTENNAS AND PROPAGATION

[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 radiation intensity.	2 Marks	L1	CO1
	b)	State the Friis transmission equation and mention its practical applications.	2 Marks	L1	CO1
	c)	What is the principle of pattern multiplication?	2 Marks	L1	CO2
	d)	Define a broadside array and an end-fire array, and state one key difference between them.	2 Marks	L1	CO2
	e)	Explain the difference between axial and normal modes in a monofilar helical antenna.	2 Marks	L2	CO2
	f)	What are the advantages and limitations of rectangular microstrip antennas?	2 Marks	L1	CO2
	g)	What is the concept of reciprocity in antenna theory?	2 Marks	L1	CO3
	h)	Describe the difference between near and far fields in antenna measurements.	2 Marks	L4	CO3
	i)	What is super refraction, and how does it affect wave propagation?	2 Marks	L1	CO4
	j)	Explain the concept of skip distance in sky wave propagation and its relation to the maximum usable frequency (MUF).	2 Marks	L2	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the following terms related to antenna: i) Beam efficiency. ii) Directivity. iii) Polarization. iv) Radiated power.	8 Marks	L2	CO1
	b)	Derive the relation between Directivity with Effective Aperture Area and Beam Area.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss about the far fields of center-fed antennas with respect to different lengths?	8 Marks	L2	CO1
	b)	Explain the concept of radiation resistance and derive an expression for the radiation resistance of a small electric dipole antenna.	8 Marks	L2	CO1

		MODULE-II			
4.	a)	In a linear array of 4 isotropic elements spaced λ/2 apart and with equal currents fed in phase, plot the radiation pattern in polar coordinates.	10 Marks	L4	CO2
	b)	Discuss the characteristics, merits and demerits of a folded dipole.	6 Marks	L2	CO2
		(OR)			
5.	a)	Derive the expression for the array factor of a linear broadside array of 'n' elements.	8 Marks	L3	CO2
	b)	Derive the expressions of null-null beam width of a uniform linear array.	8 Marks	L3	CO2
		MODULE-III			
6.	a)	Sketch and explain the constructional features of a horn antenna.	8 Marks	L2	CO2
	b)	Compare the various feed methods involved in Microstrip Patch Antenna.	8 Marks	L4	CO2
		(OR)			
7.	a)	Discuss the design considerations for monofilar helical antenna in axial mode.	8 Marks	L3	CO2
	b)	With neat diagram, explain the geometry of parabolic reflector.	8 Marks	L2	CO2
		MODULE-IV			
8.	a)	Explain the different gain measurement techniques of an antenna.	8 Marks	L2	CO3
	b)	Analyze source of errors regarding antenna measurements.	8 Marks	L4	CO3
		(OR)			
9.	a)	Describe a method of measurement of radiation pattern with neat measurement setup	8 Marks	L2	CO3
	b)	What is polarization and describe polarization measurement by power measurement approach?	8 Marks	L1	CO3
		MODULE-V			
10.	a)	Explain the structural details of the ionosphere.	8 Marks	L2	CO4
	b)	Analyze the effects of D-layer in the sky wave propagation.	8 Marks	L4	CO4
		(OR)			
11.	a)	Derive the fundamental equation for free space propagation	8 Marks	L3	CO4
	b)	Explain the relation between MUF and skip distance in detail	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

PROGRAMMABLE LOGIC CONTROLLERS

[Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define PLC.	2 Marks	L1	CO1
	b)	Compare the PLC and PC.	2 Marks	L1	CO1
	c)	Point out the applications of PLC.	2 Marks	L1	CO3
	d)	Draw the PLC ladder diagram for NAND gate.	2 Marks	L1	CO3
	e)	What is the use of MCR instruction?	2 Marks	L1	CO2
	f)	Point out the advantages of jump instruction.	2 Marks	L1	CO2
	g)	List basic math functions that can be performed on PLC's.	2 Marks	L1	CO3
	h)	Convert $(327)_{10}$ to octal.	2 Marks	L1	CO3
	i)	Sketch Token Ring Topology.	2 Marks	L1	CO4
	j)	Summarize PLC Comparison functions	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Draw a block diagram of a PLC showing the main functional items and how buses link them, explaining the functions of each block.	8 Marks	L2	CO1
	b)	State the characteristics of the Relay, Transistor and Triac types of PLC output terminals.	8 Marks	L2	CO1

(OR)

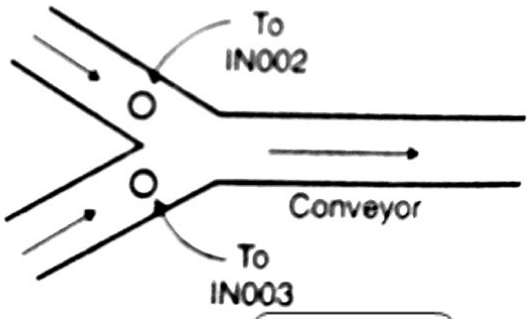
3.	a)	Describe the PLC CPU Power Supply with suitable sketches.	8 Marks	L2	CO1
	b)	Develop a ladder logic diagram for an alarm system. There are four hazard inputs to the alarm system that go on some operational malfunction occurs. The system operates as follows If one input is on, nothing happens If any two inputs are on, a red pilot light goes on If any three inputs are on, an alarm siren sounds If all four are on, the fire department is notified.	8 Marks	L3	CO1

MODULE-II

4.	a)	Create a ladder diagram for a motor control circuit that utilizes two push buttons.	8 Marks	L3	CO2
	b)	Explain the following i) AND gate and relay and PLC equivalents. ii) NOR gate and Relay and PLC equivalents.	8 Marks	L2	CO2

(OR)

5.	a)	Develop a ladder logic diagram for the following Boolean expression (61*62)+(63)+(64)+(65*66)=15	8 Marks	L2	CO3
	b)	Develop ladder logic for counting the net number of parts on a conveyor. The number of parts going on the conveyor is counted by one proximity device's count. The number leaving the conveyor is counted by a second proximity's device's count. The indicator will be ON when at least 6 of Part A and 8 of Part B have entered the conveyor.	8 Marks	L3	CO3



MODULE-III

6.		Explain the Jump with Non-Return with an application.	16 Marks	L2	CO4

(OR)

7.		Evaluate the significance of these comparison functions in the automation industry, focusing on process control applications.	16 Marks	L3	CO4

MODULE-IV

8.		Explain how Bit patterns in registers can be used in machine control?	16 Marks	L3	CO4

(OR)

9.		Discuss in detail shift register function and its applications.	16 Marks	L3	CO4

MODULE-V

10.	a)	Describe about open system interconnection model for network architecture in PLC.	8 Marks	L2	CO5
	b)	Explain the different levels of industrial control systems and illustrate how each level interacts with one another in a typical manufacturing environment	8 Marks	L2	CO5

(OR)

11.	a)	Discuss in detail about Networking of PLC.	8 Marks	L2	CO5
	b)	Generally, describe the PID function in PLC	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

DIGITAL SIGNAL PROCESSING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the mathematical equation for time-scaling property with initial conditions in Z-Transforms?	2 Marks	L1	CO1
	b)	What is the sufficient condition for the existence of Discrete-time Fourier transform?	2 Marks	L2	CO1
	c)	Compare 2-point butterfly diagrams of DIT-FFT and DIF-FFT algorithms.	2 Marks	L2	CO2
	d)	Find number of complex multiplications in 8-point FFT.	2 Marks	L1	CO2
	e)	Find the denominator polynomial in the transfer function of Butterworth filter with order N=2.	2 Marks	L1	CO3
	f)	What is the mathematical equation to find the order N of a Butterworth filter?	2 Marks	L1	CO3
	g)	Expain the significance of windowing technique in the design of FIR Filters.	2 Marks	L2	CO3
	h)	Explain Gibb's phenomenon.	2 Marks	L2	CO3
	i)	Find the number of memory locations required to realize an IIR Filter using Direct form-I realization with M = 2 and N = 3.	2 Marks	L2	CO4
	j)	List the common structures used to realization of FIR filters.	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Find 8-Point DFT of the sequence x(n) = [1,2,1,0,2,3,0,1]	8 Marks	L1	CO1
	b)	Describe the relation between i) DFT to Z- transform ii) DFT to Fourier Series.	8 Marks	L3	CO1

(OR)

3.	a)	Derive the expression for average power in the discrete-time periodic signal.	8 Marks	L2	CO1
	b)	Apply z-transform to determine the solution of the difference equation $y(n) = x(n) + \frac{5}{6}y(n-1) - \frac{1}{6}y(n-2)$ for $x(n) = 2^n u(n)$	8 Marks	L3	CO1

MODULE-II

4.		By means of DFT and IDFT, determine the sequence $x_3(n)$ corresponding to the circular convolution of the sequences $x_1(n)$ ={4,2,3,1} and $x_2(n)$={4,1,2,2}.	16 Marks	L3	CO1

(OR)

5.	a)	Apply decimation in time algorithm and compute the DFT of the following sequence: x(n)={1,2,1,2,1,2,1,2 }	12 Marks	L3	CO2
	b)	State and prove any two properties of DFT.	4 Marks	L3	CO2

MODULE-III

6.	a)	Design a Butterworth filter using the impulse invariance method for the following specifications. Assume T=1sec. $0.8 \le \lvert H(e^{j\omega}) \rvert \le 1 \qquad 0 \le \omega \le 0.2\pi$ $\lvert H(e^{j\omega}) \rvert \le 0.2 \qquad 0.6\pi \le \omega \le \pi$	10 Marks	L4	CO2
	b)	Explain the steps in design an analog Chebyshev lowpass filter.	6 Marks	L2	CO2

(OR)

7.	a)	Design a Chebyshev Type-I Low pass filter with the following specifications using bilinear transformation α_p = 1 dB ripple in the pass band $0 \le \omega \le 0.2\pi$ α_s = 15 dB ripple in the stop band $0.3\pi \le \omega \le \pi$	10 Marks	L4	CO3
	b)	Distinguish the Butterworth and Chebyshev filters	6 Marks	L4	CO3

MODULE-IV

8.	a)	Design FIR high pass filter with the given frequency response for N=11 using hamming window. Find H(z). $H_d(e^{j\omega}) = 1 \quad -\pi/4 \le \lvert \omega \rvert \le \pi$ $= 0 \quad \lvert \omega \rvert < \pi/4$	10 Marks	L4	CO3
	b)	Develop Frequency sampling method to design FIR Filter. Give the necessary equations.	6 Marks	L4	CO3

(OR)

9.	a)	Compare IIR and FIR filters.	6 Marks	L2	CO3
	b)	Design a FIR filter for N=7 using Rectangular method for the following specifications. $H_d(e^{j\omega}) = e^{-j3\omega} \qquad \frac{-\pi}{8} \le \omega \le \frac{\pi}{8}$ $= 0 \qquad \frac{\pi}{8} \le \lvert \omega \rvert \le \pi$	10 Marks	L4	CO3

MODULE-V

10.		Consider the system y(n) = y(n - 1) + 2y(n - 2) + x(n)+3x(n-1) i) Find H(z) ii) Realize using direct form-I and direct form-II.	16 Marks	L3	CO4

(OR)

11.		Realize system with following difference equation y(n) = (3/4) y(n-1) – (1/8) y(n-2) + x(n) + (1/3) x(n-1). i) Cascade form ii) Parallel form	16 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

EMBEDDED SYSTEMS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the function of the clock generator in the MSP430 microcontroller?	2 Marks	L1	CO1
	b)	Explain the role of memory-mapped input and output in MSP430.	2 Marks	L1	CO1
	c)	Write a simple program to light an LED using MSP430.	2 Marks	L2	CO1
	d)	Analyze the use of subroutines and functions in MSP430 programming.	2 Marks	L3	CO1
	e)	What is the purpose of the Watchdog Timer in MSP430?	2 Marks	L1	CO2
	f)	Explain the operation of the ADC10 in single conversion mode.	2 Marks	L2	CO2
	g)	How would you implement master-slave communication using SPI in MSP430?	2 Marks	L1	CO1
	h)	Analyze the differences between USART and USCI in MSP430.	2 Marks	L3	CO1
	i)	What are the different processor technologies used in embedded systems?	2 Marks	L1	CO4
	j)	Explain the concept of a Data Flow Model in system modeling.	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the functional block diagram of the MSP430 microcontroller and explain the role of each component in detail.	10 Marks	L1	CO1
	b)	List and describe the different types of memory available in the MSP430 microcontroller.	6 Marks	L2	CO1
		(OR)			
3.	a)	Explain the function of the clock generator in the MSP430 microcontroller. How does it contribute to the overall operation of the microcontroller?	6 Marks	L3	CO1
	b)	Explain the memory organization of the MSP430 microcontroller. How does memory-mapped input and output work in this architecture?	10 Marks	L4	CO1

MODULE-II

4.	a)	Describe the register organization of the MSP430 microcontroller. How do the different registers contribute to its operation?	10 Marks	L1	CO2
	b)	Explain the various addressing modes available in the MSP430 microcontroller. Provide examples to illustrate each mode.	6 Marks	L2	CO2

(OR)

5.	a)	Write a program in Assembly Language to read input from a switch and light an LED on the MSP430 microcontroller. Explain the steps and logic used in your program.	10 Marks	L3	CO2
	b)	Compare the use of subroutines and functions in MSP430 programming. Discuss their advantages and disadvantages in embedded system applications.	6 Marks	L4	CO2

MODULE-III

6.	a)	Describe the architecture and operation of the Watchdog Timer in the MSP430 microcontroller. How does it help in system reliability?	8 Marks	L1	CO3
	b)	Explain the process of PWM generation using Timer_A in the MSP430 microcontroller. How is it used in embedded applications?	8 Marks	L2	CO3

(OR)

7.	a)	Write a program to configure Timer_A in capture mode to measure the frequency of an external signal. Explain the steps and logic used in your program.	8 Marks	L3	CO3
	b)	Compare the ADC10 and ADC12 in terms of their architecture, operation, and applications. Discuss the advantages and disadvantages of each.	8 Marks	L4	CO3

MODULE-IV

8.	a)	List and describe the features of the USI communication interface in the MSP430 microcontroller. How is it used in embedded applications?	8 Marks	L1	CO3
	b)	Explain the Inter-Integrated Circuit (I2C) bus protocol. How does it enable communication between multiple devices?	8 Marks	L2	CO3

(OR)

9.	a)	Develop a program to configure the MSP430 microcontroller for I2C communication. Explain the logic and steps involved.	8 Marks	L3	CO3
	b)	Analyze the role of the USB and CAN communication protocols in embedded systems. Discuss their applications and how they enhance the capabilities of the MSP430 microcontroller.	8 Marks	L4	CO3

MODULE-V

10.	a)	Describe the different processor technologies used in embedded systems. How do they impact the design and performance of embedded applications?	8 Marks	L1	CO4
	b)	Explain the concept of IC technology in embedded system design. How does it influence the development and implementation of embedded systems	8 Marks	L2	CO4

(OR)

11.	a)	Develop a simple embedded system design using the Data Flow Model. Explain the steps and logic involved in your design.	8 Marks	L3	CO4
	b)	Compare the trade-offs between different IC technologies in embedded system design. Discuss their advantages and disadvantages.	8 Marks	L4	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

POWER ELECTRONICS

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the significance of the holding current in SCR operation?	2 Marks	L2	CO1
	b)	Why is snubber circuit used in SCR applications?	2 Marks	L2	CO1
	c)	Write the expression for average load voltage in a single-phase half-controlled rectifier with R load.	2 Marks	L2	CO2
	d)	What are three-pulse and six-pulse converters?	2 Marks	L1	CO2
	e)	List the advantages of choppers.	2 Marks	L1	CO3
	f)	What is the significance of duty cycle in chopper operation?	2 Marks	L1	CO3
	g)	What is the impact of an RL load on the performance of an AC voltage controller compared to an R load?	2 Marks	L1	CO4
	h)	List the applications of cyclo-converters in industrial systems.	2 Marks	L1	CO4
	i)	What is pulse width modulation (PWM) in inverters?	2 Marks	L1	CO5
	j)	How does the conduction angle affect the performance of a three-phase inverter?	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 static and dynamic characteristics of an SCR with relevant diagrams.	8 Marks	L2	CO1
	b)	With a neat circuit diagram, explain the working of a UJT firing circuit for SCR triggering.	8 Marks	L3	CO1

(OR)

3.	a)	With the help of diagrams, explain the structure, characteristics, and applications of Power IGBT.	8 Marks	L2	CO1
	b)	A Silicon-Controlled Rectifier (SCR) is connected to a 230V AC supply through a load resistor of 50Ω. The SCR is triggered at an angle of 90° in each half-cycle. Assume ideal conditions. i) Determine the RMS load voltage. ii) Calculate the RMS load current. iii) Find the power dissipated in the load.	8 Marks	L3	CO1

MODULE-II

4.	a)	With diagrams, explain the operation of a three-phase six-pulse converter and analyze its performance with RL load.	8 Marks	L2	CO2
	b)	Discuss the operation of a single-phase fully controlled bridge rectifier with RL load and provide relevant waveforms.	8 Marks	L3	CO2

(OR)

5.	a)	Analyze the operation of single phase fully controlled bridge rectifier with RL load and freewheeling diode for a firing angle delay of 30°.	8 Marks	L3	CO2
	b)	A single-phase dual converter is used to control the speed of a DC motor. The AC input is 230V RMS, 50Hz, and the motor has an armature resistance of 2Ω. The converter operates in the non-circulating current mode, and the firing angle of the forward converter is set to 30°. Find the average voltage, current and power supplied to the motor.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the operation and obtain the load voltage and current equations in step-down choppers with R and RL loads	8 Marks	L2	CO3
	b)	A step-down chopper has input voltage of 230V and load resistance is 10 Ω. Consider the voltage drop of 2 V across when it is ON for a duty cycle of 0.4. Calculate the following parameters: i) Average and RMS output voltage ii) Chopper efficiency.	8 Marks	L3	CO3

(OR)

7.	a)	Explain the operation of a step-up chopper with the help of a circuit diagram and waveforms.	8 Marks	L3	CO3
	b)	Derive the load voltage and current expressions for a step-down chopper with R-load.	8 Marks	L3	CO3

MODULE-IV

8.	a)	With the help of neat circuit schemes and necessary waveforms, explain the circulating and non-circulating current modes of operation of a single-phase dual converter with R-Load.	8 Marks	L3	CO4
	b)	Analyze the performance of three phase dual converter with R-load, when it is operating under circulating current mode. Sketch and explain the gating sequence and relevant waveforms for control angle, $\alpha=30^{o}$.	8 Marks	L3	CO4

(OR)

9.	a)	Compare step-up and step-down cyclo-converters with respect to their circuit configuration, operation, and applications.	8 Marks	L2	CO4
	b)	Explain the operation of a single-phase AC voltage controller feeding resistive load with the help of neat output wave forms for firing angle $\alpha= 45^{o}$.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe sinusoidal pulse width modulation (SPWM) and its advantages in inverter circuits.	8 Marks	L3	CO5
	b)	Explain the principle of operation of a three-phase inverter with detailed diagrams for 120° conduction mode.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the working of a single-phase inverter with relevant circuit diagrams and waveforms.	8 Marks	L2	CO5
	b)	Discuss the operation and waveforms of a basic parallel inverter, highlighting its applications.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is load curve?	2 Marks	L1	CO1
	b)	Define economic dispatch problem?	2 Marks	L2	CO1
	c)	What is a hydro power plant?	2 Marks	L1	CO2
	d)	What are the main classifications of hydro power plants based on operation?	2 Marks	L1	CO2
	e)	Define Unit commitment?	2 Marks	L1	CO3
	f)	Define spinning reserve?	2 Marks	L2	CO3
	g)	What is the purpose of Load Frequency Control (LFC) in power systems?	2 Marks	L1	CO4
	h)	Mention two types of turbines used in LFC systems.	2 Marks	L2	CO4
	i)	Why is it necessary to keep the frequency constant in a power system?	2 Marks	L2	CO5
	j)	Define control area	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2. a) A power station has the following daily load cycle: — 8 Marks — L2 — CO1

Time (hrs)	6-8	8-12	12-16	16-20	20-24	24-6
Load (MW)	20	40	60	20	50	20

Plot the load curve and load duration curve. Also calculate the energy generated per day.

b) The load in MW on a generating plant observed over a period of time is as follows — 8 Marks — L3 — CO1

Month	Jan	Feb	Mar	Apr	May	Jun
Load(MW)	220	240	262	258	304	310
Month	Jul	Aug	Sep	Oct	Nov	Dec
Load(MW)	240	280	230	245	262	280

Estimate the load for the next January using the simple regression method.

(OR)

3. a) Derive the transmission loss formula for a system consisting of n–generating units supplying several loads interconnected through a transmission network. — 10 Marks — L4 — CO1

	b)	Derive the co-ordination equations for the optimal scheduling of hydro-thermal interconnected power plants neglecting the transmission losses	6 Marks	L4	CO1

MODULE-II

4.	a)	What is hydro scheduling? Describe the problem of long range hydro scheduling with necessary expressions.	8 Marks	L3	CO2
	b)	A hydro and thermal plant supply a connected load of 100 MW for one week. The characteristics of the units are as follows: $Q = 110 + 5.1P_{hy}^2\ m^3 / Sec.$ and $F(P_{th}) = 55 + 11.5 + P_{th} + 0.022P_{th}^2\ Rs / MWh.$, determine the scheduling If the hydro plant energy is limited to 12000 MWh. The volume of water drawn is limited to 3.2 X 10^8 m^3.	8 Marks	L2	CO2

(OR)

5.	a)	With relevant equations, obtain the algorithm for short term scheduling of hydropower plant using $\gamma - \lambda$ iteration method.	8 Marks	L2	CO2
	b)	Explain the classification of hydroelectric power plants with diagrams.	8 Marks	L2	CO2

MODULE-III

6.	a)	Obtain the priority list of unit commitment problem using full load average production cost for the given data:	8 Marks	L2	CO3

Unit No	Loading Limits		Fuel Cost Parameters			Fuel cost
	Min	Max	a_i	b_i	c_i	
1	100	400	0.006	7	600	1.1
2	50	300	0.01	8	400	1.2
3	150	500	0.008	6	500	1.0

Consider the fuel cost as $F_i = a_i P_{Gi}^2 + b_i P_{Gi}^2 + C_i$ (Rs/h) and obtain the optimum unit commitment table for a load demand of 800 MW.

	b)	With the help of a flowchart explain the Priority list method of unit commitment.	8 Marks	L2	CO3

(OR)

7.	a)	There are 3 thermal generating units which can be committed to take the system load of 800MW. The fuel cost data and generation operating limit data are given below. Obtain the unit commitment using dynamic programming method.	16 Marks	L1	CO3

Units	Min(MW)	Max(MW)	a_i	b_i	c_i
1	100	400	0.006	7	600
2	50	300	0.01	8	400
3	150	500	0.008	6	500

MODULE-IV

8.	a)	Develop the mathematical model of a generator-load model with relevant assumptions.	8 Marks	L2	CO4
	b)	Explain the importance of load frequency control problem in detail.	8 Marks	L1	CO4

(OR)

9.	a)	Sketch the block diagram of IEEE type-1 excitation system and explain it with functional aspects.	8 Marks	L2	CO4
	b)	With a neat sketch, develop the mathematical modeling of automatic Voltage Regulator (AVR).	8 Marks	L3	CO4

MODULE-V

10.	a)	Develop the transfer function model of a controlled single area power system and derive the expression for static error following a step load disturbance.	8 Marks	L2	CO5
	b)	An isolated power system has the following data: Rating of the generator 100 MW, Inertia Constant 5 Sec, Nominal operating load 60 MW, speed regulation of the governor 2.5Hz/p.u. MW. If the load would increase 1% for 1% frequency increases. When the load is increased by 10 MW, find the static frequency change for uncontrolled case.	8 Marks	L3	CO5
		(OR)			
11.		Develop the transfer function model of an uncontrolled two area power system and derive the expression for static error following a step load disturbance.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the major disadvantage of oil in circuit breakers?	2 Marks	L1	CO1
	b)	Why is SF6 preferred for modern circuit breakers?	2 Marks	L2	CO1
	c)	Write universal torque equation?	2 Marks	L1	CO2
	d)	List the limitations of microprocessor based relays?	2 Marks	L1	CO2
	e)	In generator protection, failure of prime mover is detected by which relays?	2 Marks	L1	CO3
	f)	What is the function of Buchholtz relay in transformer?	2 Marks	L1	CO3
	g)	Define lightening?	2 Marks	L2	CO4
	h)	What is mean by voltage-time curve?	2 Marks	L1	CO4
	i)	Write the relation between X_0 and X_1, in resistance grounding?	2 Marks	L2	CO5
	j)	What are methods of neutral grounding?	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 following terms: i) Restriking voltage ii) Recovery voltage iii) RRRV iv) Active recovery voltage	8 Marks	L3	CO1
	b)	Explain the construction and operation of Air blast circuit breaker and also discuss its advantages and disadvantages?	8 Marks	L3	CO1

(OR)

3.	a)	Describe the construction, principle of operation and applications of Vacuum circuit breaker with neat sketch?	8 Marks	L2	CO1
	b)	Design the value of resistance to be used across the contacts to eliminate the restriking voltage and also calculate the voltage appearing across the pole of a CB if a magnetizing current of 10A is interrupted for a system of 132KV, 3-ϕ , 50 Hz, the circuit Phase to ground capacitance is 0.01μF, the inductance is 6H?	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the microprocessor-based distance relays with a neat block diagram. Also draw the flowchart for the same.	8 Marks	L2	CO2
	b)	Define: i) Selectivity ii) Speed iii) Sensitivity iv) Reliability with respect to protective relays?	8 Marks	L2	CO2

(OR)

5.	a)	List various types of over current relays and give their applications along with approximate characteristics?	8 Marks	L2	CO2
	b)	Differentiate the advantages of induction cup relays over induction disc relays? What is the purpose of shading in an induction disc relay?	8 Marks	L2	CO2

MODULE-III

6.	a)	List the various abnormal conditions that occur in a generator and also mention the protective schemes available for the protection of generators?	8 Marks	L3	CO3
	b)	Design the current ratio of the CTs on the HV side for a three-phase, 11 KV/ 132 KV, delta-star connected power transformer is protected by differential protection. The CT's on the LV side have a current ratio of 500/5?	8 Marks	L1	CO3

(OR)

7.	a)	Explain briefly about the differential protection used for the protection of a bus bar?	8 Marks	L2	CO3
	b)	Evaluate the percentage of each phase of the stator winding which is unprotected against earth faults, when the machine is operating at normal voltage. If a star connected, 3-ϕ , 10 MVA, 6.6kVA alternator is protected by Mertz – Price circulating – current principle using 1000/5 amperes current transformers. The star point of the alternator is earthed through a resistance of 7.5 Ω. If the minimum operating current for 3 the relay is 0.5 Amps?	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain about the three-zone distance protection using distance relays in a transmission line protection?	8 Marks	L2	CO4
	b)	With a neat sketch, describe the difference between definite time characteristic and inverse characteristic of relays?	8 Marks	L2	CO4

(OR)

9.	a)	Write short notes on i) Reactance relay ii) Mho relay iii) Directional impedance relay	12 Marks	L2	CO4
	b)	Explain the directional impedance relay by means of its characteristic on R-X plane?	4 Marks	L2	CO4

MODULE-V

10.	a)	Describe the effects if the proper earthing is not provided to the domestic house or commercial or industrial buildings to a human society?	8 Marks	L2	CO5
	b)	A 50 Hz overhead line has line to earth capacitance of 1.2 μF. It is desired to use *earth fault neutralizer. Determine the reactance to neutralize the capacitance of i) 100% of the length of the line ii) 90% of the length of the line and iii) 80% of the length of the line?	8 Marks	L2	CO5

(OR)

11.	a)	Write a short notes on: i) Resistance grounding ii) Arc suppression coil grounding	8 Marks	L2	CO5
	b)	Calculate the reactance of Peterson coil suitable for a 33 kV, 3-phase transmission line having a capacitance to earth of each conductor as 4.5 μF. Assume supply frequency to be 50 Hz?	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Develop a graph of a power system network with suitable example.	2 Marks	L1	CO1
	b)	The per-unit impedance of an alternator corresponding to base values 13.2 kV and 30 MVA is 0.2 pu. What is the p.u. value of the impedance for base values 13.8 kV and 50 MVA	2 Marks	L2	CO1
	c)	List the necessities and applications of load flow studies in power systems	2 Marks	L1	CO2
	d)	Specify the quantities to determine at load bus and generator bus.	2 Marks	L1	CO2
	e)	Write the applications of symmetrical fault analysis.	2 Marks	L1	CO3
	f)	Discuss the importance of symmetrical fault analysis using Z-bus matrix.	2 Marks	L1	CO3
	g)	Develop the sequence network connections for single-line-to ground fault condition.	2 Marks	L1	CO4
	h)	Define unsymmetrical faults and list the different types of unsymmetrical faults.	2 Marks	L1	CO4
	i)	Define transient stability. Write the condition of stability in equal area criterion.	2 Marks	L1	CO5
	j)	List the methods to improve power system stability.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Draw the per unit impedance diagram of the system shown in figure, by taking a base of 100 MVA, 11 kV in the generator circuit. The various components ratings are: Transformer T1: 3 phase 90 MVA, 11/110 kV, X=10%; Transformer T2: 3 single phase units of each 33.33 MVA, 68/6.6 kV, X=10 %; Synchronous generator: 80 MVA, 10 kV, X=10%; synchronous motor: 95 MVA, 6.3 kV, X=15% and the line reactance is 20 Ohms.	10 Marks	L2	CO1



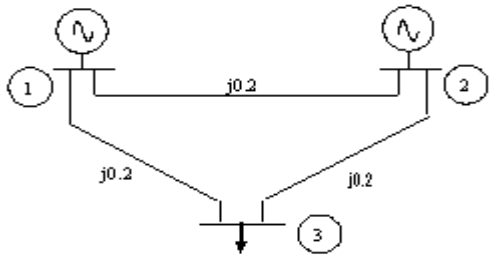
	b)	Derive the necessary equation to change the base impedance from one set of base values to another set of base values.	6 Marks	L3	CO1

(OR)

3.	a)	Develop step-by-step algorithm for addition of branch in Zbus building, for a network containing no mutual and no phase shifting transformers.	8 Marks	L1	CO1
	b)	Impedances connected between various buses are as follows:X_{10} = j1.25, X_{30} = j1.25, X_{12}= j0.25, X_{23} = j0.4, X_{31} = j0.125, where '*0*' is reference node. All impedances are in p.u. Determine the bus impedance matrix for the network connecting above impedances preserving all buses.	8 Marks	L3	CO1

MODULE-II

4.	a)	Develop the static load flow equations in load flow studies.	6 Marks	L2	CO2
	b)	Carry out one iteration of load flow solution for the system shown in Figure by G-S method. Take Q limits of generator 2 as Qmin = 0, Qmax = 5. Bus 1 slack bus Vspecified = $1.05\angle 0°$ Bus 2 PV bus Vspecified = 1.00 p.u., PG = 3 p.u. Bus 3 PQ bus PD = 4 p.u., QD = 2 p.u	10 Marks	L3	CO2



(OR)

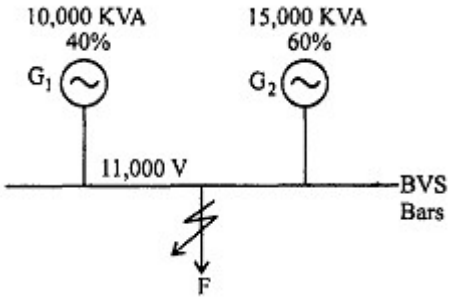
5.	a)	Define bus in power system? Explain the types of buses and their significance.	8 Marks	L2	CO2
	b)	Explicate in detail with a flow chart, the computational procedure for load flow analysis using Fast decoupled method deriving necessary equations.	8 Marks	L4	CO2

MODULE-III

6.	a)	Derive the expression for fault current when three phase balanced fault occurs in power system.	8 Marks	L2	CO3
	b)	The bus impedance matrix of four bus system with values in p.u. is given by, $Zbus = j\begin{bmatrix} 0.15 & 0.08 & .04 & 0.07 \\ 0.08 & 0.15 & 0.06 & 0.09 \\ 0.04 & 0.06 & 0.13 & 0.05 \\ 0.07 & 0.09 & 0.05 & 0.12 \end{bmatrix}$ In this system generators are connected to buses 1 and 2 and their sub transient reactances were included when finding Z_{bus}. If pre-fault current is neglected, find sub-transient current in p.u. for a 3 phase fault on a bus 4. Assume pre-fault voltage is 1 p.u.	8 Marks	L4	CO3

(OR)

7.	a)	Derive the equation to calculate symmetrical fault of power system using Z-bus matrix.	6 Marks	L1	CO3
	b)	Consider the system shown in Figure. The percentage reactance of each alternator is expressed on its own capacity determine the short circuit current that will flow into a dead three phase short circuit at F.	10 Marks	L2	CO3

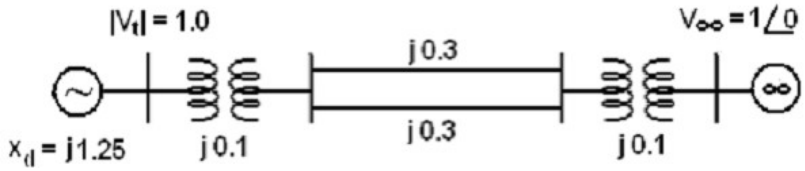


MODULE-IV

8.	a)	Determine the expression for fault current and fault voltage of a power system for L-L fault.	8 Marks	L2	CO4
	b)	Given the sequence components of a phase voltages: V_{b1}=100; V_{c2}=10j and V_{ao}=10; Determine the phase voltages V_a, V_b and V_c.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the sequence impedances & networks of the synchronous machine.	8 Marks	L2	CO4
	b)	A synchronous generator 50 MVA, 13.8 KV has sub-transient reactance, negative sequence reactance and zero sequence reactance equal to j0.1, j0.1 and j0.08 respectively. If a LLG fault occurs at the terminals of the generator (neutral solidly grounded) find fault current.	8 Marks	L2	CO4

MODULE-V

10.	a)	Derive the expression for steady state stability limit and also explain the power angle characteristics.	8 Marks	L2	CO5
	b)	A generator supplies 1.0 pu power to an infinite bus as shown in Figure. The terminal voltage and infinite bus voltage are 1.0 pu. All the reactance's are on a common base. Determine steady state stability limit: (i) When both lines are in. (ii) When one line is switched off.	8 Marks	L3	CO5



(OR)

11.	a)	Define swing equation? Develop the swing equation for 2 machine system.	8 Marks	L2	CO5
	b)	A 50 Hz turbo-generator is delivering 50% of the power that it is capable of delivering through a transmission line to an infinite bus. A fault occurs that increases the reactance between the generator and the infinite bus to 400% of the value before the fault. When the fault is isolated the maximum power that can be delivered is 75% of the original maximum value. Determine the critical clearing angle for the given conditions.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

CLOUD COMPUTING

[Computer Science and Engineering (Artificial Intelligence and Machine Learning)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the various challenges associated with Cloud Computing?	2 Marks	L3	CO1
	b)	What is virtualization?	2 Marks	L2	CO1
	c)	Differentiate between Cloud Brokers and Cloud Auditors.	2 Marks	L2	CO2
	d)	What is Infrastructure as a Service (IaaS)?	2 Marks	L1	CO2
	e)	Define "scalability" in the context of cloud computing.	2 Marks	L4	CO3
	f)	What role do Communication Protocols play in Cloud Computing?	2 Marks	L4	CO3
	g)	What is Azure & In which way it is unique?	2 Marks	L5	CO4
	h)	What is SaaS? List any two application.	2 Marks	L2	CO4
	i)	List any five AWS Core resources.	2 Marks	L3	CO5
	j)	Compare DynamoDB & RDS Services.	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 the various Risks and Challenges associate with the Cloud Computing.	8 Marks	L3	CO1
	b)	Discuss the role of Storage virtualization and Network virtualization in the taxonomy model of virtualization technologies.	8 Marks	L4	CO1

(OR)

3.	a)	Differentiate Type 1 & Type 2 hypervisors. Support your answer with diagrams wherever required.	8 Marks	L5	CO1
	b)	Discuss the role of Multitenancy and Resiliency in context of Cloud Computing.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the various cloud deployment models available for communication purpose.	8 Marks	L5	CO2
	b)	Discuss the key components of the NIST Cloud Computing model and their significance.	8 Marks	L3	CO2

(OR)

5.	a)	Compare Jolicloud Netbook OS and Chromium OS in the context of Cloud Computing, focusing on their use of the browser as an operating system.	8 Marks	L4	CO2
	b)	Explain & Elaborate cloud full stack architecture with an neat diagram.	8 Marks	L1	CO2

		MODULE-III			
6.	a)	What is an identity? Explain IDaaS interoperability	8 Marks	L3	CO3
	b)	Define Software-as-Service & Explain Salesforce CRM.	8 Marks	L4	CO3
		(OR)			
7.	a)	Illustrate Auto scaling service in practical approach to scale up & scale down servers while server crash.	8 Marks	L2	CO4
	b)	Explain Full Stack Capacity Planning & its Metrics	8 Marks	L2	CO4
		MODULE-IV			
8.	a)	Write a short note on Google Products & its Enterprise offerings	8 Marks	L3	CO4
	b)	Explain Windows App Fabric & its features	8 Marks		CO4
		(OR)			
9.	a)	Brief about Eccentex AppBase architecture in detail.	8 Marks	L1	CO5
	b)	What is Wolf Framework? Explain Drupal CRM in detail.	8 Marks	L2	CO5
		MODULE-V			
10.	a)	What is aws cloud & List Ec2 Instance types in detail	8 Marks	L4	CO5
	b)	Define virtual network & illustrate elastic compute service.	8 Marks	L4	CO5
		(OR)			
11.	a)	Define Amazon EBS? & list factors of choosing aws database	8 Marks	L3	CO5
	b)	Explain Amazon Storage service S3 with an example	8 Marks	L2	CO5



CODE No.: 22ME101008 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

OPERATIONS RESEARCH

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Operations Research	2 Marks	L1	CO1
	b)	What is linear programming?	2 Marks	L1	CO1
	c)	Define an assignment Problem.	2 Marks	L1	CO2
	d)	What is optimality test in transportation problem?	2 Marks	L1	CO2
	e)	Define Game Theory.	2 Marks	L1	CO3
	f)	What is a zero-sum game in Game Theory?	2 Marks	L1	CO3
	g)	What is a Minimal Spanning Tree (MST)?	2 Marks	L1	CO4
	h)	Define the Shortest Path Problem in the context of network flow model.	2 Marks	L1	CO4
	i)	What is the Infinite Queue Length Model in queuing theory?	2 Marks	L1	CO5
	j)	Define Exponential service time.	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 steps involved in solving LPP Using Graphical method?	8 Marks	L1	CO1
	b)	Write the applications of Operations Research	8 Marks	L1	CO1

(OR)

3.		Solve LP problem by Big-M method $Minz = 2x_1 + x_2$ Subjected to $3x_1 + x_2 = 3$ $4x_1 + 3x_2 \geq 6$ $x_1 + 2x_2 \leq 6$ $x_1, x_2 \text{ and } x_3 \leq 0$	16 Marks	L3	CO1

MODULE-II

4.		Find the optimal solution to the following transportation problem	16 Marks	L3	CO2

		Destination				
		P	Q	R	S	supply
Origin	A	21	16	25	13	11
	B	17	18	14	23	13
	C	32	17	18	41	19
	demand	6	10	12	15	43

(OR)

5. Solve the assignment problem using Hungarian method — 16 Marks — L3 — CO2

Jobs	Machines			
	A	B	C	D
1	5	7	11	16
2	8	5	9	6
3	4	7	10	7
4	10	4	8	3

MODULE-III

6. a) Explain various costs involved in inventory control. — 6 Marks — L1 — CO3

b) A supplier is required to deliver 20000 tons of raw materials in one year to a large manufacturing organization. The supplier maintains his go-down to store the material received from various resources. He finds that cost of inventory holding is 30 paisa per ton per month. His cost for ordering the material is Rs. 400. One of the conditions of the supplier contract from the manufacturing organization is that the contract will be terminated in the event of supply not being maintained as a schedule. Determine i) in what lot size is the supplier should produce the material for minimum total associated cost of inventory? ii) At what time interval should he procure the material? It may be assumed that replacement of inventory is instantaneous. — 10 Marks — L2 — CO3

(OR)

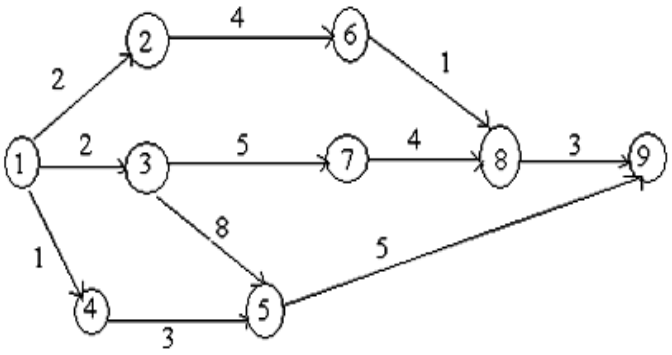
7. a) Explain the theory of dominance in the solution of rectangular games. — 6 Marks — L1 — CO3

b) Solve the game whose payoff matrix is given below: — 10 Marks — L3 — CO3

		Player B				
		B1	B2	B3	B4	B5
Player A	A1	-2	5	-3	6	7
	A2	4	6	8	-1	-6
	A3	8	2	3	5	4
	A4	15	14	18	12	20

MODULE-IV

8. Find the critical path and calculate the slack time for the following network — 16 Marks — L3 — CO4



(OR)

9. a) Construct a PERT network and find the critical path for following — 16 Marks — L3 — CO4

Activity	Most optimistic time	Most pessimistic time	Most likely time
(1-2)	1	5	1.5
(2-3)	1	3	2
(2-4)	1	5	3
(3-5)	3	5	4
(4-5)	2	4	3
(4-6)	3	7	5
(5-7)	4	6	5
(6-7)	6	8	7
(7-8)	2	6	4
(7-9)	5	8	6
(8-10)	1	3	2
(9-10)	3	7	5

MODULE-V

10. An oil company is constructing a service station on a high way. Traffic analysis indicated that customers' arrivals over most of the day would approximate a poisson distribution with a mean of 40 automobiles per hour, with that service time distribution approximating the negative exponential. If 5 pumps are installed. — 16 Marks — L3 — CO5

    i) What is the probability that an arrival would have to wait in line
    ii) Find out the average waiting time, average time spent in the system and the average number of automobiles in the system.

(OR)

11. A dentist schedules all her patients for 30 minutes appointments. Some of the patients take more or less than 30 minutes depending on the type of dental work to be done. The following summary shows the various categories of work, their probabilities and time needed to complete the work. — 16 Marks — L3 — CO5

Category	Time required (Minutes)	Probability of category
Filling	45	0.4
Crown	60	0.15
Cleaning	15	0.15
Extraction	45	0.1
Checkup	15	0.2

Simulate the dentist's clinic for four hours and determine the average waiting time for the patients as well as the idleness of the doctor. Assume that all the patients show up at the clinic at exactly their scheduled arrival times, starting at 8 A.M. Use the following random numbers for handling the above problem:

40, 82, 11, 34, 25, 66, 17, 79.



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

DESIGN OF TRANSMISSION SYSTEMS

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Distinguish between open drive and cross drive of a belt drive.	2 Marks	L1	CO1
	b)	List the desirable properties of a belt material.	2 Marks	L1	CO1
	c)	State the law of gearing.	2 Marks	L1	CO2
	d)	Describe the following: i) Pressure angle ii) Diametral pitch	2 Marks	L1	CO2
	e)	Under what situation bevel gears are used.	2 Marks	L1	CO3
	f)	Differentiate between the spiral bevel gears and hypoid gears.	2 Marks	L1	CO3
	g)	List any two methods used for changing speeds in gear box.	2 Marks	L1	CO4
	h)	Specify the four types of gear box.	2 Marks	L1	CO4
	i)	What is the function of the piston in an I.C engine?	2 Marks	L1	CO5
	j)	Why are pistons made of aluminum alloy in most I.C engines?	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.	Calculate the power capacity of the leather belt of 9mm x 250mm is used to drive a CI pulley 900mm in diameter at 336rpm. If the active arc on the smaller pulley is 120o and stress in tight side is 2Mpa.The density of the leather may be taken as 980 kg/m3 and coefficient of friction of leather on CI is 0.35.	16 Marks	L3	CO1
	(OR)			
3.	Design a flat belt drive for a fan running at 360 rpm which is driven by a 10 kW at1440 rpm motor. The belt drive is open type and the distance between the pulley Centre's is 2000 mm .The diameter of a driven pulley is 1 m.	16 Marks	L3	CO1

MODULE-II

4.	A 37.5 kW power is transmitted at 450 rpm to a shaft running at approximately 112 rpm through a spur gear drive. The load is steady and continuous. Design the gear drive and check the design. Assume the following materials: Pinion-heat treated cast steel; Gear-High grade cast iron.	16 Marks	L3	CO2
	(OR)			

5.	A helical gear speed up drive is required to drive a centrifugal compressor running at 3000 rpm. The helical gear speed up unit is driven by an electric motor running at 1000rpm. The compressor requires a nominal input power of 12.5 kW. The helix angle of 250 may be assumed for the gears. Standard involute profile 20º full depth system will be used for the gear teeth. The gear pair is required to last for at least 10,000 hrs. Design the gear drive for the following materials. Pinion: Heat treated cast steel, Gear: High Grade cast iron.	16 Marks	L2	CO2
	MODULE-III			
6.	Design a pair of bevel gears to transmit 10 kW at 1440 rpm of th pinion. The velocity ratio should be about 4. Material for gear is 1 5 N i 2 C r 1M o 1 5 Steel. The tooth profiles of the gears are of 20 º composite form.	16 Marks	L3	CO3
	(OR)			
7.	Design a cast iron bevel gear drive for a pillar drilling machine to transmit 1875 Watts at 800 rpm to a spindle at 400 rpm. The gear is to work for 40 hrs /week for 3 years. Pressure angle is 20º.	16 Marks	L3	CO3
	MODULE-IV			
8.	Design a 16 speed gear box for the following data. Minimum speed: 100 rpm, step ratio is 1.25. The input is from a 5 kW, 1000rpm motor. Draw the speed diagram, kinematic diagram and indicate the number of teeth on each gear.	16 Marks	L3	CO4
	(OR)			
9.	A six speed gear box is required to provide output speeds in the range of 125 to 400 rpm with a step ratio of 1.25 and transmit a power of 5 kW at 710 rpm. Draw the speed diagram and kinematics diagram. Determine the number of teeth module and face width of all gears, assuming suitable materials for the gears. Determine the length of the gear box along the axis of the gear shaft.	16 Marks	L3	CO4
	MODULE-V			
10.	A four stroke diesel engine has the following specifications: Brake power = 5 kW ; Speed = 1200 r.p.m. ; Indicated mean effective pressure = 0.35 N / mm ^{2} ; Mechanical efficiency = 80 %. Determine: 1. bore and length of the cylinder; 2. thickness of the cylinder head ; and 3. size of studs for the cylinder head.	16 Marks	L3	CO5
	(OR)			
11.	Design a cast iron piston for a single acting four stroke engine for the following data: Cylinder bore = 100 mm ; Stroke = 125 mm ; Maximum gas pressure = 5 N/mm2 ; Indicated mean effective pressure = 0.75 N/mm2 ; Mechanical efficiency = 80% ; Fuel consumption = 0.15 kg per brake power per hour ; Higher calorific value of fuel = 42 × 103 kJ/kg ; Speed = 2000 r.p.m. Any other data required for the design may be assumed.	16 Marks	L4	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

COMPUTER AIDED DESIGN AND MANUFACTURING

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Computer-Aided Design (CAD).	2 Marks	L1	CO1
	b)	Mention two types of manufacturing systems used in CIM.	2 Marks	L1	CO1
	c)	What is Raster Scan Graphics?	2 Marks	L1	CO2
	d)	List any two 2D transformations.	2 Marks	L1	CO2
	e)	Define part programming in CNC.	2 Marks	L1	CO3
	f)	State the importance of work holding devices in CNC.	2 Marks	L1	CO3
	g)	What is the purpose of RFID in manufacturing?	2 Marks	L1	CO4
	h)	Mention any two benefits of CAPP.	2 Marks	L1	CO4
	i)	State the laws of robotics.	2 Marks	L1	CO5
	j)	Name two types of automation systems.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the design process in Computer-Aided Design (CAD).	8 Marks	L2	CO1
	b)	Discuss the classification and importance of CAD standards.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the benefits of adopting CIM in industrial manufacturing.	8 Marks	L2	CO1
	b)	Discuss the importance of the product life cycle in CAD and CAM applications.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the steps in Bresenham's Line Algorithm.	8 Marks	L3	CO2
	b)	Discuss 2D and 3D transformations with suitable examples.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the importance of geometric modeling in CAD.	8 Marks	L2	CO2
	b)	Compare parametric and non-parametric representations with examples.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the structure and components of CNC machine tools.	8 Marks	L2	CO3
	b)	Write a detailed note on CNC tooling and automatic tool changers.	8 Marks	L2	CO3
		(OR)			
7.	a)	Elaborate on the importance and applications of canned cycles.	8 Marks	L2	CO3
	b)	Describe the role and types of work holding devices in CNC.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the concept and benefits of Group Technology in manufacturing.	8 Marks	L2	CO4
	b)	Describe the process of Retrieval and Generative CAPP systems.	8 Marks	L3	CO4
		(OR)			
9.	a)	Compare contact and non-contact inspection methods in quality control.	8 Marks	L3	CO4
	b)	Describe the various methods used for inspection and testing in quality control.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss the types and elements of automation systems.	8 Marks	L3	CO5
	b)	Explain the different part transfer methods used in automation.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the classification and working of robotic end effectors.	8 Marks	L3	CO5
	b)	Explain the flow lines and mechanisms used in automated systems.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Tech VI Semester (MBU-22) Regular Examinations, April – 2025

HEAT TRANSFER

[Mechanical Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	State Fourier's Law of conduction.	2 Marks	L1	CO1
	b)	Define Thermal Conductivity.	2 Marks	L1	CO1
	c)	Define fins (or) extended surfaces.	2 Marks	L1	CO2
	d)	State the applications of fins.	2 Marks	L1	CO2
	e)	Define convection.	2 Marks	L1	CO3
	f)	Define thermal boundary layer.	2 Marks	L1	CO3
	g)	What is heat exchanger?	2 Marks	L1	CO4
	h)	What are the types of heat exchangers?	2 Marks	L1	CO4
	i)	Define emissive power [E] and monochromatic emissive power. [$E_{b\lambda}$]	2 Marks	L1	CO5
	j)	What is meant by absorptivity, reflectivity and transmissivity?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the different modes of Heat Transfer with suitable examples	8 Marks	L2	CO1
	b)	A Plane wall is 150mm thick and its wall area is 4.5m^2. If its conductivity is 9.35 W/m^{0}C and surface temperatures are steady at 150^{0}C and 45^{0}C, determine i) Heat flow across the plane wall ii) Temperature gradient in the flow direction	8 Marks	L3	CO1
		(OR)			
3.		Derive the general heat conduction equation in Cartesian coordinates	16 Marks	L3	CO1

MODULE-II

4.	a)	List out various types of fins and its applications	8 Marks	L4	CO2
	b)	Define and write equation for Efficiency and Effectiveness of Fin.	8 Marks	L3	CO2
		(OR)			
5.		A bar of square cross section connects two metallic structures. One structure is maintained at a temperature 200^o C and the other is maintained at 50^o C. The bar, 20 mm × 20 mm, is 100 mm long and is made of mild steel (k = 0.06 kW/m . K). The surroundings are at 20^o C and the heat transfer coefficient between the bar and the surroundings is 0.01 kW/m^2 . K. Derive an expression for the temperature distribution along the bar and hence calculate the total heat flow rate from the bar to the surroundings.	16 Marks	L3	CO2

MODULE-III

6.	a)	Explain the development of boundary layer over a cylinder.	6 Marks	L2	CO3
	b)	Air at 20°C and atmospheric pressure flows at a velocity of 4.5 m/s past a flat plate with a sharp leading edge. The entire plate surface is maintained at a temperature of 60°C. Assuming that the transition occurs at a critical Reynolds number of $5x10^5$, find the distance from the leading edge at which the boundary layer changes from laminar to turbulent. At the location, calculate the followings: i) Thickness of hydrodynamic boundary layer ii) Thickness of thermal boundary layer	10 Marks	L3	CO3

(OR)

7.	a)	Develop a relationship between Nusselt, Prandtl and Reynolds Numbers in forced convection using dimensional analysis	8 Marks	L2	CO3
	b)	Estimate the heat transfer from a 40 W incandescent bulb at 127°C to 27°C quiescent air. Approximate the bulb as a 50mm diameter sphere. What percentage of the power is lost by free convection?	8 Marks	L3	CO3

MODULE-IV

8.	a)	A 4cm outer diameter, 1 m long tube is to be used to condense steam at atmospheric pressure. The water flows inside the tube maintaining the wall surface at 60^0C. Estimate the mass of condensate for the tube in horizontal position.	8 Marks	L3	CO4
	b)	In a counter flow double pipe heat exchanger with Water (Cp=4186) enters at 15°C, flowing at the rate of 1300kg/h. It is heated by oil (Cp=2000J/ kg K) flowing at the rate of 550kg/h from the inlet temperature of 94 °C. For an area of 1m2 and an overall heat transfer co-efficient of 1075 w/m^2K, determine the total heat transfer and the out let temperatures of water and oil.	8 Marks	L3	CO4

(OR)

9.	a)	Water at atmospheric pressure is to be boiled in polished copper pan. The diameter of the pan is 350 mm and is kept at 115^0C. Calculate: i) power of the burner, ii) rate of evaporation in kg/h and iii) critical heat flux	8 Marks	L3	CO4
	b)	Oil with a specific heat of 2 KJ/ kg K is cooled from 110^0C to 70^0C by a flow of water flow in a counter flow heat exchanger. Water flows at the rate of 2 kg/sec and is heated from 35^0C to 65^0C. The overall heat transfer coefficient is estimated to be 0.37 KW/ m2K. Determine the exit temperatures of oil and water, if the water flow rate drops to 1.5 kg / sec at the same oil flow rate.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the terms absorptivity, reflectivity and transmissivity.	8 Marks	L2	CO5
	b)	The net radiation from the surfaces of two parallel plates maintained at temperatures, T1 and T2 is to be reduced by79 times. Calculate the number screens to placed between the two surfaces to achieve this reduction in heat exchange, assuming the emissivity of the screens as 0.05 and that of the surfaces as 0.8.	8 Marks	L2	CO5

(OR)

11.	a)	Define the following: i) Irradiation ii) Radiosity iii) radiation shape factor.	8 Marks	L2	CO5
	b)	Two parallel black plates 0.5m × 1.0m are separated by 0.5m distance. One plate is at 11000C and the other at 6000C. Compute the net radiant heat exchange between the two plates.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations, April – 2025

FUNDAMENTALS OF DATA SCIENCE

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Data Science.	2 Marks	L1	CO1
	b)	Write any two methods to create ndarrays with example	2 Marks	L1	CO1
	c)	Define Pandas	2 Marks	L1	CO2
	d)	What is a DataFrame?	2 Marks	L1	CO2
	e)	What are the common ways to handle missing data in Pandas?	2 Marks	L1	CO3
	f)	Define data wrangling in the context of data science.	2 Marks	L1	CO3
	g)	What is matplotlib used for?	2 Marks	L1	CO4
	h)	Define a pivot table and its purpose.	2 Marks	L1	CO4
	i)	What is a time series?	2 Marks	L1	CO5
	j)	Name any two date and time data types used in Python.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the importance and features of the NumPy ndarray as a multidimensional array object.	8 Marks	L2	CO1
	b)	What are universal functions in NumPy? Explain with examples.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the five steps of data science with an example.	8 Marks	L2	CO1
	b)	Explain the process of file input and output using NumPy arrays with an example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Compare and contrast the Pandas Series, DataFrame, and Index objects with suitable examples.	8 Marks	L4	CO2
	b)	Discuss the process of computing correlation and covariance using Pandas.	8 Marks	L4	CO2
		(OR)			
5.	a)	Explain how to load data from text and binary file formats into Pandas DataFrames.	8 Marks	L2	CO2
	b)	How can we summarize data using Pandas? Explain with examples of value counts and unique values.	8 Marks	L1	CO2

MODULE-III

6.	a)	How can missing data be handled in Pandas? Discuss the methods with examples.	8 Marks	L1	CO3
	b)	Explain vectorized string functions in Pandas with examples.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss the concept of hierarchical indexing in Pandas.	8 Marks	L1	CO3
	b)	Explain the steps involved in reshaping and pivoting data using Pandas with an example.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Briefly explain the matplotlib API and its primary components for visualization.	8 Marks	L2	CO4
	b)	Compare data visualization techniques using Pandas and Seaborn with examples.	8 Marks	L4	CO4
		(OR)			
9.	a)	Discuss the concept of pivot tables and cross-tabulation in data aggregation.	8 Marks	L2	CO4
	b)	Explain the GroupBy mechanics in Pandas and its role in data aggregation with an example.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the tools and data types used for handling date and time data in Python.	8 Marks	L3	CO5
	b)	Explain the process of down-sampling and up-sampling in time series analysis.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss how to handle time zones and perform period arithmetic in time series data.	8 Marks	L3	CO5
	b)	Explain moving window functions in time series analysis with examples.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations, April – 2025

ARTIFICIAL INTELLIGENCE

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Agents in AI.	2 Marks	L1	CO1
	b)	List out the types of Agents in AI.	2 Marks	L1	CO1
	c)	Describe Search Algorithms.	2 Marks	L1	CO2
	d)	What are Informed Search Algorithms?	2 Marks	L2	CO2
	e)	Define Mini Max search Algorithm.	2 Marks	L1	CO3
	f)	Define Hill Climbing Search.	2 Marks	L2	CO3
	g)	Define Bayesian network.	2 Marks	L1	CO4
	h)	List out the features of Bayesian network.	2 Marks	L1	CO4
	i)	What is Robot Hardware?	2 Marks	L1	CO5
	j)	What is AI Safety?	2 Marks	L1	CO5

PART - B

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

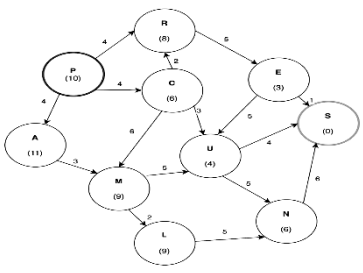
5 x 16 = 80 Marks

MODULE-I

2.	a)	What is Artificial Intelligence? Explain advantages and Disadvantages of AI.	6 Marks	L2	CO1
	b)	Explain the applications of Artificial Intelligence.	10 Marks	L2	CO1
		(OR)			
3.	a)	Demonstrate the concept of State of the Art in AI.	8 Marks	L3	CO1
	b)	Explain the concept of Intelligent Agents in AI.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the concept of Uninformed Search. Explain Breadth First Search with an example.	8 Marks	L2	CO2
	b)	Illustrate the concept of Uninformed Search strategies. Explain the concept of Uniform Cost Search.	8 Marks	L2	CO2
		(OR)			
5.		Demonstrate the concept of Greedy Best First Search. Find the path from Starting Node(P) to the Goal Node(S) for the below mentioned graph.	16 Marks	L3	CO2

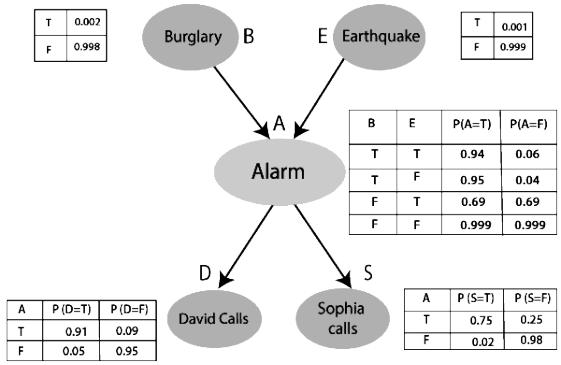


MODULE-III

6.		Explain the concept of Mini Max Search algorithm with an example.	16 Marks	L2	CO3
		(OR)			
7.	a)	Describe the concept of Hill Climbing search in detail.	8 Marks	L2	CO3
	b)	Describe the types of Hill Climbing algorithms with examples.	8 Marks	L2	CO3

MODULE-IV

8.		Discuss Bayesian Network in detail. Calculate the probability that alarm has sounded, but there is neither a burglary, nor an earthquake occurred, and David and Sophia both called the Harry.	16 Marks	L2	CO4



T	0.002
F	0.998

T	0.001
F	0.999

B	E	P(A=T)	P(A=F)
T	T	0.94	0.06
T	F	0.95	0.04
F	T	0.69	0.69
F	F	0.999	0.999

A	P (D=T)	P (D=F)
T	0.91	0.09
F	0.05	0.95

A	P (S=T)	P (S=F)
T	0.75	0.25
F	0.02	0.98

		(OR)			
9.	a)	Illustrate the concept of representing the knowledge in an Uncertain domain.	8 Marks	L2	CO4
	b)	Explain Inference in Temporal Models.	8 Marks	L2	CO4

MODULE-V

10.		Explain the concept of Robots. Explain types of Robots in detail.	16 Marks	L3	CO5
		(OR)			
11.	a)	Illustrate the concept of Ethics of Artificial Intelligence.	10 Marks	L3	CO5
	b)	Describe the Trust and Transparency in an AI.	6 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations, April – 2025

DATA WAREHOUSING AND DATA MINING

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define a Data Warehouse?	2 Marks	L1	CO1
	b)	What is a multidimensional data?	2 Marks	L1	CO1
	c)	What is KDD?	2 Marks	L1	CO2
	d)	Define Preprocessing? Specify the steps for them	2 Marks	L1	CO2
	e)	What is a frequent pattern?	2 Marks	L1	CO3
	f)	What is a tree pruning?	2 Marks	L1	CO3
	g)	What is cluster Analysis?	2 Marks	L1	CO4
	h)	Define a Partitioning Method?	2 Marks	L1	CO4
	i)	What is a symbolic sequence?	2 Marks	L1	CO5
	j)	Define a spatial data 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)	Explain about the multidimensional data model.	8 Marks	L2	CO1
	b)	Differentiate OLTP and OLAP with features.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss about OLAP operations in the multidimensional data model .	8 Marks	L2	CO1
	b)	Explain the three-tier Data Warehouse Architecture with neat diagram.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss about the Major issues in Data Mining	8 Marks	L2	CO2
	b)	Explain Various Data Mining Functionalities with an example.	8 Marks	L4	CO2
		(OR)			
5.	a)	What is Data Cleaning? Describe various methods of Data Cleaning.	8 Marks	L2	CO2
	b)	Explain about Data Transformation method with suitable example	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain about Various kinds of Association rule Mining.	8 Marks	L2	CO3
	b)	Explain the steps involved in Apriori Algorithm	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the Naive Bayesian Classification algorithm.	8 Marks	L2	CO3
	b)	Explain about the linear regression.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define Clustering? Explain about Types of Data in Cluster Analysis?	8 Marks	L2	CO4
	b)	Explain about Grid based clustering methods	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss in detail about the various detection techniques in outlier analysis.	8 Marks	L2	CO4
	b)	Design statistical approaches in outlier detection with neat design and with examples.	8 Marks	L6	CO4

MODULE-V

10.	a)	Discuss about Multimedia data mining	8 Marks	L2	CO5
	b)	Discuss about text mining	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain how data mining is used in health care analysis	8 Marks	L4	CO5
	b)	Explain briefly how data is analyzed by data mining in Finance Sector	8 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations, April – 2025

UNIX SHELL PROGRAMMING

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Operating System.	2 Marks	L1	CO1
	b)	List out the layers of the operating system.	2 Marks	L2	CO1
	c)	Write about passwd command	2 Marks	L1	CO2
	d)	List the escape sequences in echo command	2 Marks	L2	CO2
	e)	What is hard link?	2 Marks	L1	CO3
	f)	Describe various fields in file inode.	2 Marks	L1	CO3
	g)	List out various modes of Vi editor.	2 Marks	L2	CO4
	h)	Which commands are used to exit from the inputting mode in Vi?	2 Marks	L1	CO4
	i)	What is Shell Scripting?	2 Marks	L1	CO5
	j)	What is meant by Command line instruction?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

1.	a)	Explain features of Unix operating system.	8 Marks	L2	CO1
	b)	Summarize the structure of Unix operating system	8 Marks	L2	CO1
		(OR)			
2.	a)	Summarize the following commands with suitable example. i) pwd ii) uname iii) cp iv) mv	8 Marks	L2	CO1
	b)	Explain the command structure in UNIX and summarize the man documentation.	8 Marks	L2	CO1

MODULE-II

3.	a)	Explain the following commands with syntax and suitable example i) bc ii) echo iii) printf iv) passwd	8 Marks	L4	CO2
	b)	Explain stty and tty commands in detail.	8 Marks	L2	CO2
		(OR)			
4.	a)	Explain the mechanism of process creation.	8 Marks	L2	CO2
	b)	Illustrate ps command and its options in detail.	8 Marks	L2	CO2

MODULE-III

5.	a)	What is a file? Explain its attributes and permissions with examples.	8 Marks	L2	CO3
	b)	Discuss the user and group in Unix? Explain the related commands for changing ownership and group.	8 Marks	L6	CO3
		(OR)			
6.	a)	Explain briefly about different types of links.	8 Marks	L2	CO3
	b)	Develop a procedure to display and modifying the access times. Also explain the file and directory attributes.	8 Marks	L3	CO3
		MODULE-IV			
7.	a)	Explain input and ex mode used by user in Vi editor.	8 Marks	L1	CO4
	b)	Inspect the operators used for performing undo and redo operations in Vi editor with a suitable example.	8 Marks	L4	CO4
		(OR)			
8.	a)	Explain the three different modes in which the vi editor works.	8 Marks	L2	CO4
	b)	Discuss search and replace commands in Vi editor.	8 Marks	L6	CO4
		MODULE-V			
9.	a)	Develop a shell script to accept student name register number and marks of four subjects of 10 students. Find the total mark and grade of each student.	8 Marks	L3	CO5
	b)	Explain case command with a suitable example.	8 Marks	L2	CO5
		(OR)			
10.	a)	Develop a shell program for finding the greatest among three numbers	8 Marks	L4	CO5
	b)	Summarize the file test operators used in shell programming.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

BCA IV Semester (MBU-22) Regular Examinations, April – 2025

INNOVATION, INCUBATION AND ENTREPRENEURSHIP

[Computer Applications]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Name the creativity important in entrepreneurship.	2 Marks	L1	CO1
	b)	Write about a product idea and value creation.	2 Marks	L1	CO1
	c)	List two benefits of product innovation.	2 Marks	L1	CO2
	d)	What is the purpose of the engineering design process?	2 Marks	L1	CO2
	e)	What is the role of user applications in digital entrepreneurship?	2 Marks	L1	CO3
	f)	Give an example of an Industry 4.0 innovation.	2 Marks	L1	CO3
	g)	Write about the market influence product success	2 Marks	L1	CO4
	h)	Mention one factor to consider while conducting feasibility analysis.	2 Marks	L1	CO4
	i)	What is the role of innovation in gaining a competitive advantage?	2 Marks	L1	CO5
	j)	Write about business process management support startups	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	Elaborate on the significance of creativity and innovation in entrepreneurship.	16 Marks	L2	CO1
	(OR)			
3.	Analyze the societal impact of entrepreneurship in economic development.	16 Marks	L2	CO1

MODULE-II

4.	How does understanding customer needs drive successful product innovation? Explain	16 Marks	L2	CO2
	(OR)			
5.	Discuss the impact of innovation on the competitiveness of businesses.	16 Marks	L2	CO2

MODULE-III

6.	Explain the potential of IoT in creating innovative business models.	16 Marks	L2	CO3
	(OR)			
7.	How can AR/VR technologies enhance customer experience in digital ventures? Explain.	16 Marks	L2	CO3

MODULE-IV

8.	How does market understanding contribute to the success of a startup? Explain	16 Marks	L2	CO4

(OR)

9.	How does market understanding contribute to the success of a startup? Explain	16 Marks	L2	CO4

MODULE-V

10.	Explain how startups can leverage business model innovation to disrupt markets.	16 Marks	L2	CO5

(OR)

11.	Evaluate the role of mentorship and support systems in successful business incubation.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

CONCEPTS OF DISEASE RELATED TO DIALYSIS TECHNOLOGY - I

[Dialysis Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is Minimal Change Disease?	2 Marks	L2	CO1
	b)	Define Membranous Glomerulonephritis.	2 Marks	L1	CO1
	c)	Define Chronic Kidney Disease.	2 Marks	L1	CO2
	d)	List two causes of CKD.	2 Marks	L1	CO2
	e)	What is the mechanism of action of diuretics?	2 Marks	L2	CO3
	f)	Differentiate between respiratory acidosis and metabolic acidosis.	2 Marks	L2	CO3
	g)	How does liver disease affect renal function?	2 Marks	L2	CO4
	h)	Name two renal manifestations in systemic vasculitis.	2 Marks	L1	CO4
	i)	What is the significance of renal dysplasia?	2 Marks	L2	CO5
	j)	Name two renal vascular disorders.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the pathophysiology of Acute Glomerulonephritis.	8 Marks	L2	CO1
	b)	Describe the clinical features and diagnosis of Rapidly Progressive Glomerulonephritis.	8 Marks	L3	CO1
		(OR)			
3.	a)	Compare and contrast Minimal Change Disease and Focal Segmental Glomerulosclerosis.	8 Marks	L3	CO1
	b)	Explain the etiopathogenesis and management of Membranous Glomerulonephritis.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the role of proteinuria in CKD progression.	8 Marks	L3	CO2
	b)	Explain the different types of dialysis and their indications.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the impact of CKD on cardiovascular health.	8 Marks	L3	CO2
	b)	Explain the complications of Diabetic Nephropathy and their management.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the disorders of potassium metabolism and their management.	8 Marks	L3	CO3
	b)	Explain the pathophysiology and clinical features of sodium imbalance.	8 Marks	L2	CO3

(OR)

7.	a)	Describe the causes, diagnosis, and treatment of metabolic alkalosis.	8 Marks	L2	CO3
	b)	Discuss the role of buffer systems in acid-base homeostasis.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the dietary management of CKD patients.	8 Marks	L3	CO4
	b)	Discuss the influence of age and sex on dietary requirements.	8 Marks	L3	CO4

(OR)

9.	a)	Discuss the nutritional management of diabetes and renal disease.	8 Marks	L3	CO4
	b)	Explain the relationship between cardiovascular diseases and renal function.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain pregnancy-associated renal diseases.	8 Marks	L2	CO5
	b)	Discuss renal vascular disorders in hypertension.	8 Marks	L3	CO5

(OR)

11.	a)	Discuss the role of imaging in congenital renal diseases.	8 Marks	L3	CO5
	b)	Explain the diagnosis and management of hydronephrosis.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

TOXICOLOGY AND ENVIRONMENTAL EMERGENCY

[Emergency Medical and Critical Care Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write any two differential diagnosis of cherry red color in skin.	2 Marks	L1	CO1
	b)	What is the different inhalation method for using hydrocarbons?	2 Marks	L2	CO1
	c)	Define clenched fist bite.	2 Marks	L1	CO2
	d)	List out any four indication of whole bowel irrigation.	2 Marks	L2	CO2
	e)	How the blood vessels change in hot temperature.	2 Marks	L1	CO3
	f)	Write down the stages of iron toxicity	2 Marks	L2	CO3
	g)	Types of drowning	2 Marks	L2	CO4
	h)	Stages of frost bite	2 Marks	L1	CO4
	i)	Different between ionizing and non ionizing radiation.	2 Marks	L1	CO5
	j)	Write down the types of blast injury	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Elaborate the organophosphate poisoning, and explain about antidote.	8 Marks	L2	CO1
	b)	Difference between normal and opiate toxicity mechanism, and detail note on management.	8 Marks	L2	CO1
		(OR)			
3.	a)	What is the role of atropine and pralidoxime in the management of organophosphate poisoning, and how are they administered?	8 Marks	L1	CO1
	b)	Detail about the role of digoxin-specific antibody fragments in the management of severe digoxin toxicity.	8 Marks	L4	CO1

MODULE-II

4.	a)	What complications can arise from untreated or inadequately treated cat bites?	8 Marks	L4	CO2
	b)	Describe the process of safely removing a leech from the skin.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the pathophysiology of snake bite envenomation and their effects on the human body.	8 Marks	L2	CO2
	b)	What are scorpions, and where are they commonly found?	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the principles of management for beta blocker toxicity, including decontamination measures.	8 Marks	L2	CO3
	b)	Describe the physiological effects of iron toxicity on the body, including gastrointestinal irritation, liver damage, cardiovascular collapse, metabolic acidosis, and multi-organ failure.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the signs and symptoms associated with each heat-related disorder and how they progress from mild to severe manifestations.	8 Marks	L2	CO3
	b)	Outline the signs and symptoms of a bee or wasp sting, including pain, swelling, redness, itching, and allergic reactions.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the stages of frostbite, and the clinical manifestations associated with each stage.	8 Marks	L2	CO4
	b)	What are the common poisonous plants encountered in different regions, including history and physical examination, identification of the plant.	8 Marks	L3	CO4
		(OR)			
9.	a)	Detail note on strategies for preventing leech bite	8 Marks	L2	CO4
	b)	Describe the physiological mechanisms of frostbite, including vasoconstriction, tissue freezing, and cellular damage.	8 Marks	L4	CO4

MODULE-V

10.	a)	What are the common sources of ionizing radiation, and their effects on biological tissues?	8 Marks	L2	CO5
	b)	Define triage and describe its significance in healthcare settings, including emergency departments, disaster response, and mass casualty incidents.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the roles and responsibilities of triage personnel.	8 Marks	L2	CO5
	b)	Outline the signs and symptoms of radiation injuries, and difference between ionizing and non ionizing ration.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

MEDICAL PSYCHOLOGY

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Discuss briefly about 'Pure Psychology'.	2 Marks	L2	CO1
	b)	Discuss the contribution of 'Sigmund Freud' to the field of Psychology.	2 Marks	L1	CO1
	c)	Prepare a brief note on any two developmental tasks of 'Early Adulthood' (Young Age).	2 Marks	L3	CO2
	d)	List any two pubertal changes that occur in in females.	2 Marks	L1	CO2
	e)	Comment briefly on the Attentional deficits'.	2 Marks	L3	CO3
	f)	Define 'Attention'.	2 Marks	L1	CO3
	g)	Discuss briefly about the psychological motives in the context of motivation.	2 Marks	L2	CO4
	h)	Comment briefly on 'Incentive' in the motivational cycle.	2 Marks	L3	CO4
	i)	Discuss briefly about the methods in 'Problem- Solving'.	2 Marks	L2	CO5
	j)	Comment briefly on 'Creativity'.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss in detail about the branches of 'Applied Psychology'.	8 Marks	L2	CO1
	b)	Prepare a note about the different research methods used in Psychology.	8 Marks	L3	CO1
		(OR)			
3.	a)	Comment in detail about the application of Psychological principles to the medical professionals.	8 Marks	L3	CO1
	b)	Define 'Psychology. List out the different 'Schools of Psychology'	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss in detail about the different stages of human development.	8 Marks	L2	C02
	b)	Prepare a detailed note on 'Nature' versus 'Nurture' controversy.	8 Marks	L3	CO2
		(OR)			
5.	a)	Comment on the role of environment on the human development.	8 Marks	L3	CO2
	b)	Prepare a detailed note on developmental changes in the old age.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe 'Gestalt Laws of Grouping'.	8 Marks	L2	CO3
	b)	Comment on the different types of 'Attention'.	8 Marks	L3	CO3
		(OR)			
7.	a)	Comment in detail about 'Hallucinations'.	8 Marks	L3	CO3
	b)	Describe disorders of sensation.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Prepare a note on the Abraham Maslow's theory of 'The Hierarchy of Needs'.	8 Marks	L3	CO4
	b)	Comment on the different types of conflicts and 'Conflict resolution' (Management of conflict).	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe various types of social motives behind the phenomenon of motivation.	8 Marks	L2	CO4
	b)	Prepare a detailed note on sources and management of frustration.	8 Marks	L3	CO4

MODULE-V

10.	a)	Mention various IQ Testing methods in Psychology.	8 Marks	L1	CO5
	b)	Prepare a detailed note on the various complications and management of stress.	8 Marks	L3	CO5
		(OR)			
11.	a)	Define 'Creativity' and elaborate on the steps in 'Creative Thinking'.	8 Marks	L3	CO6
	b)	Write about any two defense mechanisms in Psychology.	8 Marks	L2	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

POLYSOMNOGRAPHY-I

[Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define sleep state.	2 Marks	L1	CO1
	b)	What is narcolepsy?	2 Marks	L1	CO1
	c)	Write about the normal architecture of sleep.	2 Marks	L2	CO2
	d)	Define neurobiology of sleep.	2 Marks	L2	CO2
	e)	Elaborate AHI AND RDI.	2 Marks	L2	CO3
	f)	Define bradypnea.	2 Marks	L1	CO3
	g)	What is apnoea?	2 Marks	L1	CO4
	h)	What are the symptoms of dyspnea?	2 Marks	L1	CO4
	i)	Write a brief note on sleep pathway.	2 Marks	L2	CO5
	j)	Define circadian rhythm.	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 lifestyle changes for patients diagnosed with "OSA".	8 Marks	L2	CO1
	b)	Mention the importance of sleeping position.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain "CPAP" and "BIPAP" indication and contraindication.	8 Marks	L3	CO1
	b)	Describe sleeping hygiene and positions for patients in sleep apnoea.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the dereference between sleep hygiene and circadian rhythm of sleep.	8 Marks	L2	CO2
	b)	Draw a schematic sketch of alpha and beta waveform, and explain its occurrence in sleep stages.	8 Marks	L3	CO2
		(OR)			
5.	a)	What is polysomnography? Explain central sleep apnoea with a suitable diagram.	8 Marks	L3	CO2
	b)	Describe hypopnea and its stages.	8 Marks	L2	CO2

MODULE-III

6.	a)	Differentiate the difference between sleep apnea and sleep arousal.	8 Marks	L3	CO3
	b)	Describe the arousal and its associated disease conditions.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss in detail about the obstructive sleep apnoea along with associated hypoxemia.	8 Marks	L3	CO3
	b)	Illustrate all three-sleep apnoea pattern of waveform.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the pattern of sleep-in general anesthesia.	8 Marks	L2	CO4
	b)	Describe sleep arousal pathway. Illustrate the alpha and beta waveform.	8 Marks	L3	CO4
		(OR)			
9.	a)	Discuss the lifestyle modification in sleep hygiene	8 Marks	L2	CO4
	b)	Explain patients sleep disruption with an example.	8 Marks	L3	CO4

MODULE-V

10.	a)	List down the complications and impact on psychiatric drugs and sleep pattern.	8 Marks	L2	CO5
	b)	Explain narcolepsy and its sleep stage.	8 Marks	L3	CO5
		(OR)			
11.	a)	List out the adverse effect of sleep Aging.	8 Marks	L3	CO5
	b)	Chart down the sleeping hourly table.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

CONGENENTAL HEART DISEASE - I

[Cardio Vascular Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Name four shunt lesions of acyanotic congenital heart diseases.	2 Marks	L2	CO1
	b)	Define gallop rhythm and enlist it's types.	2 Marks	L2	CO1
	c)	Expand the following: i) DIRV; ii) DILV; iii) DORV; iv) DOLV.	2 Marks	L1	CO2
	d)	Differentiate between d loop and l loop.	2 Marks	L2	CO2
	e)	What is acyanotic and its types?	2 Marks	L2	CO3
	f)	Write about clinical features of AVSD.	2 Marks	L2	CO3
	g)	Identify the primary defect observed in aortopulmonary window.	2 Marks	L3	CO4
	h)	Define atrialization.	2 Marks	L1	CO4
	i)	What are the causes of aortic stenosis?	2 Marks	L1	CO5
	j)	Define mitral balloon valvotomy.	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 fourth heart sound and its causes.	8 Marks	L2	CO1
	b)	Explain in detail about systolic murmurs and its types.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define continuous murmurs. Explain its causes.	8 Marks	L2	CO1
	b)	Memorize points to be examined in murmur.	8 Marks	L1	CO1

MODULE-II

4.	a)	Explain in detail about atrioventricular connections and add a note on malposed great artery connections.	8 Marks	L2	CO1
	b)	Describe in detail about atrioventricular connections and add a note on malposition of great artery connections.	8 Marks	L1	CO2
		(OR)			
5.	a)	Discuss univentricular connections and its types.	8 Marks	L2	CO2
	b)	Explain in detail about ventriculoarterial connections and add a note on its types.	8 Marks	L2	CO2

MODULE-III

6.	a)	Elaborate on diagnostic modalities used to detect and characterize ventricular septal defects.	8 Marks	L3	CO3
	b)	Classify atrioventricular septal defects based on anatomical variations.	8 Marks	L3	CO3
		(OR)			
7.	a)	Define atrioventricular septal defect. Write in detail on clinical manifestations and symptoms associated with atrioventricular septal defect.	8 Marks	L1	CO3
	b)	Discuss in detail about embryological development of atrial septal defects.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Apply your knowledge on advancements in surgical techniques for patients undergoing repair of aortopulmonary window.	8 Marks	L3	CO4
	b)	Discuss about the pathophysiology of partial anomalous pulmonary venous connection.	8 Marks	L2	CO4
		(OR)			
9.	a)	Summarize on characteristics, anatomical features of ebstein's anomaly.	8 Marks	L3	CO4
	b)	Discuss in detail about surgical approaches, and techniques for correcting partial anomalous pulmonary venous connection.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe indications, techniques, and outcomes of interventions for mitral stenosis.	8 Marks	L2	CO5
	b)	Elaborate the diagnostic approach to pulmonary regurgitation.	8 Marks	L3	CO5
		(OR)			
11.	a)	Write in detail etiology, and risk factors associated with aortic regurgitation.	8 Marks	L2	CO5
	b)	Summarize on anatomical features, and pathophysiology of parachute mitral valve.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

CLINICAL PHARMACOLOGY RELATED TO AOTT-II

[Anaesthesia & Operation Theatre Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List cholinergic receptors.	2 Marks	L1	CO1
	b)	Add a note on synthesis of acetylcholine..	2 Marks	L2	CO1
	c)	Enlist the adverse effects of renin angiotensin.	2 Marks	L1	CO2
	d)	Define angina pectoris.	2 Marks	L2	CO2
	e)	Define Auto-Immune disease.	2 Marks	L1	CO3
	f)	Mention Two triggers that causes migrane.	2 Marks	L2	CO3
	g)	Name two anti-thyroid drug.	2 Marks	L2	CO4
	h)	Name two medications for oral contraceptive.	2 Marks	L1	CO4
	i)	List any two types of chemotherapy.	2 Marks	L1	CO5
	j)	Define sulfonamides.	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the locations of beta-adrenergic receptors in the body,and what functions do they serve.	8 Marks	L2	CO1
	b)	Classify parasympathomimetic drugs..	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the pharmacological actions of beta-blockers.	8 Marks	L1	CO1
	b)	Summarize therapeutic uses of beta-blockers.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain the role of calcium channel blockers in treating high blood pressure.	8 Marks	L4	CO2
	b)	Classify antihypertensive drugs.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss about sodium channel blockers.	8 Marks	L2	CO2
	b)	Describe the role of sympatholytics under antihypertensive drugs.	8 Marks	L2	CO2

MODULE-III

6.	a)	Give detail classification of histamine antagonist.	8 Marks	L2	CO3
	b)	Enumerate the drug treatment for gout.	8 Marks	L2	CO3
		(OR)			
7.	a)	List out the medications used for rheumatoid arthritis.	8 Marks	L2	CO3
	b)	Give a detail note on management of migraine.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe any two-treatment goal of hyperthyroidism.	8 Marks	L2	CO4
	b)	Write short notes on: i) type I diabetic mellitus and ii) type two diabetic mellitus	8 Marks	L3	CO4
		(OR)			
9.	a)	Write the mode of action of corticosteroids ad its uses.	8 Marks	L2	CO4
	b)	Enumerate the importance of HRT.	8 Marks	L4	CO4

MODULE-V

10.	a)	Summarize the uses of combined chemotherapy.	8 Marks	L2	CO5
	b)	Write short notes on: i) Chloramphenicol ii) Oxazolidinones	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the adverse effect of chemotherapy.	8 Marks	L2	CO5
	b)	Write short notes on: i) leukemia ii) malignant lymphoma	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

APPLIED DIALYSIS TECHNOLOGY - I

[Dialysis Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Give 2 indications for starting dialysis in chronic renal failure.	2 Marks	L1	CO1
	b)	What are the emergency indications to start dialysis in a patient with Stage 5 chronic kidneydisease?	2 Marks	L2	CO1
	c)	Precautions to be followed to prevent dialysis catheter block.	2 Marks	L1	CO2
	d)	What is the access care .	2 Marks	L1	CO2
	e)	Define High flux dialysis and uses.	2 Marks	L2	CO3
	f)	What is the difference between High efficiency and high flux dialyzers?	2 Marks	L3	CO3
	g)	Define High venous pressure alarm: What does it indicate?	2 Marks	L1	CO4
	h)	Define Single pool Kt/V vs. Standard K/V.	2 Marks	L2	CO4
	i)	What are the various PD catheter insertion techniques?	2 Marks	L1	CO5
	j)	What is the function of a 'Transfer set'?	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)	Give an account on the various electrolyte imbalance and acid base disorders in CKD.	8 Marks	L3	CO1
	b)	Describe the advantages and disadvantages of dialysis in detail.	8 Marks	L2	CO1
		(OR)			
3.	a)	discuss in detail about Indications of Dialysis.	8 Marks	L3	CO1
	b)	What are the various types of dialysis?	8 Marks	L2	CO1

MODULE-II

4.	a)	What are mechanisms of solute transport in hemodialysis?	8 Marks	L2	CO2
	b)	Define hemodialysis. Describe the principles in detail and given an examples	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe about the blood circuit.	8 Marks	L2	CO2
	b)	What are the types of disinfection methods of HD machine.	8 Marks	L2	CO2

MODULE-III

6.	a)	Enumerate the different types of dialyzer membranes.	8 Marks	L3	CO3
	b)	What is high flux dialysis? How is it different from high efficiency dialysis?	8 Marks	L2	CO3

(OR)

7.	a)	What are the differences between synthetic and cellulosic dialyzer membranes?	8 Marks	L2	CO3
	b)	Explain the process of Reuse of dialyzer.	8 Marks	L3	CO3

MODULE-IV

8.	a)	What is the composition of standard hemodialysis solution? What is Dual – concentrate system?	8 Marks	L2	CO4
	b)	Write the composition of the dialysate used in hemodialysis.	8 Marks	L3	CO4

(OR)

9.	a)	What is the protocol for heparin free dialysis?	8 Marks	L2	CO4
	b)	What are the factors favoring clotting of the extra-corporeal circuit? What are the signs of clotting in the extra-corporeal circuit?	8 Marks	L2	CO4

MODULE-V

10.	a)	Mention the Indications of Acute Peritoneal Dialysis.	8 Marks	L3	CO5
	b)	What are the different types of PD available? Describe the CAPD catheter care following insertion.	8 Marks	L2	CO5

(OR)

11.	a)	Illustrate in detail about the Exit site care performed?	8 Marks	L3	CO5
	b)	Explain in detail about Currently available PD solutions.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

EMERGENCY SURGERY – I

[Emergency Medical and Critical Care Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define faciotomy.	2 Marks	L2	CO1
	b)	Write about Wagner classification of ulcer.	2 Marks	L1	CO1
	c)	Abbreviation of HIDA.	2 Marks	L3	CO2
	d)	What are the types of renal colic?	2 Marks	L1	CO2
	e)	Define Intestinal obstraction.	2 Marks	L3	CO3
	f)	Write the three types of cholecystitis.	2 Marks	L1	CO3
	g)	Define epididymo-orchitis.	2 Marks	L2	CO4
	h)	What is cardiorenal syndrome?	2 Marks	L3	CO4
	i)	Draw the classical location of haemorrhoids.	2 Marks	L2	CO5
	j)	Draw the diagram of anal canal with parts.	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)	Elaborate the amputation, and what diagnostic criteria are used?	8 Marks	L2	CO1
	b)	Explain the mangles extremity severity score in crush injury.	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe the characteristics of monofilament and multifilament sutures.	8 Marks	L1	CO1
	b)	Detail note on differences between acute and chronic wounds in terms of their healing process.	8 Marks	L3	CO1

MODULE-II

4.	a)	What are the potential complications associated with pancreatic necrosis, and short note on infected necrosis.	8 Marks	L1	CO2
	b)	Describe the kidney injury and its treatment.	8 Marks	L3	CO2
		(OR)			
5.	a)	Elaborate the vascular injury and write the flow chart of ankle-brachial index.	8 Marks	L3	CO2
	b)	Give a detail note on cholecystitis and treatment.	8 Marks	L1	CO2

MODULE-III

6.	a)	What are the causes and write in detail about management of jaundice?	8 Marks	L2	CO3
	b)	Detail note on gastro intestinal bleeding	8 Marks	L3	CO3

(OR)

7.	a)	Describe hematuria, write in detail about its classification and management.	8 Marks	L3	CO3
	b)	Define cystitis, write its causes and clinical features.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Define prostatitis, write its causes and management?	8 Marks	L3	CO4
	b)	Explain dysphagia, write a note on treatment.	8 Marks	L3	CO4

(OR)

9.	a)	What are the ano-rectal disorders, write its classification.	8 Marks	L3	CO4
	b)	Define hematuria, write its classification and clinical features.	8 Marks	L1	CO4

MODULE-V

10.	a)	Write about diagnostic evaluation of AKI, write its management.	8 Marks	L1	CO5
	b)	Define jaundice, write in detail about its pathophysiology.	8 Marks	L3	CO5

(OR)

11.	a)	Detail note on gallstone, write its causes and clinical features.	8 Marks	L3	CO5
	b)	Detail note on post cardiac arrest care in BLS.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

EMERGENCY OBSTRATIC AND GYENACOLOGY

[Emergency Medical and Critical Care Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Symptoms of hyperemesis gravidarum.	2 Marks	L2	CO1
	b)	How to identify the fundal height	2 Marks	L1	CO1
	c)	Write the Flow chart of different sites in ectopic pregnancy.	2 Marks	L3	CO2
	d)	List out any four Composition of meconium.	2 Marks	L1	CO2
	e)	Expand 4 t's in postpartum hemorrhage	2 Marks	L3	CO3
	f)	Write about Johnson maneuver in inversion of uterus	2 Marks	L1	CO3
	g)	Draw the diagram of Trophoblast changes in preeclampsia	2 Marks	L2	CO4
	h)	Define placenta previa	2 Marks	L3	CO4
	i)	Difference between Oxytocin and tocolytics	2 Marks	L2	CO5
	j)	What is the action of Oxytocin in uterus and breast?	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	How do hormonal changes, such as those during puberty, menstruation, pregnancy, and menopause, affect the breasts?	8 Marks	L2	CO1
	b)	What are the different types of pregnancy tests available and how accurate are they in detecting pregnancy?	8 Marks	L3	CO1

(OR)

3.	a)	Elaborate the HCG in urine test to rule the pregnancy.	8 Marks	L1	CO1
	b)	Discuss about primary organs of the female reproductive system?	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the risks associated with the administration of epidural anesthesia during childbirth.	8 Marks	L1	CO2
	b)	Difference between medical abortion versus surgical abortion and how do they work.	8 Marks	L3	CO2

(OR)

5.	a)	Explain the complications of ectopic pregnancy, and how is it managed medically or surgically.	8 Marks	L3	CO2
	b)	Write about the treatment available for managing hyperemesis gravidarum for pregnant women.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain the principles of manual repositioning of the inverted uterus, and the importance of maintaining hemodynamic stability during the procedure.	8 Marks	L2	CO3
	b)	Discuss the role of the maternal pelvis in labor and delivery.	8 Marks	L3	CO3

(OR)

7.	a)	Enumerate the management options for breech presentation, including external cephalic version (ECV).	8 Marks	L3	CO3
	b)	Detail note on prolonged labor, including the mechanisms that contribute to delays in cervical dilation or descent of the fetus.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe the criteria for discharge and postpartum follow-up care in abruptio placenta.	8 Marks	L3	CO4
	b)	Detail note on management of severe pre-eclampsia and eclampsia, including the use of magnesium sulfate for seizure prophylaxis.	8 Marks	L3	CO4

(OR)

9.	a)	What are the potential causes of intrauterine fetal demise (IUFD) and explain the treatment.	8 Marks	L3	CO4
	b)	Discuss strategies for preventing gestational diabetes mellitus (GDM) and early identification and management of risk factors for GDM.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the assessment and diagnostic approach to injuries of the birth canal, including the role of physical examination, speculum examination.	8 Marks	L1	CO5
	b)	Discuss the clinical indications for the use of oxytocin in obstetrics. Explain its role in the induction and augmentation of labor.	8 Marks	L3	CO5

(OR)

11.	a)	Elaborate the clinical presentation of preterm labor, including signs and symptoms that may indicate the onset of preterm contraction.	8 Marks	L3	CO5
	b)	What is the role of prophylactic measures in preventing meconium aspiration syndrome (MAS).	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

CLINICAL PROCEDURE IN EMERGENCY CARE

[Emergency Medical and Critical Care Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Non rebreathing mask.	2 Marks	L1	CO1
	b)	Write down Beer lambert law in pulse oximetry.	2 Marks	L3	CO1
	c)	Define Allen's test.	2 Marks	L1	CO2
	d)	List out the five R's indication of trachostomy.	2 Marks	L1	CO2
	e)	Draw the landmark for venro gluteal IM injection.	2 Marks	L3	CO3
	f)	List out six R's for proper medical procedure in hospital.	2 Marks	L1	CO3
	g)	Define whole bowel irrigation.	2 Marks	L1	CO4
	h)	List out the four types of anamolisis in AV shunt.	2 Marks	L1	CO4
	i)	What is the position for transcutanous pacing.	2 Marks	L1	CO5
	j)	Draw the landmark for lumber puncture.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define cardioversion and describe its purpose in cardiac rhythm management.	8 Marks	L1	CO1
	b)	Elaborate the hypertension classified based on blood pressure readings.	8 Marks	L2	CO1
		(OR)			
3.	a)	Write down the metered dose inhaler (MDI) and describe its purpose in respiratory therapy.	8 Marks	L3	CO1
	b)	What is arteriovenous (AV) shunt and describe its procedure.	8 Marks	L1	CO1

MODULE-II

4.	a)	Define suctioning and describe its purpose in airway management.	8 Marks	L1	CO2
	b)	What are the anatomical landmarks used for intercostal drainage tube placement? Describe the steps involved in intercostal drainage tube insertion.	8 Marks	L1	CO2
		(OR)			
5.	a)	Explain the allen test and procedure of arterial line placement.	8 Marks	L2	CO2
	b)	Define Ryle's tube and short note on common indications for Ryle's tube placement?	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss the importance of accurate documentation and reporting in intramuscular injection administration.	8 Marks	L2	CO3
	b)	Detail note on central venous catheterization for neonatal.	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe the procedure for removing an IV line, including steps to safely withdraw the catheter.	8 Marks	L2	CO3
	b)	Explain the components of a standard parenteral nutrition solution.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the steps involved in removing a urinary catheter from a male patient, including proper technique.	8 Marks	L2	CO4
	b)	Explain the importance of ongoing assessment and monitoring of patients undergoing ABG analysis.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the role of AV shunts in providing long-term vascular access for patients requiring hemodialysis or other medical treatments.	8 Marks	L3	CO4
	b)	Evaluate the evidence-based practice guidelines and recommendations related to female urethral catheterization.	8 Marks	L2	CO4

MODULE-V

10.	a)	How is the ascitic fluid collected and measured during a paracentesis procedure?	8 Marks	L2	CO5
	b)	Define transvenous pacing, and what is its primary purpose in clinical practice?	8 Marks	L2	CO5
		(OR)			
11.	a)	What are the alternatives to peritoneal lavage for diagnosing abdominal trauma, and how do they compare in terms of efficacy and safety?	8 Marks	L1	CO5
	b)	Explain the process of documenting transcutaneous pacing therapy in the medical record.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

APPLIED PATHOLOGY

[Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is white coat hypertension?	2 Marks	L2	CO1
	b)	Define pulsus paradoxus.	2 Marks	L2	CO1
	c)	Write a short note on bronchiectasis.	2 Marks	L2	CO2
	d)	List the causes of COPD.	2 Marks	L1	CO2
	e)	Define leukemia.	2 Marks	L1	CO3
	f)	Classify causes of neutrophilic leukocytosis.	2 Marks	L3	CO3
	g)	Which laboratory parameter is used to monitor dialysis adequacy?	2 Marks	L1	CO4
	h)	Mention the causes of nephritic and nephrotic syndromes.	2 Marks	L1	CO4
	i)	Write a brief note on osteomyelitis.	2 Marks	L2	CO5
	j)	What is Encephalitis?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is infraction. Discuss the clinical manifestation, laboratory diagnosis and management of myocardial infraction.	8 Marks	L3	CO1
	b)	Summarize the ischemic heart disease.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define pericardial effusion. Write about the pathogenesis, morphology and complications of Pericardial effusion.	8 Marks	L2	CO1
	b)	Outline the congenital heart disease.	8 Marks	L2	CO1

MODULE-II

4.	a)	Elaborate pathogenesis of pulmonary edema. Add a note on cardiogenic and non cardiogenic pulmonary edema.	8 Marks	L3	CO2
	b)	Explain the pathological basis and symptoms of pneumoconiosis.	8 Marks	L3	CO2
		(OR)			
5.	a)	Elaborate about emphysema.	8 Marks	L3	CO2
	b)	Outline the pathological features,clinical manifestations and complications of chronic bronchitis.	8 Marks	L1	CO2

MODULE-III

6.	a)	Classify leukemia. Compare and contrast acute lymphoblastic leukemia (ALL) and acute myeloid leukemia (AML)	8 Marks	L3	CO3
	b)	Discuss the morphological classification of anemia.	8 Marks	L2	CO3

(OR)

7.	a)	Define and classify types of hemophilia. Discuss symptoms and investigations.	8 Marks	L3	CO3
	b)	Define leukopenia. Discuss the causes, clinical significance and approach to diagnosis in a patient with leukopenia.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Classify congenital anomalies of the kidney. Discuss the pathogenesis, types, and clinical implications of renal agenesis.	8 Marks	L4	CO4
	b)	Explain the clinical features and pathology of horseshoe kidney.	8 Marks	L2	CO4

(OR)

9.	a)	Describe the morphological and functional changes in acute tubular necrosis.	8 Marks	L2	CO4
	b)	Explain the causes, clinical manifestations and diagnostic criteria hemolytic uremic syndrome.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the radiological and pathological features of osteoarthritis	8 Marks	L2	CO5
	b)	Define neoplasia. Classify tumors and describe the differences between benign and malignant tumors.	8 Marks	L3	CO5

(OR)

11.	a)	Elaborate about rickets.	8 Marks	L3	CO5
	b)	Elucidate about osteomalacia.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

EMERGENCY MEDICIEN AND CARDIAC LIFE SUPPORT - I

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Name any two barrier devices.	2 Marks	L2	CO1
	b)	What is a BAINS circuit?	2 Marks	L1	CO1
	c)	Write the antidotes for opoid poisoning	2 Marks	L2	CO2
	d)	List out any four emergency drugs	2 Marks	L2	CO2
	e)	List out the steps to interpret ate ECG.	2 Marks	L2	CO3
	f)	Write the joules used for shockable rythms.	2 Marks	L2	CO3
	g)	Define cardio version.	2 Marks	L1	CO4
	h)	Define arrhythmia	2 Marks	L1	CO4
	i)	Illustrate the waveform for a heart block	2 Marks	L3	CO5
	j)	Illustrate the wave form of Atrial flutter	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the management of drowning	8 Marks	L2	CO1
	b)	Table down the adult life support.	8 Marks	L3	CO1
		(OR)			
3.	a)	Table down the algorithm of pregnant life support.	8 Marks	L3	CO1
	b)	Explain the management of any two life threatening emergencies in a causality.	8 Marks	L2	CO1

MODULE-II

4.	a)	Enumerate the indication for using defibrillator	8 Marks	L2	CO2
	b)	Discuss the ECG rhythm where you will use a defibrillator shock and why?	8 Marks	L2	CO2
		(OR)			
5.	a)	Write short notes on: i) Event monitor ii) Electrocardiogram	8 Marks	L2	CO2
	b)	Describe wearable defibrillator.	8 Marks	L2	CO2

MODULE-III

6.	a)	Enumerate the three main types of Atrial fibrillation.	8 Marks	L2	CO3
	b)	List out the medications and treatment outcome for Atrial fibrillation	8 Marks	L2	CO3
		(OR)			
7.	a)	Enumerate the complications of the wearable defibrillator.	8 Marks	L2	CO3
	b)	Enumerate the indications and contraindication of a holter.	8 Marks	L2	CO3

MODULE-IV

8.	a)	List out the risk factors of a Tachycardia and its Management	8 Marks	L2	CO4
	b)	Enumerate the procedure for a transcutaneous pacing .	8 Marks	L2	CO4
		(OR)			
9.	a)	Write short on notes: i) AC mode ii) CMV mode	8 Marks	L2	CO4
	b)	Enumerate the importance of suctioning of a patient on a mechanical ventilator.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the importance of transcutaneous cardiac pacing in a third-degree heart block.	8 Marks	L2	CO5
	b)	Illustrate: i) Atrial Flu ii)Atrial fib iii) VT iv) VF	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss metabolic acidosis and metabolic alkalosis, and indicate its value.	8 Marks	L2	CO5
	b)	Discuss any two-emergency drug used during an intubation.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

STERILIZATION AND INFECTION CONTROL

[Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List four standard precautions to be followed to combat hospital acquired infections.	2 Marks	L1	CO1
	b)	Name four bacteria causing late onset VAP.	2 Marks	L1	CO1
	c)	Define pulmonary & extra pulmonary tuberculosis.	2 Marks	L1	CO2
	d)	List four personal protective equipment's and its uses.	2 Marks	L1	CO2
	e)	Write the precautions to be followed while handling hot air oven	2 Marks	L2	CO3
	f)	Name four materials sterilized by hot air oven.	2 Marks	L1	CO3
	g)	Mention the blood collections methods commonly used for blood drawing.	2 Marks	L2	CO4
	h)	Name four materials to be discarded in yellow color coded bin.	2 Marks	L3	CO4
	i)	Define ART and its role in HIV infected people.	2 Marks	L1	CO2
	j)	List the different types of urinary catheters.	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)	Define Catheter. Describe different types of urinary catheters, add note on precautions to be followed while inserting a urinary catheter.	8 Marks	L2	CO1
	b)	Describe the procedure for management of a blood spill.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define CAUTI, enumerate the causes & pathogenesis of CAUTI.	8 Marks	L1	CO1
	b)	Define Ventilator associated pneumoniae (VAP). Discuss the pathogenesis of VAP.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define ART. Mention its role in HIV infected people, add note on Lab diagnosis of HIV infection.	8 Marks	L2	CO2
	b)	Explain the mode of transmission, diseases caused, prevention of salmonella infections in health care professionals.	8 Marks	L2	CO2
		(OR)			
5.	a)	Enumerate the mode of transmission, pathogenesis of hepatitis B Infection,and add a note on hepatitis B vaccination.	8 Marks	L2	CO2
	b)	Classify tuberculosis. Discuss the mode of transmission & preventive measures to be taken by a person infected with tuberculosis.	8 Marks	L4	CO2

MODULE-III

6.	a)	Discuss the procedure to operate hot air oven, list the materials sterilized by it.	8 Marks	L2	CO3
	b)	Enumerate: i) Ethylene oxide ii) Formaldehyde gas sterilization methods.	8 Marks	L2	CO3

(OR)

7.	a)	List the concentrations of disinfectants commonly used, Discuss the disinfection of i) Critical materials ii) Semi-critical materials iii)Noncritical materials.	8 Marks	L2	CO3
	b)	Discuss the construction & working of Hot air oven.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Elucidate universal health precautions.	8 Marks	L2	CO4
	b)	List the different color coded bins used in biomedical waste management, explain the waste products discarded into them in a neat tabular column.	8 Marks	L1	CO4

(OR)

9.	a)	Discuss the standard precautions, standard procedure to be followed while performing vein puncture for blood drawing.	8 Marks	L2	CO4
	b)	Enumerate various categories included in biomedical waste, explain the treatment protocol for the same.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the pathogenesis & diseases caused by herpes simplex virus and add a note on herpatic witflow.	8 Marks	L2	CO2
	b)	List various practices followed in infection prevention & control, explain hand hygiene and PPE.	8 Marks	L2	CO2

(OR)

11.	a)	Discuss the various modes of transmission of HIV Infection and add a note on preventive measures.	8 Marks	L2	CO2
	b)	Describe the pathogenesis and treatment of salmonella infection.	8 Marks	L2	CO2

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B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

CARDIOPULMONARY REHABILITATION

[Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define respiratory physiotherapy.	2 Marks	L1	CO1
	b)	List two benefits of inspiratory muscle training.	2 Marks	L1	CO1
	c)	What are the phases of cardiac rehabilitation?	2 Marks	L2	CO2
	d)	Identify the common investigative procedures for cardiac diseases.	2 Marks	L2	CO2
	e)	Mention four indications for mechanical ventilation.	2 Marks	L1	CO3
	f)	List two types of respiratory failure.	2 Marks	L1	CO3
	g)	Define cardiac surgery.	2 Marks	L1	CO4
	h)	Explain is a valvotomy.	2 Marks	L2	CO4
	i)	State any two indications for thoracic surgery.	2 Marks	L1	CO5
	j)	Explain the term “stove-in chest.”	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the indications, contraindications, and procedure of suctioning.	8 Marks	L2	CO1
	b)	Discuss the role of positioning and mobilization in respiratory physiotherapy.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the role of suctioning in airway clearance and its associated risks.	8 Marks	L2	CO1
	b)	Compare the effectiveness of manual percussion with mechanical percussion in secretion clearance.	8 Marks	L4	CO1

MODULE-II

4.	a)	Relate the role of pharmacological and non-pharmacological interventions in hypertension management.	8 Marks	L3	CO2
	b)	Compare the impact of obesity and diabetes on cardiovascular diseases.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the importance of monitoring vital signs in cardiac patients	8 Marks	L2	CO2
	b)	Enumerate cyanotic and Acyanotic congenital heart disease.	8 Marks	L2	CO2

MODULE-III

6.	a)	Simplify cardiopulmonary exercise testing and its significance in rehabilitation.	8 Marks	L3	CO3
	b)	Explain the role of oxygen therapy in ICU and its types.	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe the effects of smoking on lung function and physiotherapy interventions.	8 Marks	L2	CO3
	b)	Memorize the techniques and clinical applications of high-frequency chest wall oscillation.	8 Marks	L1	CO3

MODULE-IV

8.	a)	What is coronary angioplasty? Explain the indications and procedure.	8 Marks	L2	CO4
	b)	Explain the difference between valve replacement and valvotomy.	8 Marks	L2	CO4
		(OR)			
9.	a)	How does sternotomy affect respiratory mechanics and mobility?	8 Marks	L1	CO4
	b)	Demonstrate the use of incentive spirometry in post-cardiac surgery patients.	8 Marks	L3	CO4

MODULE-V

10.	a)	Compare the effectiveness of manual chest physiotherapy vs mechanical devices in pulmonary surgery patients.	8 Marks	L3	CO5
	b)	How does the choice of surgical incision impact post-operative rehabilitation.	8 Marks	L1	CO5
		(OR)			
11.	a)	Analyze the effects of lung transplantation on respiratory mechanics.	8 Marks	L4	CO5
	b)	What are the risks and benefits of lung volume reduction surgery?	8 Marks	L2	CO5



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B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

CARDIAC INSTRUMENTATION

[Cardio Vascular Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define signal to noise ratio.	2 Marks	L1	CO1
	b)	Write a brief note on "Rayleigh Scatterers".	2 Marks	L3	CO1
	c)	What is dynamic range?	2 Marks	L1	CO2
	d)	Enlist four uses of 2D mode.	2 Marks	L2	CO2
	e)	Define artifact.	2 Marks	L1	CO3
	f)	Name the types of 2D artifacts.	2 Marks	L3	CO3
	g)	What is flow velocity profile?	2 Marks	L1	CO4
	h)	Write the difference between mean and modal velocity.	2 Marks	L2	CO4
	i)	Write the full form of "RAD" and "REM"	2 Marks	L1	CO5
	j)	What is radiation?	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 concept of interaction of US beam with tissue.	8 Marks	L2	CO1
	b)	Summarize reflection and refraction in ultrasound imaging.	8 Marks	L2	CO1
		(OR)			
3.	a)	Outline types of transducers, and describe phased array transducers.	8 Marks	L2	CO1
	b)	Describe "Fresnel and Fraunhofer" zones of US beam and its importance in image creation.	8 Marks	L2	CO1

MODULE-II

4.	a)	Prepare a detailed note on "B – mode and M-mode".	8 Marks	L2	CO2
	b)	Summarize 2D mode of echocardiography.	8 Marks	L2	CO2
		(OR)			
5.	a)	Prepare a note on tradeoffs in creation of an echo image.	8 Marks	L2	CO2
	b)	Describe how an ultrasound signal is processed to create an echo image.	8 Marks	L3	CO2

MODULE-III

6.	a)	Classify types of echo machine and describe its capabilities.	8 Marks	L2	CO3
	b)	Discuss the manipulation of knobs and its use in clinical practice for better image acquisition.	8 Marks	L3	CO3

(OR)

7.	a)	Define tissue harmonic imaging, and describe its types with a labelled diagram.	8 Marks	L2	CO3
	b)	Classify 2D artifacts, and describe its echocardiographic features.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Apply your knowledge and prepare a note on optimization of Doppler images to prevent errors.	8 Marks	L3	CO4
	b)	Tabulate the difference between pulse wave Doppler and continuous wave Doppler.	8 Marks	L3	CO4

(OR)

9.	a)	Summarize optimization of color Doppler imaging.	8 Marks	L3	CO4
	b)	Describe continuity equation and add a note on its applications and limitations.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the importance of cardiac catheterization & cathlab.	8 Marks	L2	CO5
	b)	Outline the equipments used in cathlab, and add a note on image intensifier.	8 Marks	L2	CO5

(OR)

11.	a)	Prepare a detailed note on radiation protection in cathlab.	8 Marks	L2	CO5
	b)	Explain the components of pacemaker.	8 Marks	L2	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

FUNDAMENTALS OF ANESTHETIC TECHNIQUES

[Anaesthesia & Operation Theatre Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Explain the importance of blade size in surgical procedures.	2 Marks	L2	CO1
	b)	What is the role of needle holders in suturing?	2 Marks	L1	CO1
	c)	What are powered surgical instruments?	2 Marks	L1	CO2
	d)	Name any two thyroid surgical instruments.	2 Marks	L1	CO2
	e)	Name two types of laparoscopic instruments.	2 Marks	L1	CO3
	f)	What is the main function of a laparoscopic tower?	2 Marks	L2	CO3
	g)	List two instruments used in cardiac transplantation.	2Marks	L1	CO4
	h)	Mention two instruments used in tissue transplantation.	2 Marks	L1	CO4
	i)	Differentiate between emergency and elective surgeries.	2 Marks	L2	CO5
	j)	Explain the significance of OT management.	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the ergonomic considerations in the design of surgical scissors.	8 Marks	L3	CO1
	b)	Explain the advantages and disadvantages of various haemostatic instruments.	8 Marks	L2	CO1
		(OR)			
3.	a)	Evaluate the role of advanced surgical instruments in minimally invasive surgery.	8 Marks	L4	CO1
	b)	Illustrate the different sizes of surgical blades and their applications.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the advancements in general surgical instruments over time.	8 Marks	L2	CO2
	b)	Discuss the differences between manual and powered surgical instruments.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the importance of sterilization in maintaining surgical instrument longevity.	8 Marks	L2	CO2
	b)	Analyze the complications associated with the misuse of electrocautery devices.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain the use of advanced robotic techniques in anorectal surgeries.	8 Marks	L2	CO3
	b)	Compare different types of robotic machines used in surgery.	8 Marks	L4	CO3
		(OR)			
7.	a)	Explain the different types of endoscopes used in surgery.	8 Marks	L2	CO3
	b)	Evaluate the importance of proper maintenance of robotic surgical instruments.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Evaluate the role of transplant coordinators in successful transplant outcomes.	8 Marks	L3	CO4
	b)	Describe the types of transplant rejection and their management.	8 Marks	L2	CO4
		(OR)			
9.	a)	Analyze the effectiveness of different preservation techniques for donor organs.	8 Marks	L4	CO4
	b)	Explain the process of tissue matching and its significance.	8 Marks	L2	CO4

MODULE-V

10.	a)	Evaluate the role of teamwork in OT management.	8 Marks	L4	CO5
	b)	Explain the principles of OT zoning.	8 Marks	L2	CO5
		(OR)			
11.	a)	Compare different techniques of surgical handwashing.	8 Marks	L3	CO5
	b)	Discuss the role of emergency preparedness in OT.	8 Marks	L3	CO5



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B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

TRAUMA AND CARDIAC CARE MANAGEMENT

[Dialysis Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is subarachnoid hemorrhage?	2 Marks	L1	CO1
	b)	List two clinical features of subdural hematoma.	2 Marks	L1	CO1
	c)	Name two primary thoracic injuries.	2 Marks	L1	CO2
	d)	State the clinical importance of FAST (Focused Assessment with Sonography in Trauma).	2 Marks	L2	CO2
	e)	List any two complications of untreated abdominal trauma.	2 Marks	L2	CO3
	f)	Mention two signs of liver injury following blunt abdominal trauma.	2 Marks	L2	CO3
	g)	State two management steps for pulseless ventricular tachycardia.	2 Marks	L2	CO4
	h)	Mention any two causes of pulseless electrical activity (PEA).	2 Marks	L3	CO4
	i)	Mention any two characteristics of a shockable rhythm.	2 Marks	L2	CO5
	j)	List two signs of bradycardia that require intervention.	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 classification of head injuries.	8 Marks	L2	CO1
	b)	Explain the anatomy involved in epidural and subdural hematomas.	8Marks	L2	CO1

(OR)

3.	a)	Describe the emergency room management for a patient with suspected epidural hematoma.	8 Marks	L3	CO1
	b)	Develop a treatment plan for a patient with severe maxillofacial injuries and airway compromise.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain the sequence of events in the development of hemothorax following chest trauma.	8 Marks	L2	CO2
	b)	Describe how to clinically identify and differentiate thoracic injuries.	8 Marks	L2	CO2

(OR)

5.	a)	Develop a management protocol for treating a massive hemothorax.	8 Marks	L4	CO2
	b)	Describe how to clinically identify and differentiate thoracic injuries.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the pathophysiology of abdominal trauma.	8 Marks	L2	CO3
	b)	Discuss the clinical features of retroperitoneal injuries.	8 Marks	L2	CO3
		(OR)			
7.	a)	Apply trauma scoring and triage principles in a multi-trauma patient with abdominal and thoracic injuries.	8 Marks	L3	CO3
	b)	Explain the principles of damage control surgery in abdominal trauma.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain the treatment algorithm for ventricular fibrillation.	8 Marks	L2	CO4
	b)	Explain the management of tachycardia with and without a pulse.	8 Marks	L2	CO4
		(OR)			
9.	a)	List the sequence of Adult Basic Life Support steps as per current guidelines.	8 Marks	L2	CO4
	b)	Write a detailed notes on pediatric BLS.	8Marks	L2	CO4
		MODULE-V			
10.	a)	Discuss the significance of "exposure" in preventing missed injuries.	8 Marks	L2	CO5
	b)	Explain the purpose of the secondary survey and how it complements the primary assessment.	8 Marks	L2	CO5
		(OR)			
11.	a)	Demonstrate how you would perform a head-to-toe secondary survey in a stable trauma patient.	8 Marks	L4	CO5
	b)	A patient with multiple injuries needs airway management. Apply your knowledge of ITLS to secure the airway.	8 Marks	L3	CO5



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SYSTEMATIC BACTERIOLOGY

[Medical Lab Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the modifications of ZN staining?	2 Marks	L1	CO1
	b)	Write the examples of catalase positive & catalase negative bacteria.	2 Marks	L1	CO1
	c)	Write two examples of gram positive cocci, gram negative cocci.	2 Marks	L1	CO2
	d)	Name two suppurative and non-suppurative lesions caused by Streptococcus pyogenes.	2 Marks	L1	CO2
	e)	Add note on Non-venereal syphilis.	2 Marks	L1	CO3
	f)	List four diseases caused by E.coli.	2 Marks	L1	CO3
	g)	Define 'Mc' Fadyeans reaction.	2 Marks	L1	CO4
	h)	List the types of anthrax occurring in humans.	2 Marks	L1	CO4
	i)	Mention two differences between elementary body & reticulate body of Chlamydiae.	2 Marks	L1	CO5
	j)	Name four infections caused by Pseudomonas.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Briefly explain the principle, procedure of gram stain with examples.	8 Marks	L3	CO1
	b)	Enumerate coagulase test under following headings. i) Principle ii) Types iii) Procedure iv) Examples	8 Marks	L2	CO1

(OR)

3.	a)	Explain the principle, procedure of ZN stain with examples.	8 Marks	L3	CO1
	b)	Describe the principle, procedure, methods and examples of oxidase test.	8 Marks	L3	CO1

MODULE-II

4.	a)	Name two bacteria causing pyogenic lesions. Explain the lab diagnosis of staphylococcus aureus.	8 Marks	L3	CO2
	b)	Describe the morphology, cultural characteristics, diseases caused and laboratory diagnosis of Streptococcus pneumoniae.	8 Marks	L4	CO2

(OR)

5.	a)	Explain Neisseria gonorrhoeae under following heading. i) Morphology ii) Cultural characteristics iii) Diseases caused iv) Laboratory diagnosis	8 Marks	L4	CO2
	b)	Describe the morphology, cultural characteristics, diseases caused and laboratory diagnosis of Neisseria meningitides.	8 Marks	L3	CO2
		MODULE-III			
6.	a)	List the E.coli causing diarrhea, add note on lab diagnosis of E.coli.	8 Marks	L3	CO3
	b)	Describe the sample collection protocol for blood culture and sensitivity testing.	8 Marks	L3	CO3
		(OR)			
7.	a)	List the diseases caused by salmonella, explain the different samples collected during the course of the typhoid fever.	8 Marks	L3	CO3
	b)	Define zoonosis. Name four zoonotic diseases explain the lab diagnosis of Yersenia pestis.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Name the different spirochetes and diseases caused by them. Describe the pathogenesis and laboratory diagnosis of leptospirosis.	8 Marks	L2	CO4
	b)	Describe the clinical features and Laboratory diagnosis of Pulmonary Tuberculosis. Add a note on Mantoux test.	8 Marks	L3	CO4
		(OR)			
9.	a)	Describe the morphology, cultural characteristics, disease caused and lab diagnosis of anthrax bacilli.	8 Marks	L2	CO4
	b)	Enumerate the procedure & interpretation for Standard tube agglutination test.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Describe the Morphology, clinical features and laboratory diagnosis of Actinomycetes.	8 Marks	L3	CO5
	b)	List the Predominant factors responsible for Pseudomonas Aeruginosa causing hospital acquired infections, add note on control measures to combat hospital acquired infections.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss the pathogenesis, clinical manifestations and lab diagnosis of Bordetella pertusis.	8 Marks	L3	CO5
	b)	Enumerate the morphology, cultural characteristics, Pathogenesis and diseases caused by Rickettsiae.	8 Marks	L3	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

HAEMATOLOGY-II

[Medical Lab Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define leukopenia's.	2 Marks	L1	CO1
	b)	List the causes of iron deficiency.	2 Marks	L1	CO1
	c)	Write the full form of PCV and ESR	2 Marks	L1	CO2
	d)	Elaborate RBC and WBC.	2 Marks	L1	CO2
	e)	Write the principle of the Sahli's method.	2 Marks	L1	CO3
	f)	List the PCV estimation methods and add a note on the disadvantages of the micro method.	2 Marks	L1	CO3
	g)	Write the full form of CSF and add note on functions.	2 Marks	L1	CO4
	h)	Write the full form of MCV, MCH and MCHC.	2 Marks	L1	CO4
	i)	Define the Von Willebrand's disease.	2 Marks	L1	CO5
	j)	What is hemophilia?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Write a brief note on following WBCs' Disorders. Pelger-Huet Anomaly and Alder-Reilly Anomaly.	8 Marks	L3	CO1
	b)	Describe the morphological classification of anemia with suitable diagram.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize the thalassemia and explain diagnosis of it.	8 Marks	L3	CO1
	b)	Classify the differential leukocytes, explain examination procedure.	8 Marks	L3	CO1

MODULE-II

4.	a)	Which of the method used for total RBC count and write the Procedure with calculation.	8 Marks	L3	CO2
	b)	Solve below problem of the total WBC count by using standard formula. box 1:30, Box 2: 25, Box 3: 45, and Box 4: 35.	8 Marks	L4	CO2
		(OR)			
5.	a)	Solve below problem of the total RBC count by using standard formula. box 1: 77, Box 2: 89, Box 3: 66, Box 4: 81 and Box 5: 68.	8 Marks	L4	CO2
	b)	How would you estimate erythrocyte sedimentation rate by Westergren method?	8 Marks	L3	CO2

MODULE-III

6.	a)	How would you estimate the hemoglobin by cyanmethemoglobin method.	8 Marks	L3	CO3
	b)	Determine the thick smear preparation and explain the its importance.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the semen motility test in detailed.	8 Marks	L3	CO3
	b)	Determine the hemoglobin estimation by Sahli's method.	8 Marks	L3	CO3

MODULE-IV

8.	a)	How would you differentiate Pelger-HuëtandDöhle Bodies.	8 Marks	L2	CO4
	b)	Apply your Knowledge on CSF collection procedure.	8 Marks	L3	CO4
		(OR)			
9.	a)	How would you perform paracentesis.	8 Marks	L2	CO4
	b)	Determine the risk factors of thoracentesis.	8 Marks	L2	CO4

MODULE-V

10.	a)	Determine the types, causes and diagnosis of thrombosis.	8 Marks	L3	CO5
	b)	Summarize the causes of bleeding disorder and diagnosis of Hemophilia	8 Marks	L3	CO5
		(OR)			
11.	a)	List out the coagulation factors, add note on factor I, Factor II and Factor V deficiencies.	8 Marks	L3	CO5
	b)	Summarize the activated partial thromboplastin time test.	8 Marks	L3	CO5

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B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

APPLIED HISTOPATHOLOGY

[Medical Lab Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the responsibilities of pathology technician?	2 Marks	L2	CO1
	b)	What is the autolysis?	2 Marks	L1	CO1
	c)	What are Advantages and disadvantages of 10% formalin?	2 Marks	L3	CO2
	d)	What is the use of Leukhartz "L" brass molds?	2 Marks	L1	CO2
	e)	Write brief note on Progressive stain.	2 Marks	L3	CO3
	f)	What is the Regressive Stain?	2 Marks	L1	CO3
	g)	Write short note on deparaffinization.	2 Marks	L2	CO4
	h)	What is the interpretation of calcium stain?	2 Marks	L3	CO4
	i)	How would you prepare 90% alcohol?	2 Marks	L2	CO5
	j)	Write preparation 75% alcohol.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define fixative. Explain the various types of fixatives.	8 Marks	L2	CO1
	b)	What are the steps involved in the tissue processing by manual method and explain it?	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the clearing and infiltration with suitable diagram.	8 Marks	L1	CO1
	b)	What are the various concentrated alcohol used in tissue processing, add note on preparation procedure?	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain various parts and its applications of microtome.	8 Marks	L4	CO2
	b)	Illustrate the tissue embedding system, add note on advantages of it.	8 Marks	L4	CO2
		(OR)			
5.	a)	Explain classification of knife based on manner of ground add suitable diagram.	8 Marks	L4	CO2
	b)	How would you give numbering to sectioning slides, explain it?	8 Marks	L1	CO2

MODULE-III

6.	a)	Determine the trouble shooting in H&E Stain.	8 Marks	L2	CO3
	b)	What are techniques involving in the mounting of stained sections, add suitable diagram?	8 Marks	L3	CO3
		(OR)			
7.	a)	What are requirements and reagents used in H & E Stain?	8 Marks	L3	CO3
	b)	Demonstrate the dyes classification according to their action on tissue.	8 Marks	L1	CO3

MODULE-IV

8.	a)	How you identify bacteria from tissue section?	8 Marks	L3	CO4
	b)	How would you identify connective tissue for histological diagnosis?	8 Marks	L3	CO4
		(OR)			
9.	a)	Write the principle, reagents, procedure, precautions and result of Weigert-van Gieson staining method.	8 Marks	L3	CO4
	b)	Write the introduction, reagents, procedure of Fat Satin.	8 Marks	L3	CO4

MODULE-V

10.	a)	What is the cryostat section and add note on its uses?	8 Marks	L1	CO5
	b)	Explain the periodic acid-schiff stain.	8 Marks	L3	CO5
		(OR)			
11.	a)	What are steps involved in tissue electron microscopy and explain?	8 Marks	L3	CO5
	b)	What is the use of pathology museum, and note on its important?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

CYTOPATHOLOGY

[Medical Lab Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is cytopathology?	2 Marks	L1	CO1
	b)	Why is exfoliative cytology important?	2 Marks	L2	CO1
	c)	What is fluid cytology?	2 Marks	L2	CO2
	d)	Explain CCMSU.	2 Marks	L1	CO2
	e)	What is aspiration cytology?	2 Marks	L1	CO3
	f)	Write a brief note on Goblet cells.	2 Marks	L1	CO3
	g)	What is the main benefit of automated cytology systems?	2 Marks	L1	CO4
	h)	Write the importance of liquid-based cytology.	2 Marks	L1	CO4
	i)	What is sex chromatin (Barr body)?	2 Marks	L1	CO5
	j)	What is enzyme cytochemistry?	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the basic anatomy and physiology of the female genital tract.	8 Marks	L2	CO1
	b)	Explain in detail the H & E stain and discuss its significance.	8 Marks	L3	CO1
		(OR)			
3.	a)	How would you collect a female genital sample for a Pap smear?	8 Marks	L2	CO1
	b)	Illustrate the sample collection methods and applications for Vaginal Smears.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the appearance, color, clarity, and odor of a normal urine sample.	8 Marks	L2	CO2
	b)	Discuss the common tests performed on sweat and their significance.	8 Marks	L3	CO2
		(OR)			
5.	a)	Discuss the cytological examination of pleural fluid, including a note on malignancy and inflammation.	8 Marks	L3	CO2
	b)	Discuss the common tests conducted on saliva and their significance.	8 Marks	L3	CO2

MODULE-III

6.	a)	What are the common indications for urine cytology?	8 Marks	L3	CO3
	b)	Explain the procedure for lumbar puncture and its limitations.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the differences between benign and malignant conditions.	8 Marks	L2	CO3
	b)	Describe the basic principles of aspiration cytology.	8 Marks	L2	CO3

MODULE-IV

8.	a)	How does molecular cytology enhance traditional cytology techniques?	8 Marks	L3	CO4
	b)	Discuss the various types of automated cytology systems available.	8 Marks	L3	CO4
		(OR)			
9.	a)	What are the advantages of liquid-based cytology for cervical cancer screening?	8 Marks	L3	CO4
	b)	What are the commonly used antigens in immuno-cytochemistry?	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the role of phosphatases in liver function.	8 Marks	L2	CO5
	b)	Discuss the roles of dehydrogenase, oxidase, and peroxidase in cellular metabolism.	8 Marks	L3	CO5
		(OR)			
11.	a)	Describe the quantitative analysis of enzyme activity through enzyme cytochemistry.	8 Marks	L4	CO5
	b)	Enumerate the challenges and limitations of enzyme cytochemistry.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. IV Semester (MBU-22) Regular Examinations, June – 2025

ERGONOMICS AND HEALTH PROMOTION

[Bachelor of Physiotherapy]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define ergonomics.	2 Marks	L1	CO1
	b)	What is organizational ergonomics?	2 Marks	L1	CO1
	c)	Write the cofield classification of rotator cuff tear.	2 Marks	L2	CO2
	d)	List common conditions affecting the shoulder.	2 Marks	L1	CO2
	e)	What is dosimeter?	2 Marks	L1	CO3
	f)	Define workspace modification.	2 Marks	L1	CO3
	g)	Differentiate between health and wellness.	2 Marks	L2	CO4
	h)	Name the components of physical fitness.	2 Marks	L1	CO4
	i)	List four ways to prevent lifestyle diseases.	2 Marks	L1	CO4
	j)	What is volkman's canal?	2 Marks	L2	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss about principles of ergonomics.	8 Marks	L1	CO1
	b)	Explain the impact of ergonomics on workplace productivity.	8 Marks	L2	CO1
		(OR)			
3.	a)	Elucidate the cognitive ergonomics.	8 Marks	L2	CO1
	b)	Describe the workmen's compensation act.	8 Marks	L1	CO1

MODULE-II

4.	a)	How can strength training improve joint stability and prevent musculoskeletal injuries.	8 Marks	L1	CO2
	b)	Elucidate the risk factors, symptoms, prevention strategies that causes cervical spondylosis in desk job workers?	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the importance of warm-up and cool-down exercises in preventing musculoskeletal injuries.	8 Marks	L2	CO2
	b)	Break down the role of hydrotherapy in rehabilitation for musculoskeletal conditions.	8 Marks	L4	CO2

MODULE-III

6.	a)	Describe the key elements of environmental design in workplaces.	8 Marks	L2	CO3
	b)	Compare and contrast job safety analysis and hazard analysis.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the lifting techniques in the work place. Discuss about	8 Marks	L3	CO3

		safety guidelines and factors contribute in the lifting task.			
	b)	Elaborate about systematic method for the design of office layout.	8 Marks	L1	CO3
		MODULE-IV			
8.	a)	Define endurance. What are the physiological changes occur with endurance training?	8 Marks	L2	CO4
	b)	Describe about the wellness enhancing foods.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain in detail about dietary goals.	8 Marks	L2	CO4
	b)	What are the physiological changes occur during pregnancy?	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Describe the types of spinal deformities and their causes.	8 Marks	L2	CO2
	b)	Discuss the anatomy and function of intervertebral discs.	8 Marks	L2	CO2
		(OR)			
11.	a)	Explain the long-term benefits of shift work organization on worker health and efficiency.	8 Marks	L2	CO3
	b)	What are the common hazards and control measures in working environment?	8 Marks	L1	CO3



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T IV Semester (MBU-22) Regular Examinations, June – 2025

PHARMACOLOGY

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How the drug metabolites are eliminated from the body.	2 Marks	L2	CO1
	b)	What is the role of plasma proteins in drug distribution?	2 Marks	L3	CO1
	c)	Distinguish sympathetic and parasympathetic nervous system.	2 Marks	L2	CO2
	d)	How the drug levodopa normalizes the parkinson's disease.	2 Marks	L2	CO3
	e)	What is the indications of beta blockers?	2 Marks	L3	CO4
	f)	Add a note on mechanism of action of digoxin.	2 Marks	L1	CO4
	g)	Write in brief about side effects of ACE Inhibitors.	2 Marks	L2	CO4
	h)	Make a brief note on indications of glucocorticoids.	2 Marks	L3	CO5
	i)	Why selective COX2 inhibitors preferred over non-selective COX inhibitors in pain management.	2 Marks	L3	CO5
	j)	List out the side effects of NSAID's.	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)	Mention a detail note on routes of drug administration.	8 Marks	L2	CO1
	b)	Elaborate the concept of pharmacodynamics of a drug.	8 Marks	L4	CO1
		(OR)			
3.	a)	Extend the pharmacology of benzodiazepines.	8 Marks	L2	CO2
	b)	Justify the pharmacological role of tricyclic antidepressants in managing depression.	8 Marks	L5	CO2

MODULE-II

4.	a)	Elaborate the pharmacology of anticonvulsants.	8 Marks	L2	CO3
	b)	Justify the pharmacological role of dopamine precursor levodopa in parkinson's disease.	8 Marks	L5	CO3
		(OR)			
5.	a)	Illustrate the detailed pharmacology of beta blockers.	8 Marks	L2	CO4
	b)	Demonstrate the role of antiarrhythmics in normalizing arrhythmia.	8 Marks	L3	CO4

MODULE-III

6.	a)	Classify arthritic diseases and justify the pharmacological management of arthritic diseases.	8 Marks	L4	CO5
	b)	Write in detail about non-opioid analgesics.	8 Marks	L2	CO5
		(OR)			
7.	a)	Discuss the role of diuretics in the management of hypertension and add a brief note on its side effects.	8 Marks	L2	CO4
	b)	Explain in detail about drugs used for peripheral vascular disease.	8 Marks	L3	CO4

MODULE-IV

8.	a)	Relate how the drug lithium managing the mood disorders and add a brief note on its side effects.	8 Marks	L2	CO2
	b)	Explain in detail about distribution of drugs.	8 Marks	L3	CO2
		(OR)			
9.	a)	Write an overview on drugs used in the treatment of mood disorders.	8 Marks	L1	CO2
	b)	Formulate the mechanism of action, therapeutic uses of barbiturates.	8 Marks	L6	CO2

MODULE-V

10.	a)	Classify 'SMR' and write the mechanism, actions and uses of D-Tubocurarine.	8 Marks	L2	CO2
	b)	Simplify the pharmacology of antipsychotic drugs	8 Marks	L4	CO2
		(OR)			
11.	a)	Define constipation and elaborate the drugs used in constipation.	8 Marks	L2	CO6
	b)	Make a detail presentation on pharmacology of insulin in diabetes mellitus management.	8 Marks	L4	CO6

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T I Semester (MBU-22) Regular Examinations, May – 2025

SOCIOLOGY

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 social survey?	2 Marks	L2	CO1
	b)	List out the types of Survey.	2 Marks	L1	CO1
	c)	Mention two agencies of socialization.	2 Marks	L2	CO2
	d)	What is anticipatory socialization?	2 Marks	L2	CO2
	e)	Define culture.	2 Marks	L1	CO3
	f)	Write about Culture Induced Symptoms and Diseases.	2 Marks	L1	CO3
	g)	Define poverty.	2 Marks	L1	CO4
	h)	Outline unemployment.	2 Marks	L1	CO4
	i)	Write about seasonal unemployment.	2 Marks	L1	CO4
	j)	Name the types of social system.	2 Marks	L1	CO2

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define Sociological Investigation. What are the methods of Sociological Investigation?	8 Marks	L2	CO1
	b)	What is social survey? Explain the different types of social surveys.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define health and discuss the social factors, socio cultural barriers and traits influencing on health status of the individuals in society.	8 Marks	L2	CO1
	b)	In what ways are health and illness socially defined.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the role of social groups in health and sickness of the individual.	8 Marks	L2	CO2
	b)	What is socialization? Describe the agencies of socialization.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the Cooley's group classification.	8 Marks	L2	CO2
	b)	What is modern family? Explain the problems of modern family.	8 Marks	L2	CO2

MODULE-III

6.	a)	Relate difference between rural and urban communities.	8 Marks	L2	CO3
	b)	What are the health hazards associated with rural communities?	8 Marks	L2	CO3
		(OR)			
7.	a)	How to overcome rural problems?	8 Marks	L1	CO3
	b)	Discuss the Spectrum of Health.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss social welfare programs.	8 Marks	L2	CO4
	b)	Narrate alcoholism as a social problem.	8 Marks	L4	CO4
		(OR)			
9.	a)	Relate sickness and disability.	8 Marks	L3	CO4
	b)	Why social security is required?	8 Marks	L1	CO4

MODULE-V

10.	a)	What is the relationship of sociology with other social sciences?	8 Marks	L2	CO1
	b)	Mention the role of heredity and environment in relation to physical characteristics.	8 Marks	L2	CO1
		(OR)			
11.	a)	Define health, Characteristics of Mentally Healthy Individual.	8 Marks	L1	CO3
	b)	What are the problems of urbanization?	8 Marks	L2	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T IV Semester (MBU-22) Regular Examinations, June – 2025

EXERCISE THERAPY - II

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define stretch reflex.	2 Marks	L1	CO1
	b)	Name any four indications and contraindications of passive stretching.	2 Marks	L3	CO1
	c)	Differentiate cock-up and cubital tunnel splint.	2 Marks	L2	CO2
	d)	What is swing to gait and swing through gait?	2 Marks	L1	CO2
	e)	What is lower cross syndrome?	2 Marks	L3	CO3
	f)	What is Torticollis?	2 Marks	L2	CO3
	g)	List out four indications of hydrotherapy.	2 Marks	L3	CO4
	h)	Write about Antalgic Gait.	2 Marks	L2	CO4
	i)	What are Anti gravity muscles.	2 Marks	L1	CO3
	j)	What is lower cross syndrome?	2 Marks	L3	CO3

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 principles and treatment techniques involved in joint mobilizations.	8 Marks	L3	CO1
	b)	Describe in detail about proprioceptive neuromuscular facilitation.	8 Marks	L2	CO1
		(OR)			
3.	a)	Differentiate between Arthro kinematics and osteokinematics	8 Marks	L2	CO1
	b)	Interpretation of stress and strain curve.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe crutches. Mention about its types.	8 Marks	L1	CO2
	b)	Explain about the floor gait pattern in crutch training.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss in detail about measurement of canes	8 Marks	L1	CO2
	b)	Discuss about Classification of Prosthesis.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe posture and its types. Mention about postural mechanism.	8 Marks	L1	CO3
	b)	Describe Assessment of Posture.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain about characteristics of postural muscles.	8 Marks	L2	CO3
	b)	Explain about Postural Mal alignment.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain about traditional method of gait cycle.	8 Marks	L2	CO4
	b)	Discuss about the normal movement and muscle action in stance and swing phase of hip.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain about indications and contraindications of hydrotherapy.	8 Marks	L2	CO4
	b)	Explain about Pathological gaits.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain about characteristics of postural muscles.	8 Marks	L2	CO3
	b)	Explain about Postural Mal alignment.	8 Marks	L2	CO3
		(OR)			
11.	a)	Interpretation of improper gait patterns due to Neurological problems.	8 Marks	L3	CO4
	b)	Discuss about the normal movement and muscle action in stance and swing phase of knee.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T IV Semester (MBU-22) Regular Examinations, June – 2025

ELECTRO THERAPY - II

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 indications and contraindications of pulsed diathermy.	2 Marks	L3	CO1
	b)	What is pulsed SWD?	2 Marks	L1	CO1
	c)	Give any four examples of safety considerations of electrotherapy.	2 Marks	L1	CO2
	d)	Write any four contraindications and precautions in spinal traction.	2 Marks	L3	CO2
	e)	What is Ruby laser?	2 Marks	L1	CO3
	f)	Choose any two properties of laser.	2 Marks	L2	CO3
	g)	How to apply the contrast bath for swelling?	2 Marks	L1	CO4
	h)	List out the users of contrast.	2 Marks	L1	CO4
	i)	What is the typical duration of an EMG procedure?	2 Marks	L2	CO5
	j)	Differentiate between myopathy and neuropathy in terms of the causes of muscle weakness.	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 oscillatory currents and describe about the physiological and therapeutic effects of shortwave diathermy.	8 Marks	L2	CO1
	b)	Explain the various methods of application of pulsed SWD.	8 Marks	L2	CO1
		(OR)			
3.	a)	Elaborate the production of micro-wave diathermy and its various techniques of application of MWD.	8 Marks	L2	CO1
	b)	Explain the different application methods of shortwave diathermy and the testing of apparatus.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the technique and modes of traction used in the disc herniation condition.	8 Marks	L2	CO2
	b)	Evaluate the dosage in acute lesions & chronic condition in ultrasound therapy.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the process of phonophoresis and drugs used in phonophoresis.	8 Marks	L2	CO2
	b)	Classify the application methods of mechanical traction and discuss its precautions, indications, and contraindications.	8 Marks	L2	CO2

MODULE-III

6.	a)	Compare the infrared lamp and the ultraviolet ray's lamp, highlighting their differences and uses.	8 Marks	L2	CO3
	b)	Define IRR. Explain in detail the different types of generators and discuss the physiological and therapeutic effects of IRR.	8 Marks	L2	CO3
		(OR)			
7.	a)	Write in detail about kromayer lamp with suitable diagram.	8 Marks	L2	CO3
	b)	Classify the different types of lamps used in UVR and explain any two lamps in detail.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the applications and physiological effects of paraffin wax.	8 Marks	L2	CO4
	b)	Explain in detail the physiological effects of cryotherapy and add a note on the various application methods of cryotherapy.	8 Marks	L2	CO4
		(OR)			
9.	a)	Compare the effects of paraffin bath therapy and fluidotherapy.	8 Marks	L2	CO4
	b)	Describe the effectiveness of paraffin wax and its applications.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the strengths and limitations of EMG electrodes.	8 Marks	L2	CO5
	b)	Discuss the different methods of application of shortwave diathermy. Mention its dangerous and contraindications.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the different types of EMG techniques, including needle EMG and intramuscular EMG, and discuss their applications.	8 Marks	L3	CO5
	b)	Write in detail about the principles and components of nerve conduction study.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T IV Semester (MBU-22) Regular Examinations, June – 2025

BIOMECHANICS – II

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Prepare a note on acetabular dysplasia.	2 Marks	L2	CO1
	b)	Which area is the weakest in hip joint capsule?	2 Marks	L1	CO1
	c)	Add a note on quadriceps lag.	2 Marks	L2	CO2
	d)	Write a note on primary functions of ACL and MCL.	2 Marks	L2	CO2
	e)	Define pes planus and pes cavus?	2 Marks	L1	CO3
	f)	List out lateral compartment of ankle ligaments.	2 Marks	L1	CO3
	g)	Prepare a note on flexion relaxation phenomenon.	2 Marks	L2	CO4
	h)	Recall degree of toe out.	2 Marks	L1	CO4
	i)	Define Q angle.	2 Marks	L1	CO2
	j)	Write the genuvarum and genuvalgum.	2 Marks	L2	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Elaborate "SCFE", acetabular dysplasia and coxa profunda.	8 Marks	L3	CO1
	b)	Outline the strategies to reduce muscle forces of unilateral stance in hip joint.	8 Marks	L2	CO1

(OR)

3.	a)	Discuss the role of ligaments in stabilizing the hip joint during movement.	8 Marks	L3	CO1
	b)	Explore the role of trabecular system in load transmission and stress distribution in hip joint.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define Q-angle.Elaborate the clinical implications and its measurement.	8 Marks	L3	CO2
	b)	Explore the kinematics of knee joint flexion and extension.	8 Marks	L2	CO2

(OR)

5.	a)	Discuss the structural components of the knee complex and their roles in functional ability.	8 Marks	L2	CO2
	b)	Elaborate the tibiofemoral alignment and weight bearing forces.	8 Marks	L3	CO2

MODULE-III

6.	a)	What is the role of ligaments in stabilizing the ankle joint during movement?	8 Marks	L1	CO3
	b)	summarize the role of ankle and foot complex function in maintaining overall balance and stability.	8 Marks	L2	CO3

(OR)

7.	a)	Elucidate the functions of transverse tarsal joints.	8 Marks	L3	CO3
	b)	How does extension of the MTP joints contribute to stability of the foot?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the determinants of Gait.	8 Marks	L2	CO4
	b)	Enumerate the following : i) muscle activity in sitting and standing ii) intradiskal pressure and compressive loads on spine.	8 Marks	L2	CO4

(OR)

9.	a)	Summarize the analysis of sitting posture	8 Marks	L3	CO4
	b)	What are the key factors influencing posture? How they contribute to kinematic changes?	8 Marks	L1	CO4

MODULE-V

10.	a)	Explore about locking mechanism of knee.	8 Marks	L3	CO2
	b)	Outline the fibrous layer of knee joint capsule.	8 Marks	L1	CO2

(OR)

11.	a)	Elucidate the fixed support synergies.Add a note on pertubation.	8 Marks	L2	CO4
	b)	Discuss the change in support strategies of posture.	8 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

OPTOMETRIC OPTICS

[Optometry]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define nominal power.	2 Marks	L1	CO1
	b)	Write principle of lensometer.	2 Marks	L2	CO2
	c)	Mention the abbe value for crown and flint glass material.	2 Marks	L1	CO3
	d)	Define aniseikonia.	2 Marks	L1	CO5
	e)	Name any two diagnostic uses of prism.	2 Marks	L1	CO4
	f)	Write any two differences between tints and filters.	2 Marks	L2	CO5
	g)	What type of prism effect is created by a plano-convex lens?	2 Marks	L2	CO4
	h)	Define finishing laboratory.	2 Marks	L1	CO3
	i)	List two types of defects in ophthalmic lens.	2 Marks	L1	CO2
	j)	Write the formula for spherical equivalent.	2 Marks	L2	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Illustrate the operation of a lens clock and analyze how it functions.	8 Marks	L2	CO1
	b)	Recall strums conoid and with neat labelled diagram.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain diverging lens and its characteristics.	8 Marks	L2	CO1
	b)	Outline step by step procedure for changing cross cylindrical to spherocylindrical, minus cylindrical form to plus cylindrical form and spherical equivalent.	8 Marks	L4	CO1

MODULE-II

4.	a)	Elaborate Geneva lens measure with procedure and diagram.	8 Marks	L2	CO2
	b)	If the ocular refraction is +12.00D and the vertex distance for his/her spectacle is 14.00mm. Then what will be contact lens power and mention practical application of vertex distance.	8 Marks	L4	CO2
		(OR)			
5.	a)	What is lens effectivity and how vertex distance in change in plus and minus lenses?	8 Marks	L3	CO2
	b)	Explain the steps involved in inspecting the quality of lenses, including visual inspection and testing for defects.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write any eight properties of ophthalmic lens material.	8 Marks	L3	CO3
	b)	Add a note on the following. i) Refractive index. ii) Curve variation factor. iii) Abbe value.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss polycarbonate lens with the properties, pros and cons.	8 Marks	L2	CO3
	b)	Explain the following. i) Density ii) Reflectance iii) UV cut off point	8 Marks	L2	CO3

MODULE-IV

8.	a)	Elaborate four types of prisms.	8 Marks	L2	CO4
	b)	Describe deviation produced by prism, prism orientation, dividing prism.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain decentred prisms and slab-off prism.	8 Marks	L2	CO4
	b)	Add note on prismatic effects of lenses.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe any four types of special ophthalmic lens.	8 Marks	L2	CO5
	b)	Explain the clinical indications for prescribing aniseikonic lenses and their effectiveness in promoting binocular vision and visual comfort.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss when we are recommended aspheric and atorics.	8 Marks	L2	CO5
	b)	Summarize color consideration for sunglass and tinted lens.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

OCULAR DISEASE - I

[Optometry]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List traumatic causes of subconjunctival hemorrhage.	2 Marks	L1	CO1
	b)	What are the causes for protozoal corneal ulcers?	2 Marks	L2	CO2
	c)	Mention the Grades of RAPD.	2 Marks	L1	CO3
	d)	Name the congenital anomalies of lens.	2 Marks	L1	CO5
	e)	What are the causes for excessive tear production?	2 Marks	L2	CO4
	f)	Define blue-dot cataract.	2 Marks	L1	CO5
	g)	Name any two lacrimal sac abnormalities.	2 Marks	L1	CO4
	h)	What type of Reflex seen in amaurotic pupil?	2 Marks	L2	CO3
	i)	List any two causes for microphthalmia.	2 Marks	L1	CO2
	j)	Name malignant tumors of eye lids.	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)	Describe internal hordeolum and its clinical features.	8 Marks	L2	CO1
	b)	Summarize stye, its symptoms and treatment.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain four types of malignant tumor.	8 Marks	L2	CO1
	b)	Enumerate evaluation of ptosis and its measurements.	8 Marks	L3	CO1

MODULE-II

4.	a)	Summarize the risk factors, complications, and preventive measures for viral corneal ulcer.	8 Marks	L2	CO2
	b)	Describe the clinical features and management strategies for Acanthamoeba keratitis, highlighting its association with contact lens wear	8 Marks	L3	CO2
		(OR)			
5.	a)	What is xeropthalmia, WHO grading and its clinical features?	8 Marks	L3	CO2
	b)	Define keratitis and explain different types of keratitis.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discus choroidal/ciliary melanoma and is diagnosis.	8 Marks	L2	CO3
	b)	Compare iris coloboma and posterior segment coloboma.	8 Marks	L4	CO3
		(OR)			
7.	a)	Explain iris coloboma and its clinical features	8 Marks	L2	CO3
	b)	Write note on albinism.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Summarize lacrimal syringing and jones dye test	8 Marks	L2	CO4
	b)	Describe about chronic dacryocystitis and its management.	8 Marks	L2	CO4
		(OR)			
9.	a)	Compare epiphora in children's and adults.	8 Marks	L4	CO4
	b)	Elaborate lacrimal apparatus infection and its management.	8 Marks	L2	CO4

MODULE-V

10.	a)	Recall early and late post-operative complication of cataract surgery.	8 Marks	L3	CO5
	b)	Enumerate subluxation and dislocation of lens.	8 Marks	L3	CO5
		(OR)			
11.	a)	Summarize pre-operative and operative complication of surgery.	8 Marks	L2	CO5
	b)	Demonstrate Phacoemulsification procedure with its pro's, cons and limitations	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

SPECIAL INVESTIGATIONS IN RADIOLOGY

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Draw the structure of ionic monomers.	2 Marks	L3	CO1
	b)	List out any four points about ideal contrast media.	2 Marks	L1	CO1
	c)	Name any two drugs which increase bowel peristalsis.	2 Marks	L1	CO2
	d)	Define BMFT.	2 Marks	L2	CO2
	e)	Summarize the parts of urinary system.	2 Marks	L1	CO3
	f)	Mention any four risk factors of "IVU" procedure.	2 Marks	L2	CO3
	g)	Draw a labeled diagram of biliary system.	2 Marks	L3	CO4
	h)	List out the positions for galactography.	2 Marks	L1	CO4
	i)	Write any four indications of phlebography.	2 Marks	L1	CO5
	j)	Define "DVT".	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 physiology of contrast media.	8 Marks	L2	CO1
	b)	Outline the emergency drugs and its importance in radiology.	8 Marks	L3	CO1
		(OR)			
3.	a)	Summarize ionic monomers.	8 Marks	L2	CO1
	b)	Outline ionic dimers and characteristics of ideal contrast media.	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss about the indications, contraindications, contrast media and procedure for barium enema.	8 Marks	L2	CO2
	b)	Summarize single contrast small bowel enema.	8 Marks	L2	CO2
		(OR)			
5.	a)	Summarize double contrast small bowel enema.	8 Marks	L2	CO2
	b)	Explain the indications, contraindications, contrast media and procedure for barium meal follow through.	8 Marks	L2	CO2

MODULE-III

6.	a)	Summarize the indications, contraindications and patient preparation for retrograde urethrogram.	8 Marks	L2	CO3
	b)	Explain intravenous urethrogram procedure.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss about the procedure and after care of retrograde urethrogram.	8 Marks	L2	CO3
	b)	Outline the indications of 'MCU" and "RGU" procedure.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Describe t-tube cholangiography.	8 Marks	L2	CO4
	b)	Summarize "ERCP".	8 Marks	L2	CO4
		(OR)			
9.	a)	Prepare a note on percutaneous trans hepatic cholangiography.	8 Marks	L3	CO4
	b)	Summarize on galactography.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss about the indications and contraindications of phlebography.	8 Marks	L2	CO5
	b)	Explain phlebography.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss the anatomy of nasolacrimal duct along with a diagram.	8 Marks	L3	CO5
	b)	Illustrate lower limb venous system.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

PHYSIC AND TECNIQUES OF ULTRASOUND AND MAMMOGRAPHY

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define sternal angle.	2 Marks	L1	CO1
	b)	Add a note on stroma.	2 Marks	L1	CO1
	c)	Identify routine X ray parameters study of mammography.	2 Marks	L1	CO2
	d)	Write brief note on flat panel detectors.	2 Marks	L1	CO2
	e)	What is the speed of sound in vacuum?	2 Marks	L2	CO3
	f)	What is the range of sound for human hearing in Hz?	2 Marks	L1	CO3
	g)	Define Doppler effect.	2 Marks	L1	CO4
	h)	What is another name for Fresnel zone?	2 Marks	L1	CO4
	i)	Add a note on US probe used in liver studies.	2 Marks	L2	CO5
	j)	Write any four points about preparation of US abdomen.	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 BIRADS and Explain in detail on mammography lexicon.	8 Marks	L2	CO1
	b)	Discuss in detail on structure of breast.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define "BIRADS" and Explain briefly about standard reporting & final assessment categories of breast.	8 Marks	L2	CO1
	b)	Explain in detail on steps of Self examination of breast.	8 Marks	L2	CO1

MODULE-II

4.	a)	Summarize Indications, contraindications, preparation, positioning of Cleopatra view of mammography with diagram	8 Marks	L3	CO2
	b)	Write in detail about digital mammography.	8 Marks	L4	CO2
		(OR)			
5.	a)	Summarize the supplementary views of mammography.	8 Marks	L3	CO2
	b)	Summarize the flat panel detectors used in digital mammography.	8 Marks	L4	CO2

MODULE-III

6.	a)	Define US coupling agent, its composition and advantages.	8 Marks	L1	CO3
	b)	Add a long note on the following : i) Linear transducer with diagram. ii) Convex transducer with diagram.	8 Marks	L2	CO3
		(OR)			

7.	a)	Summarize artifacts of ultrasound imaging.	8 Marks	L4	CO3
	b)	Discuss in detail on Fresnel zone & franshofer zone with neat diagram.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Write in detail on power Doppler with neat diagram.	8 Marks	L3	CO4
	b)	Write detail on continuous Doppler with neat diagram, its advantages & disadvantages.	8 Marks	L3	CO4

(OR)

9.	a)	Define Doppler frequency shift and explain factors affecting Doppler shift.	8 Marks	L2	CO4
	b)	Explain in detail on duplex scanning with neat diagram.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss in detail on TRUS ultrasound.	8 Marks	L3	CO5
	b)	Add a note on following : i) US pelvis preparation of patient ii) US pelvis positioning of patient. Choice of transducer.	8 Marks	L2	CO5

(OR)

11.	a)	Explain the techniques of US small parts.	8 Marks	L2	CO5
	b)	Discuss in detail on indications of Ultrasound kidneys, ureters and urinary bladder studies.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

QUALITY CONTROL AND SAFETY IN DIAGNOSTIC RADIOLOGY

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Interpret "AERB".	2 Marks	L1	CO1
	b)	Mention any three benefits of record keeping.	2 Marks	L1	CO1
	c)	Expand "RSO" and "QMS".	2 Marks	L2	CO2
	d)	Mention any two duties of "RSO".	2 Marks	L1	CO2
	e)	Draw a line diagram of the beam alignment tool.	2 Marks	L3	CO3
	f)	State the corrective action of fluoroscopic image quality tool.	2 Marks	L1	CO3
	g)	Define spatial resolution phantom.	2 Marks	L1	CO4
	h)	What is string phantom?	2 Marks	L1	CO4
	i)	List the measurements supported by phantom kit.	2 Marks	L1	CO5
	j)	Define high contrast spatial resolution.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Elaborate on licensing and approval for radiological equipment.	8 Marks	L3	CO1
	b)	Explain about the role of the radiographer in quality assurance and quality control.	8 Marks	L2	CO1

(OR)

3.	a)	Summarize on "e-LORA" along with the planning of diagnostic x-ray equipment setup.	8 Marks	L2	CO1
	b)	Discuss about dose reference levels.	8 Marks	L2	CO1

MODULE-II

4.	a)	Elaborate on the members of quality assurance council.	8 Marks	L2	CO2
	b)	Draw a flow chart on quality control committee according to their role.	8 Marks	L3	CO2

(OR)

5.	a)	Describe the responsibilities of radiological technologist, radiologist and radiation physicist in quality assurance.	8 Marks	L2	CO2
	b)	Illustrate survey meter.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss about the linearity of radiation output quality assurance tests for x-ray equipment.	8 Marks	L2	CO3
	b)	Describe about fluoroscopy image quality and contrast resolution quality assurance tests.	8 Marks	L2	CO3

(OR)

7.	a)	Discuss about total filtration and radiation leakage through tube housing QA tests of x-ray equipment.	8 Marks	L2	CO3
	b)	Elaborate on radiation beam width and low contrast performance quality assurance tests for "CT" scanner.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Elaborate on geometry resolution test.	8 Marks	L3	CO4
	b)	Explain measurement accuracy test for ultrasound equipment.	8 Marks	L2	CO4

(OR)

9.	a)	Discuss about recent developments in ultrasound phantoms with suitable diagrams.	8 Marks	L3	CO4
	b)	Describe tissue mimicking phantom and testing phantom.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain about slice thickness accuracy measurement in "MRI" and its assessment.	8 Marks	L2	CO5
	b)	Elaborate on quality control tests for high contrast spatial resolution in "MRI".	8 Marks	L3	CO5

(OR)

11.	a)	Discuss about low contrast image detectability test in "MRI" and its assessment.	8 Marks	L2	CO5
	b)	Explain "MRI" phantoms.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

PHYSICS OF COMPUTERIZED TOMOGRAPHY

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define tomography.	2 Marks	L1	CO1
	b)	List types of solid-state detectors.	2 Marks	L2	CO1
	c)	Mention the years when the first head scan and first whole-body scan were taken.	2 Marks	L3	CO2
	d)	Present any three functions of slip rings.	2 Marks	L2	CO2
	e)	Distinguish between data acquisition and scanning in one sentence each.	2 Marks	L1	CO3
	f)	Define beam geometry.	2 Marks	L2	CO3
	g)	Distinguish between data acquisition and scanning in one sentence each.	2 Marks	L1	CO4
	h)	Define beam geometry.	2 Marks	L2	CO4
	i)	Define effective dose	2 Marks	L2	CO5
	j)	Add a brief note on CTDI	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss about image display in CT along with storage and communications.	8 Marks	L2	CO1
	b)	Write a short note on: i.Computers of CT scanner. ii.CT couch.	8 Marks	L3	CO1

(OR)

3.	a)	Summarize different components of a CT scanner.	8 Marks	L2	CO1
	b)	Apply your knowledge on introducing Computed tomography in your own words.	8 Marks	L3	CO1

MODULE-II

4.	a)	Elaborate on the evaluation of CT scanners till today along with the aim of evaluation.	8 Marks	L3	CO2
	b)	Explain about flat panel detectors.	8 Marks	L3	CO2

(OR)

5.	a)	Describe about slip rings and the generation of CT scanner in which they introduced.	8 Marks	L2	CO2
	b)	Summarize on sixth and seventh generations with diagrams	8 Marks	L2	CO2

MODULE-III

6.	a)	Elaborate on various post processing techniques in CT scanner.	8 Marks	L2	CO3
	b)	Write a short on: i) Simple back projection ii) Fourier transformission.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss in detail about image acquisition in 1st and 2nd generation CT scanners.	8 Marks	L3	CO3
	b)	Add a short note on: i) Image acquisition in CT diagram. ii) Volume rendering technique and Maximum intensity projection.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Apply your knowledge in elaborating and relating the concepts of pixel, voxel and matrix with image resolution.	8 Marks	L3	CO4
	b)	Elaborate on remedies to avoid patient-based artifacts and physics-based artifacts in CT.	8 Marks	L3	CO4
		(OR)			
9.	a)	Discuss in detail about windowing with suitable diagrams.	8 Marks	L2	CO4
	b)	Write a note on: Beam hardening artifacts and its remedies. Partial volume artifacts. and its remedies.	8 Marks	L3	CO4

MODULE-V

10.	a)	Elaborate on biological effects of radiation along with principals of radiation protection in detail	8 Marks	L3	CO5
	b)	Explain in detail about various radiation risks.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain in detail about effects of radiation in cells.	8 Marks	L3	CO5
	b)	Write a short note on: i) CTDI. ii) Tissue weighting factor.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. IV Semester (MBU-22) Regular Examinations, June – 2025

SYSTEM FOR OPHTHALMIC DISPENSING

[Optometry]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is an aspheric lens?	2 Marks	L2	CO1
	b)	Explain minus add bifocals.	2 Marks	L2	CO2
	c)	Mention any four different kind coating used in spectacle industry.	2 Marks	L1	CO3
	d)	What is ptosis crutches?	2 Marks	L2	CO5
	e)	Define prentice's rule.	2 Marks	L1	CO4
	f)	Recall datum line and datum length.	2 Marks	L2	CO5
	g)	Explain four points touch method.	2 Marks	L2	CO4
	h)	What are the primary colors?	2 Marks	L2	CO3
	i)	Recall bifocal lens.	2 Marks	L2	CO2
	j)	Mention two types of Vertex Power.	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)	Write note on ANSI	8 Marks	L3	CO1
	b)	Elaborate labeling guidance for nonprescription sunglasses and direction of use.	8 Marks	L2	CO1

(OR)

3.	a)	Recall four types of spectacle lens material.	8 Marks	L3	CO1
	b)	Discuss limitations of exemption for nonprescription sunglasses with example.	8 Marks	L2	CO1

MODULE-II

4.	a)	Enumerate any two kind glasses will suggest for the patient above 40 years.	8 Marks	L3	CO2
	b)	Compare bifocal and multifocal glasses.	8 Marks	L4	CO2

(OR)

5.	a)	Elaborate advantages and disadvantages of bifocal lens.	8 Marks	L2	CO2
	b)	Interpret the terminologies related to segmented multifocal with the necessary diagram.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss about mirror coating and hydrophobic lenses.	8 Marks	L2	CO3
	b)	Explain the importance of safety lenses in protecting the eyes from hazards and preventing injuries in various environments.	8 Marks	L2	CO3

(OR)

7.	a)	Examine the OSHA regulations for safety eyewear and explain the impact thickness requirements for ensuring adequate protection.	8 Marks	L4	CO3
	b)	Summarize surface coated lens, advantages and disadvantages.	8 Marks	L2	CO3

MODULE-IV

8.	a)	How should frames be selected based on facial type and fitting considerations?	8 Marks	L3	CO4
	b)	Write about any four types of tools to adjust the spectacle parts.	8 Marks	L3	CO4

(OR)

9.	a)	Elaborate eight factors to consider before using the wearer's old frames.	8 Marks	L2	CO4
	b)	What is pantoscopic angle, explain about pantoscopic tilt?	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe each type of metal material used in frames and explain which one you believe is the most user- friendly.	8 Marks	L2	CO5
	b)	Explain any four types of plastic frame material.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss the function and design of ptosis crutches in spectacle frames.	8 Marks	L2	CO5
	b)	Compare plastic and metal frame with examples.	8 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

COMPLICATIONS IN ANESTHESIA

[Anaesthesia & Operation Theatre Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Discuss briefly about 'ECCO2R'.	2 Marks	L2	CO1
	b)	Mention briefly about the physiological effects of 'Hypocarbia'.	2 Marks	L1	CO1
	c)	Prepare a brief note about the care and precautions that should be taken for hypertensive patients on the day of surgery'.	2 Marks	L3	CO2
	d)	List any two cardiac arrhythmias that occur commonly during the perioperative period.	2 Marks	L1	CO2
	e)	Elaborate 'AAGA'.	2 Marks	L3	CO3
	f)	Mention the classification of epilepsy by the 'International League against Epilepsy' (ILAE).	2 Marks	L1	CO3
	g)	Discuss briefly about the significance of human errors contributing to the equipment problems.	2 Marks	L2	CO4
	h)	Comment in brief about the significance of 'Scavenging the Trace Anesthetic Gases'.	2 Marks	L3	CO4
	i)	Discuss briefly about the 'Compartment syndrome'.	2 Marks	L2	CO5
	j)	Comment in brief about the care to be taken to prevent pressure sores developed as a result of different patient positions.	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 radiological features helpful in diagnosing the 'Perioperative Pulmonary Atelectasis'.	8 Marks	L2	CO1
	b)	Comment in detail about the etiology and pathogenesis of 'Perioperative Pulmonary Atelectasis'.	8 Marks	L3	CO1

(OR)

3.	a)	Mention the clinical features and complications of the patients who have experienced 'Perioperative Hypercarbia'.	8 Marks	L1	CO1
	b)	Prepare a detailed note on the etiology and clinical features of 'Perioperative Hypoxia'.	8 Marks	L3	CO1

MODULE-II

4.	a)	List the various cardiovascular complications that can occur during the perioperative period.	8 Marks	L1	CO2
	b)	Comment in detail about the management of 'cardiac arrest' during the perioperative period.	8 Marks	L3	CO2

(OR)

5.	a)	Prepare a detailed note on the 'risk evaluation scoring systems', which could predict the major cardiac adverse events during the perioperative period.	8 Marks	L3	CO2
	b)	Mention the differential diagnosis of 'Perioperative Hypotension'	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe the clinical features and role of anesthetic management in a patient of 'refractory status epilepticus'.	8 Marks	L2	CO3
	b)	Comment in detail about the 'seizure-provoking potential' of anesthetic agents.	8 Marks	L3	CO3

(OR)

7.	a)	Prepare a detailed note about the risk factors associated with 'Delayed Emergence' (DE).	8 Marks	L3	CO4
	b)	Mention in detail about the 'Perioperative prevention of peripheral nerve Injury'.	8 Marks	L1	CO4

MODULE-IV

8.	a)	Comment in detail about the impact of 'Natural Rubber Latex (NRL) and Antibiotics' on the development of 'Perioperative Allergies and Anaphylaxis'.	8 Marks	L3	CO4
	b)	Prepare a detailed note about the various potential complications associated with the malfunctioning of the anesthesia equipments.	8 Marks	L3	CO4

(OR)

9.	a)	Describe in detail about the sources and management of airway fires in the OT room.	8 Marks	L3	CO4
	b)	List in detail about the basic anesthesia machine standard checklist.	8 Marks	L1	CO4

MODULE-V

10.	a)	Mention the various complications associated with the 'Supine positioning' of surgical patients.	8 Marks	L1	CO5
	b)	Comment in detail about the different mechanisms of surgical positioning contributing to the peripheral nerve injuries.	8 Marks	L3	CO5

(OR)

11.	a)	Comment in detail about the consequences and benefits of 'Hypothermia'.	8 Marks	L3	CO5
	b)	List the causes of 'Inadvertent Hypothermia'.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

NEONATAL AND PEDIATRIC RESPIRATORY CARE

[Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the role of the fetal pulmonary circulation in lung development before birth?	2 Marks	L1	CO1
	b)	How does surfactant replacement therapy is done?	2 Marks	L3	CO1
	c)	Mention any two symptoms of cyanosis.	2 Marks	L1	CO2
	d)	How would you evaluate the decreased PaO2?	2 Marks	L3	CO2
	e)	Enlist any four oxygen delivery devices and its flow rate for pediatrics.	2 Marks	L2	CO3
	f)	Write a short respiratory alkalosis.	2 Marks	L2	CO3
	g)	What is pulmonary hypertension.	2 Marks	L1	CO4
	h)	What is neonatal care in NICU?	2 Marks	L1	CO4
	i)	How would you evaluate increased PaCO2?	2 Marks	L2	C05
	j)	Define crepitations.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Table down the tapering of hydrocortisone and prednisone dosage according to the protocol of tapering doses.	8 Marks	L3	CO1
	b)	Differentiate between a mild flare-up and a severe asthma attack that requires emergency medical attention.	8 Marks	L3	CO1
		(OR)			
3.	a)	Enlist the potential side effects of long-term use of corticosteroid inhalers, and how can patients minimize these risks?	8 Marks	L2	CO1
	b)	How does exercise-induced asthma differ from other types of asthma? Give exampels.	8 Marks	L3	CO1

MODULE-II

4.	a)	Give a schematic sketch of the neonatal lung developmental stages.	8 Marks	L3	CO2
	b)	Describe neonatal immature surfactant production.	8 Marks	L2	CO2
		(OR)			
5.	a)	How would you find the markings of the lung field in a chest X-ray?	8 Marks	L3	CO3
	b)	Discuss the clinical findings of a pediatric patients for asthma exacerbation.	8 Marks	L2	CO3

MODULE-III

6.	a)	Discuss the role of antenatal Steroids in the Prevention of Respiratory Distress Syndrome	8 Marks	L2	CO3
	b)	Discuss why meconium aspiration leads to pulmonary vasoconstriction and right-to-left shunting.	8 Marks	L2	CO3

(OR)

7.	a)	Evaluate oxygen therapy for neonates and chart down the differences of flow/min for various devices.	8 Marks	L3	CO3
	b)	Discuss the importance on non- invasive ventilation for neonates with PPHN.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the risks of suctioning, including hypoxia, airway trauma, bradycardia, and infection.	8 Marks	L2	CO4
	b)	Chart down the indication, contraindication and complications of suctioning in neonates.	8 Marks	L3	CO4

(OR)

9.	a)	What is tracheal trauma? Mention the causes and risk factors of tracheal trauma.	8 Marks	L2	CO4
	b)	How do you manage the overall respiratory care management of a neonate in NICU?	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss the oxygen therapy, its Indications, methods of administration, and monitoring in neonates.	8 Marks	L2	CO5
	b)	Describe the role of nasal cannula in neonatal oxygen therapy.	8 Marks	L2	CO5

(OR)

11.	a)	Mention the use of “Oxygen Hood’ n neonates and explain its flow/min and its indication.	8 Marks	L2	CO5
	b)	What is an incubator? Mention the role of incubators for pre matured babies.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

EMERGENCY MEDICINE - II

[Emergency Medical and Critical Care Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write a brief note on management of renal failure.	2 Marks	L2	CO1
	b)	Define renal failure	2 Marks	L1	CO1
	c)	List out the causes of thrombocytopenia.	2 Marks	L2	CO2
	d)	Describe thrombocytopenia.	2 Marks	L2	CO2
	e)	Define thyroid crisis.	2 Marks	L1	CO3
	f)	Identify any three types of diarrhea.	2 Marks	L3	CO3
	g)	List out any four causes of pruritus.	2 Marks	L2	CO4
	h)	What are the common diagnostic tests used in allergic reactions.	2 Marks	L1	CO4
	i)	List out the stages of measles.	2 Marks	L2	CO5
	j)	Write a brief note on management of typhoid.	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 pathophysiology of hematuria and the potential causes of both microscopic and gross hematuria.	8 Marks	L2	CO1
	b)	Outline the steps of urinary tract infection.	8 Marks	L2	CO1
		(OR)			
3.	a)	What are the primary causes of acute renal failure, and how do they differ from chronic renal failure in terms of pathophysiology and clinical presentation?	8 Marks	L2	CO1
	b)	Discuss the pathophysiology, risk factors, and classification of urolithiasis.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe platelet disorders and classify it.	8 Marks	L2	CO2
	b)	Define polycythemia and write its clinical features.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain types of white blood cell disorders.	8 Marks	L2	CO2
	b)	Differentiate microcytic, normocytic and normochromic anemia.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the pathophysiology and diagnostic criteria for Diabetic Ketoacidosis (DKA)	8 Marks	L2	CO3
	b)	Describe the management of acute diarrhea, including the use of antidiarrheal medications.	8 Marks	L2	CO3

(OR)

7.	a)	Enumerate the clinical features and diagnostic criteria for Hyperosmolar Hyperglycemic State (HHS).	8 Marks	L3	CO3
	b)	Discuss the management of thyroid crisis (thyroid storm), including pharmacologic treatment and supportive care.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define Systemic Lupus Erythematosus and explain its pathophysiology.	8 Marks	L3	CO4
	b)	Outline the pathophysiology of acute erythroderma and explain how it affects the skin barrier function.	8 Marks	L3	CO4

(OR)

9.	a)	Define Systemic Lupus Erythematosus and explain its pathophysiology.	8 Marks	L3	CO4
	b)	Discuss the pathophysiology of acute erythroderma and explain how it affects the skin barrier function.	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss the pathophysiology of dengue fever.	8 Marks	L2	CO5
	b)	Describe mode of transmission and prevention of "AIDS".	8 Marks	L2	CO5

(OR)

11.	a)	Enumerate the clinical features and treatment of measles.	8 Marks	L3	CO5
	b)	Define tuberculosis and classify its types.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

DISASTER MANAGEMENT AND INDUSTRIAL EMERGENCIES

[Emergency Medical and Critical Care Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write a brief note on disaster plan.	2 Marks	L1	CO1
	b)	List out the types of disaster.	2 Marks	L2	CO1
	c)	Expand RACE and PASS.	2 Marks	L1	CO2
	d)	What is mitigation?	2 Marks	L2	CO2
	e)	List out any four causes of crush injury.	2 Marks	L1	CO3
	f)	What are the common causes of assaults.	2 Marks	L3	CO3
	g)	Write any four examples of biological hazards.	2 Marks	L1	CO4
	h)	Identify any four causes of psychological hazards.	2 Marks	L2	CO4
	i)	Write a brief note on volcanic eruptions.	2 Marks	L2	CO5
	j)	What is heat related disaster?	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the different types of triages used in disaster situations.	8 Marks	L2	CO1
	b)	Differentiate "JUMP START" triage and "START" triage.	8 Marks	L3	CO1
		(OR)			
3.	a)	Discuss the challenges faced by EMS during disaster situations.	8 Marks	L2	CO1
	b)	Explain the triage system used in disaster management and its importance for EMS.	8 Marks	L2	CO1

MODULE-II

4.	a)	Classify the types of maritime disaster.	8 Marks	L3	CO2
	b)	Define hazardous material emergencies and list out its causes.	8 Marks	L1	CO2
		(OR)			
5.	a)	Explain the immediate response and role of emergency services in a terrorist bombing incident.	8 Marks	L2	CO2
	b)	Summarize the importance of Personal Protective Equipment (PPE) for responders in chemical disasters.	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the role of imaging and diagnostic tests in evaluating crush injuries.	8 Marks	L2	CO3
	b)	Discuss the physiological and psychological effects of amputation on a patient.	8 Marks	L2	CO3
		(OR)			
7.	a)	Describe workplace safety measures to prevent electrocution.	8 Marks	L2	CO3
	b)	Discuss the impact of falls from height on different age groups.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the impact of work-related stress on employees' mental and physical health.	8 Marks	L2	CO4
	b)	Explain the role of occupational health and safety regulations in controlling physical hazards.	8 Marks	L2	CO4
		(OR)			
9.	a)	Enumerate the ethical responsibilities of employers in minimizing occupational hazards.	8 Marks	L3	CO4
	b)	Explain the different types of psychological hazards in the workplace.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the impact of tornadoes on human life and infrastructure.	8 Marks	L2	CO5
	b)	Explain the economic consequences of winter storms.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the impact of floods on human life and infrastructure.	8 Marks	L2	CO5
	b)	Explain the impact of tsunamis on human life and the environment	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

CRITICAL CONCEPTS AND DECISION MAKING IN EMERGENCY MEDICINE

[Emergency Medical and Critical Care Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out any four causes of edema.	2 Marks	L2	CO1
	b)	Identify any four clinical features of allergic rhinitis.	2 Marks	L3	CO1
	c)	Define Cor pulmonale.	2 Marks	L1	CO2
	d)	Write any four drugs used in hypertension.	2 Marks	L2	CO2
	e)	Define hypoglycemia.	2 Marks	L1	CO3
	f)	Write a brief note on management of hyperthermia.	2 Marks	L2	CO3
	g)	Define non cardiac chest pain.	2 Marks	L1	CO4
	h)	List out the common causes of dyspepsia.	2 Marks	L2	CO4
	i)	What is psoriasis?	2 Marks	L1	CO5
	j)	Identify any four causes of dermatitis.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define edema, explain its pathophysiology and management.	8 Marks	L1	CO1
	b)	Describe allergic rhinitis and explain its management.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize management of patient with dyspnea.	8 Marks	L3	CO1
	b)	Define psoriasis, and explain its causes with management.	8 Marks	L1	CO1

MODULE-II

4.	a)	Elaborate hypertension and its management.	8 Marks	L3	C02
	b)	Describe hypotension and write its causes with clinical features.	8 Marks	L2	CO2
		(OR)			
5.	a)	Classify grades of hypertension and write its diagnostic evaluation.	8 Marks	L3	CO2
	b)	Outline the steps in Cor Pulmonale.	8 Marks	L3	CO2

MODULE-III

6.	a)	Define hypoglycemia. Discuss its causes and risk factors.	8 Marks	L1	CO3
	b)	Describe hypothermia and list out its causes with clinical features.	8 Marks	L1	CO3
		(OR)			
7.	a)	Elaborate on hyperglycemia and its management.	8 Marks	L3	CO3
	b)	Describe anorexia and write its physiological, pathological causes.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define non-cardiac chest pain (NCCP). Discuss its common causes and risk factors.	8 Marks	L1	CO4
	b)	Describe the clinical features and management of rectal bleeding.	8 Marks	L2	CO4
		(OR)			
9.	a)	Elaborate on ascites and its pathophysiology.	8 Marks	L3	CO4
	b)	Explain the pathophysiology of dyspepsia and its relationship with gastrointestinal disorders.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define dermatitis and describe its pathophysiology.	8 Marks	L1	CO5
	b)	Discuss the different types of psoriasis, including their clinical features and distinguishing characteristics.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the clinical features, and management of Congestive Cardiac Failure.	8 Marks	L2	CO5
	b)	Enumerate the steps in diagnosis and management of patient with breathing difficulty.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

RESPIRATORY ACTION PLANS FOR OPTIMAL CARE

[Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Why is asthma management important during pregnancy?	2 Marks	L3	CO1
	b)	Name any two oral corticosteroids?	2 Marks	L2	CO1
	c)	List two common triggers of dyspnoea in asthma patients.	2 Marks	L2	CO2
	d)	How does air trapping in the lungs contribute to dyspnoea in asthma?	2 Marks	L3	CO2
	e)	What is air way remodelling?	2 Marks	L1	CO3
	f)	How would you calculate 20 pack years of smoking history ?	2 Marks	L3	CO3
	g)	Mention any two breathing exercise in a COPD.	2 Marks	L2	CO4
	h)	What is pink puffers?	2 Marks	L1	CO4
	i)	What is an FEV1?	2 Marks	L1	CO5
	j)	How do you calculate the percentage predicted?	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the pathophysiology of asthma.	8 Marks	L2	CO1
	b)	List all short acting and long acting inhalers , and mention its indications and complications.	8 Marks	L2	CO1
		(OR)			
3.	a)	What is triggers? Discuss about the exercise induced asthma.	8 Marks	L2	CO1
	b)	**Clinical case studies: Patient:** Emily, 28 years old, 16 weeks pregnant **Presenting Complaint:** Coughing, chest tightness, and wheezing, especially at night. **History:** Emily has had asthma since adolescence and has been managing it with an inhaled corticosteroid (ICS) and a short-acting beta-agonist (SABA) for emergency use. She is currently pregnant and is concerned about the safety of continuing her asthma medications during pregnancy. Her asthma has been well-controlled until now, but her symptoms have increased recently, especially during the night. **Question:** i) What are the key considerations for Emily's asthma management during pregnancy? ii) What medications should Emily continue or adjust during her pregnancy and what precautions should she take?	8 Marks	L4	CO1

		MODULE-II			
4.	a)	Differentiate the advantages and disadvantages of using spacer devices with inhalers for asthma management in pregnant women's?	8 Marks	L3	CO2
	b)	Discuss the role of long-term asthma control medications versus short-term relief medications.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the role of allergen avoidance in asthma management list all the common environmental triggers.	8 Marks	L2	CO2
	b)	How should asthma be managed differently in individuals who have both conditions Asthma-COPD Overlap Syndrome?	8 Marks	L3	CO2
		MODULE-III			
6.	a)	Explain how COPD patients can use a COPD action plan?	8 Marks	L3	CO3
	b)	Differentiate between chronic bronchitis and emphysema, and how do these two types of COPD affect management strategies at home?	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss lung reduction surgery, and its indications and contraindications in a COPD patient.	8 Marks	L2	CO3
	b)	What is lung transplant surgery? How effective can a lung transplant surgery be in COPD patients?	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Discuss the use of invasive versus non-invasive mechanical ventilation in the management of COPD exacerbation.	8 Marks	L2	CO4
	b)	What factors should be considered when weaning a COPD patient off mechanical ventilation and why?	8 Marks	L3	CO4
		(OR)			
9.	a)	How can healthcare providers support COPD patients in managing their daily activities while using breathing-assisted devices such as CPAP or BiPAP?	8 Marks	L3	CO4
	b)	Chart down, and illustrate the inhaler technique with spacer for a COPD patient.	8 Marks	L3	CO4
		MODULE-V			
10.	a)	Explain the importance of pulmonary rehabilitation and managing the COPD complication.	8 Marks	L3	CO5
	b)	What is the role of a home oxygen therapy program for COPD patients? list down the flow lit/min.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the role of smoking cessation in managing COPD	8 Marks	L2	CO5
	b)	Discuss the implications of COPD on physical activity and exercise capacity.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

RESPIRATORY CARE IN SPORTS AND PHYSIOLOGY

[Respiratory Therapy Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How does lactate threshold affect endurance performance?	2 Marks	L3	CO1
	b)	Mention the importance of respiratory muscle function in athletic performance.	2 Marks	L1	CO1
	c)	How can breathing techniques improve exercise performance?	2 Marks	L3	CO2
	d)	What is the role of recovery breathing in post-exercise recovery?	2 Marks	L1	CO2
	e)	Write any two signs of hypoxia?	2 Marks	L2	CO3
	f)	Define acclimatization.	2 Marks	L1	CO3
	g)	Write a brief note on rhythmic breathing.	2 Marks	L2	CO4
	h)	What are the devices used for inspiratory muscle training?	2 Marks	L1	CO4
	i)	Define edurance.	2 Marks	L1	C05
	j)	Mention any two relaxation breathing techniques.	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 role of respiratory muscle function in exercise and its effect on athletic performance.	8 Marks	L2	CO1
	b)	What is lactate threshold, and how does it impact an athlete's performance in endurance sports?	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the potential benefits and limitations of using Hyperbaric Oxygen Therapy (HBOT) in endurance training and recovery.	8 Marks	L3	CO1
	b)	How do controlled breathing and relaxation exercises contribute to reducing lactate levels and promoting faster recovery?	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss the potential risks associated with prolonged exposure to high altitudes?	8 Marks	L2	CO2
	b)	Discuss how does increased oxygen availability support tissue repair and healing?	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the role of Respiratory Muscle Training (RMT) in enhancing endurance performance.	8 Marks	L3	CO2
	b)	Describe the role of Post-Exercise Respiratory Care in enhancing muscle recovery.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain how exercise influences respiratory function in individuals with asthma.	8 Marks	L3	CO3
	b)	How exercise can be integrated into asthma management plans?	8 Marks	L3	CO3
		(OR)			
7.	a)	Describe the physiological changes that occur during altitude training.	8 Marks	L2	CO3
	b)	Explain how hypoxic training devices work.	8 Marks	L3	CO3

MODULE-IV

8.	a)	How does the anaerobic threshold relate to lactate accumulation	8 Marks	L3	CO4
	b)	What physiological changes occur as an athlete approaches and surpasses the lactate threshold during exercise?	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss the implications of anaerobic metabolism transition for performance, fatigue, and recovery?	8 Marks	L2	CO4
	b)	Explain how does the respiratory system adjust to meet the increased oxygen demand during physical activity.	8 Marks	L3	CO4

MODULE-V

10.	a)	How does exposure to low oxygen levels at high altitudes lead to an increase in erythropoiesis.	8 Marks	L3	CO5
	b)	Discuss the role of medication, environmental control, and exercise modifications in preventing exercise-induced asthma symptoms.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the chronic respiratory adaptations that occur in response to long-term endurance training.	8 Marks	L2	CO5
	b)	Compare and contrast hypoxic training and traditional altitude training.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

CARDIAC CATHETERIZATION -II

[Cardio Vascular Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	List out equipment used for percutaneous interventions.	2 Marks	L1	CO1
	b)	What is a guiding catheter?	2 Marks	L2	CO1
	c)	Define coronary angioplasty.	2 Marks	L1	CO2
	d)	List out indications of coronary angioplasty.	2 Marks	L2	CO2
	e)	Classify types of VSD.	2 Marks	L1	CO3
	f)	Write a brief note on “Swiss cheese type of VSD”.	2 Marks	L3	CO3
	g)	Define balloon mitral valvotomy.	2 Marks	L1	CO4
	h)	What is “Lautenbacher’s Syndrome”?	2 Marks	L2	CO4
	i)	Draw labelled diagram of cardiac action potential.	2 Marks	L3	CO4
	j)	Define RF ablation.	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 characteristics and functions of a guiding catheter.	8 Marks	L2	CO1
	b)	Summarize “Judkins” guiding catheter.	8 Marks	L2	CO1
		(OR)			
3.	a)	Prepare a detailed note on over the wire balloon catheter.	8 Marks	L2	CO1
	b)	Describe the structure, and characteristics of a guidewire.	8 Marks	L2	CO1

MODULE-II

4.	a)	Outline indications and contraindications of PTCA.	8 Marks	L2	CO2
	b)	Explain materials used, and patient preparation of coronary angioplasty.	8 Marks	L2	CO2
		(OR)			
5.	a)	Summarize the procedure and complications of renal angioplasty.	8 Marks	L2	CO2
	b)	Outline indications and contraindications of carotid angioplasty.	8 Marks	L2	CO2

MODULE-III

6.	a)	Prepare a note on materials used, and patient preparation for ASD device closure.	8 Marks	L2	CO3
	b)	Summarize procedure of ASD device closure.	8 Marks	L3	CO3
		(OR)			
7.	a)	Prepare a note on diagnostic studies to be performed before VSD device closure.	8 Marks	L3	CO3
	b)	Apply your knowledge and prepare a note on role of echo in VSD device closure.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Describe indications, contraindications and complications of balloon mitral valvotomy.	8 Marks	L2	CO4
	b)	Prepare a note on pre medication, and materials used for balloon mitral valvotomy.	8 Marks	L3	CO4

(OR)

9.	a)	Describe aortic stenosis, and prepare a note on patient selection for balloon aortic valvuloplasty.	8 Marks	L2	CO4
	b)	Summarize procedure of balloon aortic valvuloplasty.	8 Marks	L3	CO4

MODULE-V

10.	a)	Tabulate indications, contraindications and complications of alcohol septal ablation procedure.	8 Marks	L2	CO5
	b)	Explain materials used and procedure of alcohol septal ablation.	8 Marks	L2	CO5

(OR)

11.	a)	Describe components of the pacemaker.	8 Marks	L2	CO5
	b)	Prepare a detailed note on single chamber pacemaker.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

CARDIAC EVALUATION AND THERAPIES-II

[Cardio Vascular Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention causes of hypertrophic cardiomyopathy.	2 Marks	L2	CO1
	b)	Draw labelled diagram of ECG features in dilated cardiomyopathy.	2 Marks	L3	CO1
	c)	What are the three layers of aorta?	2 Marks	L1	CO1
	d)	List out the abnormalities of aorta.	2 Marks	L2	CO1
	e)	Define "MC Connell sign", and in which condition it is seen?	2 Marks	L2	CO4
	f)	Draw labelled ECG diagram of SI, QIII, TIII pattern.	2 Marks	L3	CO4
	g)	Name the valve of SVC and IVC.	2 Marks	L1	CO3
	h)	Define infective endocarditis.	2 Marks	L2	CO3
	i)	What happens in advanced cases of hypothyroidism?	2 Marks	L2	CO5
	j)	Define diabetes milletus.	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 physical examination findings, ECG and X ray findings of dilated cardiomyopathy.	8 Marks	L3	CO1
	b)	Summarize echocardiographic assessment of dilated cardiomyopathy.	8 Marks	L2	CO2
		(OR)			
3.	a)	Prepare a detailed note on diagnostic features of cardiac amyloidosis.	8 Marks	L2	CO2
	b)	Explain types and diagnostic features of infiltrative cardiomyopathy.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define aortic aneurysm, and classify its types.	8 Marks	L2	CO1
	b)	Prepare a detailed note on etiology, clinical features and physical examination findings of thoracic aortic aneurysm.	8 Marks	L2	CO1
		(OR)			
5.	a)	Summarize echocardiographic features of aortic dissection.	8 Marks	L3	CO2
	b)	Define ruptured sinus of valsalva, and classify its types.	8 Marks	L1	CO1

MODULE-III

6.	a)	Describe causes, and pathophysiology of pulmonary artery hypertension.	8 Marks	L2	CO3
	b)	Illustrate 2D and M-mode echocardiographic features of pulmonary hypertension with neat labelled diagram.	8 Marks	L3	CO4

(OR)

7.	a)	Describe causes and pathophysiology of COPD.	8 Marks	L2	CO4
	b)	Summarize diagnostic features of COPD.	8 Marks	L3	CO4

MODULE-IV

8.	a)	Explain eustachian valve and chairi network and how to identify them on echo?	8 Marks	L3	CO4
	b)	Summarize papillary fibroelastomas, lipomas and primary malignant tumors.	8 Marks	L3	CO4

(OR)

9.	a)	Describe types of mechanical prosthetic valves.	8 Marks	L2	CO4
	b)	Explain echocardiographic assessment of prosthetic valve.	8 Marks	L3	CO4

MODULE-V

10.	a)	Summarize echocardiographic features seen in hypovolemic shock.	8 Marks	L3	CO5
	b)	Define hypovolemic shock, and outline its causes.	8 Marks	L2	CO5

(OR)

11.	a)	How does diabetes mellitus effect the heart? What changes are seen on echo in a patient with diabetes mellitus?	8 Marks	L3	CO5
	b)	What is obesity? Describe its risk factors and causes.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

ADVANCED CARDIAC CARE TECHNOLOGY

[Cardio Vascular Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

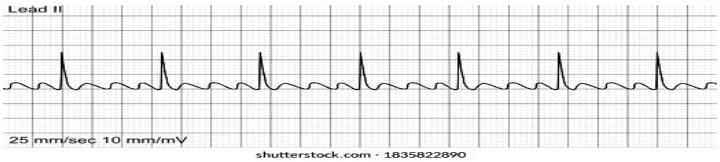
1.	a)	What is compensatory pause?	2 Marks	L2	CO1
	b)	Write a brief note on conduction ratio.	2 Marks	L3	CO1
	c)	List out indications of ambulatory ECG monitoring.	2 Marks	L2	CO2
	d)	Write a brief note on paced beat.	2 Marks	L3	CO2
	e)	Mention role of 3d echo in congenital heart diseases.	2 Marks	L2	CO3
	f)	List out factors affecting contrast echo.	2 Marks	L2	CO3
	g)	What is biphasic response?	2 Marks	L2	CO4
	h)	Write a brief note on "Pseudo dyskinesia".	2 Marks	L3	CO4
	i)	Name the valves used in "TAVI" procedure.	2 Marks	L2	CO5
	j)	Write a brief note on trans-septal puncture.	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)	Differentiate ECG characteristics of atrial and multifocal atrial tachycardia.	8 Marks	L2	CO1
	b)	 Interpret the above ECG rhythm and write your diagnosis. Explain the mechanism and ECG characteristics of above condition.	8 Marks	L3	CO1

(OR)

3.	a)	Prepare a detailed note on left bundle branch block.	8 Marks	L3	CO1
	b)	Summarize types of AV blocks with labelled diagram.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain typical ECG findings of restrictive cardiomyopathy.	8 Marks	L2	CO2
	b)	Define hyperthyroidism, and describe its ECG characteristics.	8 Marks	L2	CO2

(OR)

5.	a)	Tabulate ECG differences seen in hypocalcemia and hypercalcemia.	8 Marks	L2	CO2
	b)	Describe single and dual chamber pacemakers.	8 Marks	L2	CO2

MODULE-III

6.	a)	Outline indications and contraindications for left sided contrast echocardiography.	8 Marks	L2	CO3
	b)	Discuss concept of "Speckle" in ultrasound imaging, and how it is utilized in speckle tracking echocardiography.	8 Marks	L3	CO3
		(OR)			
7.	a)	Prepare a detailed note on myocardial contrast echo.	8 Marks	L2	CO3
	b)	Summarize transthoracic 3DE examination protocol.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Draw labelled diagram of trans gastric TEE views, and describe probe angulation, orientation, diagnostic uses.	8 Marks	L3	CO4
	b)	Prepare a note on patient recovery and probe care after transesophageal echo.	8 Marks	L2	CO4
		(OR)			
9.	a)	Summarize the recent advancements in the field of echocardiography.	8 Marks	L2	CO4
	b)	Prepare a note on hand held probes used in echocardiography.	8 Marks	L3	CO4
		MODULE-V			
10.	a)	Outline the contraindications and complications of intravascular ultrasound.	8 Marks	L2	CO5
	b)	Define mitraclip and describe its benefits over mitral valve replacement.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe post procedural care and complications of "TAVI" procedure.	8 Marks	L2	CO5
	b)	Summarize the role of echocardiography during pre and post "TAVI" procedure.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

ADVANCED ANAESTHETICS AND SURGICAL PROCEDURE TECHNIQUES

[Anaesthesia & Operation Theatre Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Discuss briefly about the clinical uses of 'CPB' (Cardiopulmonary bypass).	2 Marks	L2	CO1
	b)	Mention briefly about the grafting procedure employed in 'CABG' (Coronary Artery Bypass Grafting).	2 Marks	L1	CO1
	c)	Prepare brief note on the significance of 'Lumbar Puncture' in the management of 'raised ICP'.	2 Marks	L3	CO2
	d)	List any two anesthetic agents which are assumed to be showing neuroprotective effects.	2 Marks	L1	CO2
	e)	Prepare a brief note on any one common modes of ventilation.	2 Marks	L3	CO3
	f)	Mention the significance of 'TIVA'.	2 Marks	L1	CO3
	g)	Discuss briefly about 'Postoperative Delirium' in the elderly.	2 Marks	L2	CO4
	h)	Comment in brief about the life – style modifications in the management of obesity.	2 Marks	L3	CO4
	i)	Discuss briefly about the differences between AR (Augmented Reality) and VR (Virtual Reality).	2 Marks	L2	CO5
	j)	Comment briefly about the significance of 'Pharmacological Robots'.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the indications for ordering 'TEE' (Transesophageal Echocardiography).	8 Marks	L2	CO1
	b)	Prepare a detailed note about the technique of 'TEE' (Transesophageal Echocardiography).	8 Marks	L3	CO1

(OR)

3.	a)	Mention the anesthetic considerations during the conduct of 'CPB' (Cardiopulmonary bypass).	8 Marks	L1	CO1
	b)	Comment in detail about the 'CPB circuit'.	8 Marks	L3	CO1

MODULE-II

4.	a)	Mention the different sensors used in the monitoring of 'ICP' (Intracranial pressure).	8 Marks	L1	CO2
	b)	Comment in detail about the diagnosis of 'raised ICP'(Intracranial Pressure).	8 Marks	L3	CO2

(OR)

5.	a)	Prepare a detailed note on the various complications of 'Awake Craniotomy' (AC).	8 Marks	L3	CO2
	b)	Mention in detail about the 'Asleep-Awake-Asleep'technique of anesthesia in the management of 'Awake Craniotomy '(AC).	8 Marks	L1	CO2
		MODULE-III			
6.	a)	Discuss in detail about the different modes of 'weaning from ventilator'.	8 Marks	L2	CO3
	b)	Prepare a detailed note about the various intraoperative monitoring methods of lung mechanics and oxygenation during the mechanical breath.	8 Marks	L3	CO3
		(OR)			
7.	a)	Comment in detail about the indications for 'Mechanical Ventilation'.	8 Marks	L3	CO4
	b)	List various complications associated with 'Mechanical ventilation'.	8 Marks	L1	CO4
		MODULE-IV			
8.	a)	Prepare a detailed note on the preoperative evaluation of pediatric patients.	8 Marks	L3	CO4
	b)	Comment in detail about the anatomical and physiological differences of pediatric patients when compared with the adults in the anesthetic perspective.	8 Marks	L3	CO4
		(OR)			
9.	a)	Prepare a detailed note about the perioperative anesthetic considerations (management) of the geriatric patients.	8 Marks	L3	CO4
	b)	Mention the various systemic complications associated with 'Obesity'.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	Mention the advances in 'anesthesia machine technology'.	8 Marks	L1	CO5
	b)	Comment in detail about the significance of 'VR' (Virtual Reality) in the field of 'Anesthesiology'.	8 Marks	L3	CO5
		(OR)			
11.	a)	Enumerate the potential applications of AI (Artificial Intelligence) in the field of 'Anesthesiology'.	8 Marks	L3	CO5
	b)	Mention the ethical aspects and limitations of 'Artificial Intelligence' (AI) in Anesthesiology.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

ANESTHESIA FOR SPECIALITIES

[Anaesthesia & Operation Theatre Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention the ideal BIS range for general anesthesia.	2 Marks	L2	CO1
	b)	Draw the REM sleep pattern.	2 Marks	L3	CO1
	c)	List out any two ethical consideration.	2 Marks	L1	CO2
	d)	Mention any two legal consideration.	2 Marks	L2	CO2
	e)	Give a schematic sketch of normal ECG.	2 Marks	L1	CO3
	f)	How do you identif arrythmia? Give a suitable ECG waveform showing arrhythmia.	2 Marks	L3	CO3
	g)	Mention any four protocol of recovery room	2 Marks	L2	CO4
	h)	What are muti nodal drugs?	2 Marks	L1	CO4
	i)	Define hypoxia.	2 Marks	L1	CO5
	j)	Write a brief note on non - invasive ventilation.	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Differentiate traditional and advance anesthesia drugs, and mention any one of advance anesthesia drug, and its applications.	8 Marks	L3	CO1
	b)	Discuss REM sleep stage and its occurrence.	8 Marks	L2	CO1
		(OR)			
3.	a)	List out all the components of ERAS, and write down its importance in specialized anesthesia.	8 Marks	L2	CO1
	b)	Write down the applications of BIS and advancement of BIS.	8 Marks	L2	CO1

MODULE-II

4.	a)	How does obtaining informed consent help ensure patient autonomy, safety, and understanding of potential risks?	8 Marks	L3	CO2
	b)	Describe the legal and ethical considerations that anesthesiologists must be aware of when administering anesthesia.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the challenges anesthesiologists may face when obtaining informed consent, particularly in emergency situations or with vulnerable patient populations.	8 Marks	L2	CO2
	b)	Explain the different techniques anesthesiologists can use to reduce anxiety in patients preoperatively.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the various techniques used to monitor oxygenation during anesthesia.	8 Marks	L2	CO3
	b)	How are pulse oximetry and arterial blood gas analysis used to assess oxygen levels.	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss the importance of blood pressure monitoring during anesthesia. What are the methods used for continuous blood pressure monitoring	8 Marks	L2	CO3
	b)	Mention the risks associated with hypothermia or hyperthermia during surgical procedures.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain the post-surgical pain management using multimodal analgesia.	8 Marks	L3	CO4
	b)	How does regional anesthesia contribute to pain management and recovery, and what are the associated risks and benefits?	8 Marks	L3	CO4
		(OR)			
9.	a)	Discuss the management of chronic pain and the use of opioids in the postoperative period.	8 Marks	L2	CO4
	b)	What are the types of airway complications that may occur after anesthesia, and write the precaution methods to be taken.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	How are arrhythmia detected, and what pharmacologic and non-pharmacologic interventions are used to correct them during surgery?	8 Marks	L2	CO5
	b)	Describe the types of allergic reactions that can occur during anesthesia	8 Marks	L2	CO5
		(OR)			
11.	a)	Mention the causes and symptoms for allergic reaction during surgery	8 Marks	L2	CO5
	b)	What are the treatment options to reverse or prevent hypoxic events during surgery?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

REGIONAL, DAYCARE ANAESTHESIA AND OUTSIDE THE OPERATING ROOM

[Anaesthesia & Operation Theatre Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the importance of informed consent ?	2 Marks	L1	CO1
	b)	List all the TOF.	2 Marks	L1	CO1
	c)	Write down the accuracy and safety of peripheral nerve blocks in daycare settings.	2 Marks	L2	CO2
	d)	Write down the importance of patient communication in day care setup.	2 Marks	L2	CO2
	e)	What is continuous monitoring of vitals?	2 Marks	L1	CO3
	f)	Mention any two combination anesthesia drug.	2 Marks	L2	CO3
	g)	List down any two name of sedatives.	2 Marks	L2	CO4
	h)	What is a nerve block?	2 Marks	L1	CO4
	i)	Write a brief not on opiods.	2 Marks	L2	CO5
	j)	What is the typical dosage of propofol?	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)	Clinical case study: Age: 75 years/ Female, with ASA Classification: II (Mild systemic disease) showing Medical History: Mild osteoarthritis, hypertension, on beta-blockers,Surgical procedure: Partial knee replacement (planned as a daycare procedure) . Procedure: Given the patient's age and comorbidities, femoral nerve block was selected to provide analgesia for the knee joint. The femoral nerve block was performed with a single injection of local anesthetic (bupivacaine).The surgery was completed in 90 minutes with the patient under regional anesthesia. Postoperative pain was effectively controlled using the femoral nerve block.The patient was monitored in the recovery room for 4 hours due to age-related concerns (e.g., blood pressure changes). She experienced slight hypotension, which was corrected with IV fluids.The patient was discharged the same day, with instructions for home care, including oral pain medications and follow-up for physiotherapy. i)Why was femoral nerve block selected for this elderly patient undergoing knee replacement surgery, and what are its benefits in this case? ii)What post-operative monitoring and follow-up should be done for this elderly patient after femoral nerve block anesthesia?	8 Marks	L4	CO1

	b)	Discuss the pharmacokinetic differences between single-dose and continuous anesthesia.	8 Marks	L2	CO1
		(OR)			
3.	a)	How is informed consent obtained from patients in daycare settings for anesthesia, and why is this process critical?	8 Marks	L3	CO1
	b)	Describe the factors that should be considered when assessing a patient's airway for anesthesia in daycare procedures.	8 Marks	L2	CO1
		MODULE-II			
4.	a)	Table down the safety protocol in daycare anesthesia.	8 Marks	L3	CO2
	b)	What are the advantages of using local anesthesia and field blocks over general anesthesia in outpatient and diagnostic settings?	8 Marks	L3	CO2
		(OR)			
5.	a)	Table down the advantages and disadvantages of general and regional anesthesia.	8 Marks	L4	CO2
	b)	Clinical case study: A 50 years/ Male, ASA Classification: III (Severe systemic disease) Medical History: Type 2 diabetes mellitus, well-controlled with oral hypoglycemics. Surgical Procedure: Rotator cuff repair (shoulder surgery, planned as a daycare procedure) Procedure:Due to the nature of the surgery (shoulder), brachial plexus block was chosen as the preferred regional technique. The patient was assessed for any contraindications related to his diabetes, and no significant issues were found (e.g., no neuropathy or infection risk).A single injection of local anesthetic (lidocaine) was administered around the brachial plexus under ultrasound guidance. i)What makes brachial plexus block an appropriate choice for this ASA III diabetic patient undergoing shoulder surgery? ii)What are the potential risks of a peripheral nerve block in an elderly diabetic patient, and how can these risks be minimized?	8 Marks	L4	CO2
		MODULE-III			
6.	a)	Case Study: A 55-year-old male patient is undergoing an elective hernia repair surgery under general anesthesia. The surgery is expected to last 90 minutes, and the patient is at high risk for postoperative nausea and vomiting (PONV) due to his age, use of opioid analgesics, and history of motion sickness. The surgeon requests a strategy to reduce PONV in the recovery phase. Questions: i)What risk factors for PONV are present in this case, and how do they influence the anesthetic management plan? ii)What antiemetic prophylaxis would you consider for this patient preoperatively and intraoperatively?	8 Marks	L4	CO3
	b)	Differentiate continuous and single epidural anesthesia , and mention the name of the anesthesia drug..	8 Marks	L3	CO3
		(OR)			
7.	a)	A 45-year-old male patient is scheduled for a laparoscopic cholecystectomy in an outpatient setting. He has no significant medical history, but he reports mild anxiety about the procedure. The surgical team plans to use conscious sedation for the procedure. The patient is otherwise healthy, with stable vital signs. Questions: i)What sedative agents would you consider for conscious sedation in this case, and why? ii)Describe the steps for monitoring this patient during the sedation process. What vital signs and parameters would you focus on?	8 Marks	L4	CO3
	b)	List out the normal range of vitals for neonates.calculate the tidal volume for a premature baby.	8 Marks	L3	CO3

MODULE-IV

8.	a)	How do you modify the sedation plan for elderly patients, especially those with compromised respiratory function	8 Marks	L3	CO4
	b)	If a patient undergoing regional anesthesia develops a post-procedural headache, what is the most likely cause?	8 Marks	L2	CO4

(OR)

9.	a)	Case study: 58 years/ female Weight: 70 kg Procedure: Breast biopsy under conscious sedation Medical History: History of anxiety, mild asthma, no drug allergies Anesthesia Plan: The procedure is scheduled in an outpatient clinic with midazolam for sedation and local anesthesia for the biopsy. The patient is informed that they will remain awake but sedated during the procedure. Monitoring: Standard monitoring, including pulse oximetry and blood pressure. Capnography is also used to ensure adequate respiratory monitoring during sedation. Complications: Approximately 10 minutes into the procedure, the patient begins to appear more drowsy and slightly confused. Oxygen saturation drops to 88%, and the patient's respiratory rate decreases. Management: The procedure is halted, and the patient is given supplemental oxygen. Flumazenil (0.2 mg IV) is administered to reverse the effects of midazolam. The patient is closely monitored for recovery, and sedation depth is carefully titrated for the remainder of the procedure. Questions: i)What is the protocol for reversing the anesthesia drug. ii)Explain why the patient got the complication?what precaution would be more appropriate avoiding the complications during procedure?	8 Marks	L4	CO4
	b)	How would you manage a sudden respiratory arrest during a pediatric procedure.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the importance of pulse oximetry in monitoring during outpatient anesthesia.	8 Marks	L3	CO5
	b)	Describe the use of capnography in monitoring patients undergoing outpatient procedures. How does it enhance patient safety?	8 Marks	L2	CO5

(OR)

11.	a)	Explain the pharmacology of commonly used sedatives and analgesics in conscious sedation.	8 Marks	L3	CO5
	b)	Discuss the indications for conscious sedation in daycare and outpatient settings.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

PRINCIPLES AND PRACTICE OF PERITONEAL DIALYSIS AND TRANSPLANTATION

[Dialysis Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Enlist indications of acute peritoneal dialysis.	2 Marks	L1	CO1
	b)	Mention few advantages of "CAPD" when compared to hd.	2 Marks	L2	CO1
	c)	Mention the common sites for capd catheter infection.	2 Marks	L2	CO2
	d)	Write the electrolyte concentration of dextrose containing capd solutions.	2 Marks	L3	CO2
	e)	Mention the types of "PET".	2 Marks	L3	CO3
	f)	List the correction factor.	2 Marks	L2	CO3
	g)	Define exit site and tunnel infection.	2 Marks	L2	CO4
	h)	Add a note on encapsulating peritoneal sclerosis.	2 Marks	L1	CO4
	i)	If a voluntary kidney donor is detected to have diabetes while being investigated for fitness for kidney donation? What is the risk involved?	2 Marks	L1	CO5
	j)	Name any two drugs used in the treatment of kidney transplant recipients.	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe the fluid exchange protocol in acute peritoneal dialysis.	8 Marks	L2	CO1
	b)	Give on account on advantages and disadvantages of "PD" in acute kidney injury.	8 Marks	L2	CO1
		(OR)			
3.	a)	Write the advantages and disadvantages of "PD" in chronic kidney disease.	8 Marks	L3	CO1
	b)	Illustrate the complications of peritoneal dialysis.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is the pH of dialysis solution you use? Why is it kept so?	8 Marks	L2	CO2
	b)	Explain on the complications of peritoneal dialysis fluids.	8 Marks	L1	CO2
		(OR)			
5.	a)	Describe on the currently available peritoneal Dialysis solutions.	8 Marks	L2	CO2
	b)	Mention the patient preparation for "PD" catheter insertion and describe the methods for insertion of chronic "PD" catheter.	8 Marks	L1	CO2

MODULE-III

6.	a)	Prepare a note about type III ultrafiltration failure.	8 Marks	L2	CO3
	b)	What are the clinical benefits of "PET"? Describe the "PET" procedure, types of "PET" and the common errors occurring during "PET".	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain the transport characteristic of peritoneum.	8 Marks	L3	CO3
	b)	Explain the different forms of peritoneal dialysis.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the causes, treatment and prevention of exit- site and tunnel infection.	8 Marks	L2	CO4
	b)	Describe the complications encountered in peritoneal dialysis with their causes, signs, symptoms and management.	8 Marks	L2	CO4
		(OR)			
9.	a)	Describe on the pathogenesis, diagnosis, treatment and prevention of encapsulating peritoneal sclerosis.	8 Marks	L3	CO4
	b)	What are the causes of pain during "CAPD" inflow? How will you manage it?	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the post-transplant management and follow up.	8 Marks	L3	CO5
	b)	Explain the complications of a Post kidney transplanted patient.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the complications of post renal transplantation related to cardiovascular system.	8 Marks	L2	CO5
	b)	Illustrate the commonly causing infection in transplant recipients.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

APPLIED DIALYSIS TECHNOLOGY -III

[Dialysis Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Write the differences between diabetes mellitus and diabetes insipidus.	2 Marks	L3	CO1
	b)	Define hemolysis.	2 Marks	L1	CO1
	c)	Define dialysis related aluminum toxicity.	2 Marks	L1	CO2
	d)	List out the causes of sleep disorder in dialysis patients.	2 Marks	L3	CO2
	e)	Enlist the indication of genitourinary tract infections in CRF patients	2 Marks	L2	CO3
	f)	Mention the causes of hypokalemia.	2 Marks	L1	CO3
	g)	Add a short note on access care.	2 Marks	L2	CO4
	h)	Write a short note on acute dialysis catheters.	2 Marks	L1	CO4
	i)	What are the indications for antibiotics in dialysis patients?	2 Marks	L1	CO5
	j)	Name the newer types of anticoagulation.	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 indications for antibiotics in dialysis patients?	8 Marks	L2	CO1
	b)	Explain the indications of dialysis.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe detail about the clinical features ,pathogenesis and management of Diabetic mellitus	8 Marks	L2	CO1
	b)	Explain the causes, clinical features, pathogenesis and management of CKD.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the Etiology of aluminum toxicity in dialysis patients.	8 Marks	L2	CO2
	b)	Explain the types and management of endocrine disturbances.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain about iron deficiency anemia in dialysis patients.	8 Marks	L2	CO2
	b)	Enumerate the list causes of sleep disorder in hemodialysis and example the each causes.	8 Marks	L1	CO2

MODULE-III

6.	a)	Illustrate the special problems pertaining to heart & circulatory system in CRF patients.	8 Marks	L3	CO3
	b)	Explain in detail about planning of diet Concepts of balanced diet in hypotension.	8 Marks	L2	CO3
		(OR)			

7.	a)	Write in detail about special problems pertaining to genitourinary tract and male reproductive organs in CRF patients	8 Marks	L3	CO3
	b)	Discuss in detail about renal vascular disorders.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss about cuffed, tunneled dialysis catheters used in hemodialysis.	8 Marks	L2	CO4
	b)	Describe the advantages and disadvantages of acute dialysis catheters dialysis in detail.	8 Marks	L3	CO4

(OR)

9.	a)	Write in detail about the advantages and disadvantages of cuffed, tunneled dialysis catheters.	8 Marks	L2	CO4
	b)	Describe detail about causes, clinical features, pathogenesis and management of stenosis in fistula hand.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain in detail about Phosphorus and explain detail about its Disorders of Phosphorus.	8 Marks	L2	CO5
	b)	Explain in detail about magnesium and explain detail about its Disorders of magnesium .	8 Marks	L3	CO5

(OR)

11.	a)	Illustrate the drugs therapy in hepatitis C virus patient on dialysis.	8 Marks	L2	CO5
	b)	Discuss about dialyzer used in infants in hemodialysis.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

PHYSIOTHERAPY IN ORTHOPEDICS AND SPORTS

[Bachelor of Physiotherapy]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the potential complications can arise from inadequate rehabilitation of capitulum fracture?	2 Marks	L1	CO1
	b)	Mention two techniques used to reduce pain in rehabilitation of sideswipe injuries of elbow.	2 Marks	L2	CO1
	c)	Why is it important to monitor blood circulation during the rehabilitation of a Jones fracture?	2 Marks	L1	CO2
	d)	Prepare a note on initial management for a phalanges fracture.	2 Marks	L2	CO2
	e)	How to perform lachman test?	2 Marks	L2	CO3
	f)	List any two exercises for core strengthening.	2 Marks	L1	CO3
	g)	Write a brief note on barlow test.	2 Marks	L3	CO4
	h)	Prepare a note on Ortolani test.	2 Marks	L2	CO4
	i)	Recall the procedure of "FABER" test.	2 Marks	L2	CO5
	j)	Name any two ergonomic modifications helps to prevent cervical and lumbar spondylosis.	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Analyze the recent advances in management of anterior shoulder dislocation.	8 Marks	L4	CO1
	b)	Design post surgical rehabilitation protocol from acute phase to full functional recovery in bankart lesion patients.	8 Marks	L3	CO1
		(OR)			
3.	a)	Design the rehabilitation protocol for bennett fracture in athletes.	8 Marks	L4	CO1
	b)	Explain the general physiotherapy management for fractures.	8 Marks	L2	CO1

MODULE-II

4.	a)	Differentiate between open and closed kinematic chain exercises.	8 Marks	L2	CO2
	b)	Discuss the importance of early mobilization, strengthening, and range-of-motion exercises.	8 Marks	L3	CO2
		(OR)			
5.	a)	How does physiotherapy management differ for a supracondylar femur fracture in elderly versus younger patients?	8 Marks	L1	CO2
	b)	Evaluate the role of physiotherapy in preventing avascular necrosis and post-traumatic arthritis following a hip dislocation.	8 Marks	L4	CO2

MODULE-III

6.	a)	Evaluate the case study a 35-year-old male construction worker presents with right knee pain, swelling after twisting his knee at work.	8 Marks	L2	CO3
	b)	Discuss any two special tests for the following injuries: i) Meniscal injury ii) Anterior cruciate ligament injuries iii) Posterior cruciate ligament injuries.	8 Marks	L4	CO3
		(OR)			
7.	a)	How does eccentric strengthening aid in the rehabilitation of Achilles tendinopathy?	8 Marks	L1	CO3
	b)	Outline the assessment for jumper knee.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Analyze the physiotherapy assessment process for a child with CTEV.	8 Marks	L4	CO4
	b)	Differentiate between flexible and rigid pes planus and their physiotherapy assessment approaches.	8 Marks	L3	CO4
		(OR)			
9.	a)	How footwear modifications can assist in managing pes planus?	8 Marks	L2	CO4
	b)	Outline the recent advance rehabilitation protocol for MCL injury of knee.	8 Marks	L3	CO4

MODULE-V

10.	a)	Outline the assessment for polio myelitis.	8 Marks	L2	CO5
	b)	Design rehabilitation protocol for cerebral palsy.	8 Marks	L4	CO5
		(OR)			
11.	a)	Enumerate the following tests : i) Jebsen-Taylor Hand Function Test ii) Timed Up and Go Test (TUG)	8 Marks	L2	CO5
	b)	Outline the assessment and management of thoracic outlet syndrome.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

MOLECULAR BIOLOGY IN LABORATORY MEDICINE

[Medical Lab Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Why DNA is considered a stable molecule?	2 Marks	L1	CO1
	b)	Differentiate between dsDNA and ssDNA	2 Marks	L1	CO1
	c)	Define Nucleic acid hybridization.	2 Marks	L1	CO2
	d)	Explain electrophoretic separation.	2 Marks	L1	CO2
	e)	What is HPV, and how is PCR used in its detection?	2 Marks	L2	CO3
	f)	What is the role of PCR in diagnosing coronary artery disease?	2 Marks	L2	CO3
	g)	Define gene cloning.	2 Marks	L1	CO4
	h)	Write the name of restriction enzyme and target sequence for E. Coli.	2 Marks	L1	CO4
	i)	List the various amplification methods.	2 Marks	L2	CO5
	j)	Write short note on hybridization arrays.	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 chromosome structure with suitable diagram.	8 Marks	L3	CO1
	b)	Illustrate the replication of DNA.	8 Marks	L3	CO1
		(OR)			
3.	a)	What are stages are involved in protein synthesis, and explain of them?	8 Marks	L3	CO1
	b)	Define Operon concept and explain lac operon procedure.	8 Marks	L4	CO1

MODULE-II

4.	a)	Summarize the DNA probe applications in the diagnostic field.	8 Marks	L2	CO2
	b)	Outline the Southern and Northern blot techniques.	8 Marks	L2	CO2
		(OR)			
5.	a)	Illustrate the blot hybridization techniques.	8 Marks	L3	CO2
	b)	Define hybridization assay, and explain complementary base pairing conditions.	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the applications of PCR in detecting genetic mutations associated with cancer, and how this impacts patient care.	8 Marks	L4	CO3
	b)	Assess the impact of PCR technology on the field of molecular biology and medicine.	8 Marks	L3	CO3
		(OR)			
7.	a)	How has the invention of Taq polymerase revolutionized the PCR process?	8 Marks	L3	CO3
	b)	Explain how PCR can be used to monitor the effectiveness of cancer treatment by detecting changes in gene expression.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Illustrate the procedure of cloning into a plasmid with suitable diagram.	8 Marks	L3	CO4
	b)	Explain the applications of DNA/RNA probes in diagnosis.	8 Marks	L3	CO4
		(OR)			
9.	a)	Illustrate gene cloning methodology	8 Marks	L3	CO4
	b)	Explain the fluorescent in situ hybridization techniques.	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain the extraction and amplification of RNA.	8 Marks	L3	CO5
	b)	Determine the principle and applications of RT-PCR.	8 Marks	L3	CO5
		(OR)			
11.	a)	Determine the extraction and amplification of RNA.	8 Marks	L3	CO5
	b)	Write the application of single amplification and branched DNA (bDNA)	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

CYTOGENETICS PROCEDURES AND INTERPRETATIONS

[Medical Lab Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the use of freezer in cell culture techniques?	2 Marks	L1	CO1
	b)	Define chromosome.	2 Marks	L1	CO1
	c)	Expand PBC, and write brief note on its important.	2 Marks	L1	CO2
	d)	Which of the blood cell used for cytogenetic analysis?	2 Marks	L1	CO2
	e)	List out the main categories of genetic disorders.	2 Marks	L2	CO3
	f)	Define meiosis.	2 Marks	L2	CO3
	g)	Make a table of chromosome abnormalities in spontaneous fetal losses and in liveborn infants.	2 Marks	L1	CO4
	h)	Define prenatal cytogenetics.	2 Marks	L1	CO4
	i)	What is the use DNA test in the criminalistics context?	2 Marks	L2	CO5
	j)	Which type of cells contain DNA?	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 instruments used for cell culture and add note on its applications.	8 Marks	L3	CO1
	b)	Describe the normal structure of chromosome, and add suitable diagram.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the important aspects of cytogenetic studies.	8 Marks	L3	CO1
	b)	Illustrate the methods of cell culture.	8 Marks	L4	CO1

MODULE-II

4.	a)	Explain clinical significance, and specimen collection for cytogenetics analysis.	8 Marks	L2	CO2
	b)	Summarize the culture types and explain standard procedure.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe harvesting procedure in cytogenetics analysis.	8 Marks	L3	CO2
	b)	Illustrate the chromosome staining procedure.	8 Marks	L2	CO2

MODULE-III

6.	a)	List out types of autosomal disorders, and explain autosomal dominant disorders.	8 Marks	L4	CO3
	b)	Illustrate causes of sex-linked disorders.	8 Marks	L3	CO3
		(OR)			

7.	a)	Summarize clinical important of inborn errors of metabolism.	8 Marks	L3	CO3
	b)	Explain causes and clinical symptoms of albinism.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the autosomal aneuploidies.	8 Marks	L3	CO4
	b)	Illustrate the sex chromosome aneuploidies.	8 Marks	L3	CO4

(OR)

9.	a)	Summarize the following chromosome anomalies i) Wolf-Hirschhorn syndrome ii) Chi du Chat syndrome.	8 Marks	L3	CO4
	b)	How would you collect amniotic fluid, and add note on patient preparation?	8 Marks	L3	CO4

MODULE-V

10.	a)	Explain specimen collection procedure for forensic analysis.	8 Marks	L3	CO5
	b)	Illustrate the DNA extraction by chloroform method.	8 Marks	L3	CO5

(OR)

11.	a)	Summarize the analysis of DNA in the forensic laboratory.	8 Marks	L3	CO5
	b)	Explain the uses of PCR techniques in the forensic laboratory.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

MEDICAL PARASITOLOGY

[Medical Lab Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the symptoms of giardiasis?	2 Marks	L2	CO1
	b)	Write key features of Entamoeba histolytica?	2 Marks	L1	CO1
	c)	What is the definitive host of *Trypanosoma brucei*?	2 Marks	L3	CO2
	d)	Draw the structure of plasmodium of falciparum.	2 Marks	L1	CO2
	e)	Name the life cycle stage of *Echinococcus granulosus*.	2 Marks	L1	CO3
	f)	Draw the structure of hydatid cyst?	2 Marks	L1	CO3
	g)	What is the definitive host of *Schistosoma mansoni*?	2 Marks	L2	CO4
	h)	Name two intermediate hosts involved *Fasciola hepatica*.	2 Marks	L3	CO4
	i)	List the clinical manifestations of *Wuchereria bancrofti.*	2 Marks	L2	CO5
	j)	What is the diagnostic method used to identify *Enterobius vermicularis*.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	What is the main difference between protozoa and metazoan parasites?	8 Marks	L2	CO1
	b)	What is the main difference between definitive host and intermediate host?	8 Marks	L2	CO1

(OR)

3.	a)	Analyze the role of sandflies in the epidemiology of Leishmania.	8 Marks	L3	CO1
	b)	How will you distinguish between symptomatic and asymptomatic carriers of *Trichomonas vaginalis*?	8 Marks	L2	CO1

MODULE-II

4.	a)	Define the genus Trypanosoma and explain its classification in parasitology.	8 Marks	L1	CO2
	b)	Describe the life cycle of the malaria parasite and its diagnostic methods.	8 Marks	L3	CO2

(OR)

5.	a)	List and describe the common clinical manifestations of Toxoplasmosis caused by *Toxoplasma gondii*.	8 Marks	L3	CO2
	b)	What are the characteristics of *Microsporidium* parasites, and how do they affect humans?	8 Marks	L1	CO2

MODULE-III

6.	a)	What are the risks associated with diagnosis of *Diphyllobothrium latum* infections?	8 Marks	L2	CO3
	b)	Describe the diagnosis of Hymenolepis nana in a stool sample?	8 Marks	L3	CO3
		(OR)			
7.	a)	Describe the diagnostic approach for Echinococcus cysts to early detection.	8 Marks	L3	CO3
	b)	Explain the differences in the microscopic appearance of Hymenolepis nana eggs *vs* Taenia eggs.	8 Marks	L1	CO3

MODULE-IV

8.	a)	What are the diagnostic tests are used to identify Fasciola infections in humans?	8 Marks	L3	CO4
	b)	What is the role of snails in the transmission of trematodes like *Clonorchis sinensis*?	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the pathophysiology of schistosomiasis caused by *Schistosoma haematobium*?	8 Marks	L3	CO4
	b)	Describe how *Fasciola hepatica* larvae invade the human liver and what causes the clinical symptoms of fascioliasis.	8 Marks	L1	CO4

MODULE-V

10.	a)	Discuss the mechanisms by which *Strongyloides stercoralis* evades the host immune response.	8 Marks	L1	CO5
	b)	Explain the pathophysiology of lymphatic filariasis caused by *Wuchereria bancrofti*.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss the methods used to diagnose *Strongyloides stercoralis* in clinical settings.	8 Marks	L3	CO5
	b)	Explain the clinical manifestations and diagnosis of ascariasis?	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T VI Semester (MBU-22) Regular Examinations, April – 2025

CLINICAL ORTHOPEDICS AND TRAUMATOLOGY

[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 mal union and non union?	2 Marks	L1	CO1
	b)	Prepare a note on avascular necrosis.	2 Marks	L2	CO1
	c)	What is a stress fracture? Give an example in the lower limb.	2 Marks	L1	CO2
	d)	Prepare a note on Hangman's fracture.	2 Marks	L2	CO2
	e)	What is Quervain's Tenosynovitis?	2 Marks	L1	CO3
	f)	Name the three muscles that form the hamstrings and nerve supply to it.	2 Marks	L1	CO3
	g)	Define Hallux Valgus.	2 Marks	L2	CO4
	h)	Define Osteogenesis Imperfecta.	2 Marks	L1	CO4
	i)	What are the two types of vaccines used for Poliomyelitis prevention?	2 Marks	L1	CO5
	j)	Which type of tumor is an Osteoma—benign or malignant?	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)	Explore the causes, mechanism of injury, clinical features and medical management of supracondylar fracture of humerus.	8 Marks	L3	CO1
	b)	Analyze the complications and surgical management of fracture at shaft of humerus.	8 Marks	L4	CO1

(OR)

3.	a)	Explore the types of dislocations in shoulder and mention about its medical management.	8 Marks	L2	CO1
	b)	What is myositis ossificans? Discuss about its clinical features and management.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain about signs and symptoms, etiology, risk factors and surgical management of Patellar fractures.	8 Marks	L2	CO2
	b)	Outline the mechanism of injury, clinical features and management of rib fracture.	8 Marks	L1	CO2

(OR)

5.	a)	Explore the causes, mechanism of injury, clinical features and medical management of supracondylar fracture of femur.	8 Marks	L3	CO2
	b)	Analyze the prevention and management of femur fracture in elderly women.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the anatomy and biomechanical function of the cruciate ligaments in the knee. How do the anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL) contribute to knee stability?	8 Marks	L2	CO3
	b)	Discuss the common mechanisms of injury for cruciate ligament tears. How do sports-related activities, trauma, and degenerative changes contribute to ACL and PCL injuries?	8 Marks	L2	CO3

(OR)

7.	a)	Describe the anatomy and function of the medial collateral ligament (MCL) and lateral collateral ligament (LCL). How do these ligaments contribute to knee stability and movement?	8 Marks	L2	CO3
	b)	Discuss the common causes and mechanisms of injury for MCL and LCL injuries. How do valgus and varus forces contribute to these ligament sprains or tears?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Define kyphosis and describe its types, causes, clinical features, and diagnostic methods.	8 Marks	L3	CO4
	b)	Discuss the causes, risk factors, and symptoms of excessive lumbar lordosis.	8 Marks	L2	CO4

(OR)

9.	a)	Compare and contrast Genu Varum, Genu Valgum, and Genu Recurvatum in terms of causes, clinical presentation, and management.	8 Marks	L3	CO4
	b)	Define Arthroplasty and its classifcation.	8 Marks	L1	CO4

MODULE-V

10.	a)	Outline the pathophysiology and risk factors associated with Slipped Capital Femoral Epiphysis.	8 Marks	L1	CO5
	b)	Elaborate the causes, risk factors, and pathophysiology of Rickets.	8 Marks	L3	CO5

(OR)

11.	a)	Discuss the causes, transmission, and pathophysiology of Poliomyelitis.	8 Marks	L2	CO5
	b)	explain the causes, risk factors, and pathophysiology of Osteomyelitis.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T VI Semester (MBU-22) Regular Examinations, April – 2025

CLINICAL REASONING AND EVIDANCE BASED 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 legal rules in physiotherapy.	2 Marks	L2	CO1
	b)	Name two generic outcome measurement scales.	2 Marks	L2	CO1
	c)	What is the importance of patient values in EBP?	2 Marks	L2	CO2
	d)	Define systematic review in EBP.	2 Marks	L2	CO2
	e)	Write any four important areas of physiotherapy practice in India.	2 Marks	L2	CO3
	f)	Name any two principles of concept-based physiotherapy.	2 Marks	L2	CO3
	g)	What is the primary purpose of research dissemination?	2 Marks	L3	CO4
	h)	Define knowledge transfer.	2 Marks	L1	CO4
	i)	What is meant by patient-centered care in physiotherapy?	2 Marks	L2	CO5
	j)	Add a note on difference between dissemination and implementation.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain healthcare professionals overcome resistance to EBP among their peers.	8 Marks	L2	CO1
	b)	Analyze strategies can be used to integrate patient preferences into evidence-based decisions.	8 Marks	L3	CO1
		(OR)			
3.	a)	Summarize EBP training important for healthcare professionals.	8 Marks	L2	CO1
	b)	Describe the tools or resources can be used to enhance EBP skills.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the time constraints or limited access to research be addressed in a physiotherapy setting.	8 Marks	L3	CO2
	b)	Describe the physiotherapists navigate situations. Where high-quality evidence is lacking for specific conditions.	8 Marks	L3	CO2
		(OR)			
5.	a)	Write about strategies can be used to keep up-to-date with the latest research in physiotherapy.	8 Marks	L2	CO2
	b)	Demonstrate the important for physiotherapy students to learn evidence-based practice during their training.	8 Marks	L3	CO2

MODULE-III

6.	a)	Analyze the professional networks and organizations support the sharing of evidence-based practices.	8 Marks	L2	CO3
	b)	Explain the role do conferences, journals, and online platforms play in spreading evidence-based knowledge.	8 Marks	L3	CO3

(OR)

7.	a)	Elaborate the physiotherapy education programs promote the development of evidence-based knowledge among students.	8 Marks	L3	CO3
	b)	Discuss the role of mentorship and continuing education in fostering evidence-based practice.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the role does professional development and lifelong learning play in acquiring evidence-based knowledge.	8 Marks	L3	CO4
	b)	Demonstrate the individual physiotherapists integrate evidence-based knowledge into their daily clinical practice.	8 Marks	L3	CO4

(OR)

9.	a)	Classify the strategies can professionals use to balance patient preferences and clinical evidence when making treatment decisions.	8 Marks	L2	CO4
	b)	How can an individual physiotherapist contribute to improving patient outcomes through evidence-based interventions.	8 Marks	L2	CO4

MODULE-V

10.	a)	Write down the physiotherapists collaborate with other healthcare professionals to ensure evidence-based, multidisciplinary care.	8 Marks	L3	CO5
	b)	Demonstrate the challenges might arise when working with other disciplines to implement evidence-based interventions, and how can they be addressed.	8 Marks	L2	CO5

(OR)

11.	a)	Classify the physiotherapists contribute evidence-based knowledge to interdisciplinary teams to improve patient outcomes.	8 Marks	L2	CO5
	b)	Difference between national and international clinical guidelines shape evidence-based physiotherapy practice.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T. VI Semester (MBU-22) Regular Examinations, April – 2025

PHYSITHERAPY ADMINISTRATION AND TEACHING SKILLS

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 of professional conduct in physiotherapy.	2 Marks	L1	CO1
	b)	What are ethical rules in physiotherapy practice?	2 Marks	L1	CO1
	c)	Write a brief note on the role of diet in general fitness.	2 Marks	L2	CO2
	d)	List four examples of group fitness exercises.	2 Marks	L1	CO2
	e)	Define capital budgeting.	2 Marks	L1	CO3
	f)	Name two classical management theories.	2 Marks	L1	CO3
	g)	List the key elements of department organization.	2 Marks	L1	CO4
	h)	Write the basic material requirements for a department.	2 Marks	L2	CO4
	i)	Enlist the three main pillars of quality control.	2 Marks	L2	CO4
	j)	Explain confidentiality in physiotherapy.	2 Marks	L2	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the major milestones in the development of physiotherapy globally.	8Marks	L2	CO1
	b)	Elaborate on the ethical principles governing physiotherapy practice.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe the evolution of physiotherapy as a profession.	8Marks	L2	CO1
	b)	Demonstrate the importance of ethical guidelines in ensuring patient safety.	8Marks	L3	CO1

MODULE-II

4.	a)	Describe the basic principles and importance of general fitness.	8Marks	L1	CO2
	b)	Discuss the role of stretching and mobility exercises in enhancing general fitness.	8 Marks	L3	CO2
		(OR)			
5.	a)	Discuss the importance of diet and nutrition in general digestion and overall health.	8Marks	L2	CO2
	b)	Categorize how food requirements differ for athletes compared to non-athletes.	8 Marks	L3	CO2

MODULE-III

6.	a)	Write in detail about theories of management.	8 Marks	L1	CO3
	b)	Explain about principles of health sector management.	8 Marks	L2	CO3
		(OR)			
7.	a)	Illustrate the significance of unity of command and unity of	8 Marks	L3	CO3

		direction in management.			
	b)	Compare and contrast different theories of management.	8 Marks	L4	CO3
		MODULE-IV			
8.	a)	Explain the key steps in departmental planning with examples.	8 Marks	L2	CO4
	b)	List the essential materials required for the effective functioning of a department.	8 Marks	L1	CO4
		(OR)			
9.	a)	What are the key basic requirements for department functioning?	8 Marks	L1	CO4
	b)	How does effective communication help in department management.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Summarize the role of physical activity in managing and preventing obesity.	8 Marks	L2	CO2
	b)	Explain the importance of warm-up exercises before engaging in high-intensity training.	8 Marks	L3	CO2
		(OR)			
11.	a)	Explain Physiotherapy Policies and Procedures.	8 Marks	L2	CO3
	b)	Define a budget and discuss different types of budgets.	8 Marks	L2	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

ADVANCED IMAGING TECHNOLOGY IN DIAGNOSTIC RADIOLOGY

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define augmented reality.	2 Marks	L1	CO1
	b)	Summarize the applications of augmented reality in medical imaging.	2 Marks	L2	CO1
	c)	What is 'POCUS'?	2 Marks	L2	CO2
	d)	Write any two applications of 4D ultrasound.	2 Marks	L1	CO2
	e)	What is spectral imaging in the context of 'CT' scanning?	2 Marks	L1	CO3
	f)	How does spectral imaging improve the diagnostic capabilities of a 'CT' scan?	2 Marks	L2	CO3
	g)	What is the advantage of using diffusion-weighted imaging?	2 Marks	L1	CO4
	h)	Name the type of tissue visualized using 'DTI' in brain imaging.	2 Marks	L1	CO4
	i)	What are the features of portable x-ray camera?	2 Marks	L1	CO1
	j)	What is 4D ultrasound?	2 Marks	L1	CO2

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Summarize dynamic digital radiography.	8 Marks	L2	CO1
	b)	Outline the applications of dynamic digital radiography.	8 Marks	L3	CO1
		(OR)			
3.	a)	Summarize the methodology of computer aided diagnosis.	8 Marks	L2	CO1
	b)	Explain about deep-learning in artificial intelligence.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the principle of extended fov imaging.	8 Marks	L2	CO2
	b)	Discuss the basic principle of harmonic imaging.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain POCUS with its features.	8 Marks	L2	CO2
	b)	Outline the application, advantages and limitations of extended fov imaging.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the clinical applications of functional CT imaging.	8 Marks	L2	CO3
	b)	Examine the principle behind perfusion imaging and its role in clinical diagnostics.	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss the clinical benefits of using perfusion imaging.	8 Marks	L2	CO3
	b)	Evaluate the advantages and limitations of functional CT imaging.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the principle behind diffusion tensor imaging and how it differs from conventional diffusion-weighted imaging.	8 Marks	L2	CO4
	b)	Summarize T1, T2, and T2* relaxation times and their significance in quantitative 'MRI'.	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain the principle of 'BOLD' contrast used in functional MRI.	8 Marks	L2	CO4
	b)	Describe the working principle of magnetic resonance elastography and how it measures tissue stiffness.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss about the limitations of artificial intelligence in radiology.	8 Marks	L2	CO1
	b)	Illustrate 3D ultrasound with its application.	8 Marks	L3	CO2
		(OR)			
11.	a)	Describe the concept of virtual non-contrast imaging.	8 Marks	L2	CO3
	b)	Discuss the advantages and disadvantages of using quantitative 'MRI' biomarkers.	8 Marks	L2	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

RADIOTHERAPY PLANNING AND QUALITY CONTROL

[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)	**Prepare a note on** the importance of head-and-neck fixation devices.	2 Marks	L3	CO1
	b)	**Define** laser alignment systems in radiotherapy.	2 Marks	L1	CO1
	c)	**What** is the role of contrast-enhanced imaging in target volume delineation?	2 Marks	L2	CO2
	d)	**Mention** two limitations of conventional radiographic tumor localization.	2 Marks	L2	CO2
	e)	Mention the importance of Intensity-Modulated Radiotherapy (IMRT) in field selection.	2 Marks	L1	CO3
	f)	What is the difference between photon and electron beams in radiotherapy?	2 Marks	L1	CO3
	g)	What is Image-Guided Radiotherapy (IGRT)?	2 Marks	L2	CO4
	h)	Add a note on Active Breathing Control (ABC) in radiotherapy?	2 Marks	L2	CO4
	i)	Mention the role of radiation monitoring devices in radiotherapy.	2 Marks	L2	CO5
	j)	How do regulatory guidelines ensure radiation protection in radiotherapy?	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 function of laser alignment systems with a neat diagram showing intersecting laser beams at the treatment isocenter.	8 Marks	L2	CO1
	b)	**Describe** the importance of bite blocks in controlling motion during radiotherapy with a neat diagram showing a patient using a bite block.	8 Marks	L3	CO1

(OR)

3.	a)	**Explain** how diaphragm compression reduces organ motion during radiotherapy with a neat diagram showing the use of a diaphragm compression device.	8 Marks	L2	CO1
	b)	**Describe** how tracking systems integrate with advanced techniques like IMRT and SBRT with a neat diagram showing motion compensation during radiotherapy.	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the process of gross tumor volume (GTV) delineation using imaging techniques with a proper diagram.	8 Marks	L3	CO2
	b)	Illustrate the use of fusion imaging (CT-MRI or CT-PET) for target volume delineation with a proper diagram.	8 Marks	L3	CO2

(OR)

5.	a)	Discuss the safety considerations and potential side effects of using contrast media in radiotherapy planning with a proper diagram.	8 Marks	L3	CO2
	b)	Discuss the role of organ-at-risk (OAR) delineation and its impact on radiotherapy treatment planning with a proper diagram.	8 Marks	L3	CO2
		MODULE-III			
6.	a)	Explain the role of portal films in verifying treatment field accuracy in radiotherapy.	8 Marks	L2	CO3
	b)	How does the choice of the central axis percentage depth dose affect treatment planning?	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss the importance of isodose curves in radiotherapy field selection.	8 Marks	L3	CO3
	b)	Explain how radiotherapy beams are selected based on isodose curve distribution.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Discuss the significance of fractionation in minimizing radiation exposure to healthy tissues.	8 Marks	L3	CO4
	b)	Explain the safety considerations for protecting critical organs during radiotherapy treatment planning.	8 Marks	L2	CO4
		(OR)			
9.	a)	Discuss the role of immobilization devices in maintaining patient positioning and dose accuracy.	8 Marks	L3	CO4
	b)	Explain the importance of treatment shell immobilization in dose reduction techniques.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Describe the permissible radiation leakage limits in radiotherapy and their impact on safety.	8 Marks	L3	CO5
	b)	Explain the safe work practices that should be followed in a radiotherapy department.	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe the impact of radiation exposure on healthcare workers and strategies to minimize risks.	8 Marks	L3	CO5
	b)	Explain the role of regulatory guidelines in ensuring radiation safety in radiotherapy.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

ADVANCED DISPENSING

[Optometry]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is an Aspheric Lens?	2 Marks	L2	CO1
	b)	Mention parts of spectacle frame.	2 Marks	L1	CO2
	c)	What is cemented bifocal?	2 Marks	L1	CO3
	d)	Name the advantages of anti-reflection coating.	2 Marks	L2	CO5
	e)	List the steps of toric transposition.	2 Marks	L1	CO4
	f)	Define dust hazard.	2 Marks	L1	CO5
	g)	Mention instruments used to check intraocular distance.	2 Marks	L1	CO4
	h)	Define bifocal lens.	2 Marks	L1	CO3
	i)	What is nylon cord frames?	2 Marks	L2	CO2
	j)	Define Abbe number(V).	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)	Explain eight steps of lens surfacing.	8 Marks	L2	CO1
	b)	What is round lens, explain about geometrical shapes?	8 Marks	L3	CO1
		(OR)			
3.	a)	Write note on history of lens development.	8 Marks	L2	CO1
	b)	Explain four types of conic sections, with diagram.	8 Marks	L2	CO1

MODULE-II

4.	a)	Demonstrate about the boxing system with diagram.	8 Marks	L3	CO2
	b)	Explain about frame difference, distance between lenses (DBL) or bridge size, geometric center distance, seg height.	8 Marks	L2	CO2
		(OR)			
5.	a)	Elaborate about plastic frame materials with example.	8 Marks	L3	CO2
	b)	Summarize about cellulose acetate and propionate.	8 Marks	L2	CO2

MODULE-III

6.	a)	Demonstrate four differential displacements of bifocal lens.	8 Marks	L3	CO3
	b)	Write note on fitting philosophy of bifocal lens.	8 Marks	L2	CO3
		(OR)			
7.	a)	Define trifocal lens, explain types of trifocal lenses.	8 Marks	L2	CO3
	b)	Elaborate troubleshooting of progressive lens problems.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Summarize four Devices That Help in the Frame Selection Process.	8 Marks	L2	CO4
	b)	What is intrapapillary distance, elaborate "PD" measuring instruments?	8 Marks	L3	CO4
		(OR)			
9.	a)	Explain procedure binocular "PD" measurement and its common difficulties and their solutions.	8 Marks	L2	CO4
	b)	Define is pantoscopic angle, explain about pantoscopic tilt.	8 Marks	L2	CO4

MODULE-V

10.	a)	List common causes for eye injury, explain different types eye protection measures.	8 Marks	L2	CO5
	b)	Enumerate iseikonic , aniseikonic lens and its advantages.	8 Marks	L3	CO5
		(OR)			
11.	a)	Define impact hazard and elaborate it safety measures.	8 Marks	L2	CO5
	b)	Demonstrate first aid for eye injury and tips to protect our eye.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

PAEDIATRIC OPTOMETRY AND GERIATRIC OPTOMETRY

[Optometry]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention stages of lens development.	2 Marks	L1	CO1
	b)	Define retinoscopy.	2 Marks	L1	CO2
	c)	Name the types of nystagmus.	2 Marks	L1	CO3
	d)	What is arthrosclerosis?	2 Marks	L2	CO5
	e)	Mention the types of glaucoma.	2 Marks	L1	CO4
	f)	Explain cane.	2 Marks	L2	CO5
	g)	Define diabetic retinopathy.	2 Marks	L1	CO4
	h)	What is the post operative complication of congenital cataract?	2 Marks	L2	CO3
	i)	Mention four methods of objective refraction.	2 Marks	L1	CO2
	j)	Which part is called yellow spot, it uses?	2 Marks	L2	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define lens, elaborate three coats of human eye.	8 Marks	L2	CO1
	b)	Enumerate the development of lacrimal apertures with diagram.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain changes of eye growth form 3rd week to 9th month.	8 Marks	L2	CO1
	b)	Differentiate prenatal and postnatal changes in eye.	8 Marks	L4	CO1

MODULE-II

4.	a)	Compare cycloplegic refraction and dry refraction.	8 Marks	L4	CO2
	b)	Write note on cycloplegic drugs and it side effects.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain mohindra retinoscope. And its interpretation.	8 Marks	L2	CO2
	b)	Elaborate two types of retinoscopy procedures.	8 Marks	L3	CO2

MODULE-III

6.	a)	summarize genetics and clinical presentation of retinoblastoma.	8 Marks	L2	CO3
	b)	Describe associated metabolic disorders and intrauterine infections of congenital cataract.	8 Marks	L2	CO3
		(OR)			
7.	a)	Elaborate treatment options and post operative complication of congenital cataract.	8 Marks	L2	CO3
	b)	Enumerate ocular assessment and systemic investigation for congenital cataract.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Recall two types of diabetic retinopathy and its clinical features.	8 Marks	L3	CO4
	b)	Summarize non-proliferative-diabetic retinopathy and its sing and symptoms.	8 Marks	L2	CO4
		(OR)			
9.	a)	Elaborate "VEGF" inhibition laser treatment for proliferative retinopathy.	8 Marks	L2	CO4
	b)	discuss proliferative-diabetic retinopathy and its sing and symptoms.	8 Marks	L2	CO4

MODULE-V

10.	a)	Compare Galilean telescope and Keplerian telescope	8 Marks	L4	CO5
	b)	Find out near magnification from given prescription: a) best corrected near vision N36 at 25cm. b) best corrected near vision N18 at 30cm.	8 Marks	L4	CO5
		(OR)			
11.	a)	Explain hypertensive retinopathy and its signs and symptoms.	8 Marks	L2	CO5
	b)	Summarize sickle cell retinopathy and its management	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

PUBLIC HEALTH, COMMUNITY AND OCCUPATIONAL OPTOMETRY

[Optometry]

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 components of public health.	2 Marks	L1	CO1
	b)	What is the role of frontline workers in eye health?	2 Marks	L2	CO2
	c)	Mention any four non-government organizations.	2 Marks	L2	CO3
	d)	What is eye bank?	2 Marks	L1	CO5
	e)	Define occupational health.	2 Marks	L1	CO4
	f)	Mention any four ocular contra-indications of eye-donation.	2 Marks	L2	CO5
	g)	What is engineering controls?	2 Marks	L1	CO4
	h)	Define mission of vision 2020 India.	2 Marks	L2	CO3
	i)	List the key challenges of delivering eye care in India.	2 Marks	L1	CO2
	j)	Define blindness.	2 Marks	L2	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Describe any four key indications of public health.	8 Marks	L2	CO1
	b)	What is community ophthalmology and its characteristics?	8 Marks	L3	CO1
		(OR)			
3.	a)	Demonstrate Global health and its Characteristics.	8 Marks	L3	CO1
	b)	What are the primary challenges faced in the field of Public Health Ophthalmology?	8 Marks	L3	CO1

MODULE-II

4.	a)	List the fours levels of eye care delivery in India and explain about it.	8 Marks	L2	CO2
	b)	Describe tertiary eye care, its challenges and main components.	8 Marks	L2	CO2
		(OR)			
5.	a)	Define health promotion and its importance.	8 Marks	L2	CO2
	b)	What is the aim of Health and Wellness Center, explain about various services?	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain district blindness control society its composition and its objectives.	8 Marks	L2	CO3
	b)	Summarize vision-2020 global, strategies and its objectives.	8 Marks	L2	CO3
		(OR)			
7.	a)	Elaborate the initiatives taken by vision 2020 for childhood blindness and glaucoma.	8 Marks	L3	CO3
	b)	Describe potential limitations or criticisms of the Vision 2020 initiative.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Enumerate effect of infrared, x-rays, and visible radiation in eye.	8 Marks	L3	CO4
	b)	Summarize four hazard reduction steps	8 Marks	L2	CO4
		(OR)			
9.	a)	Elaborate fundamental conventions on occupational safety and health.	8 Marks	L2	CO4
	b)	Describe qualifying visual factors in occupational optometry.	8 Marks	L2	CO4

MODULE-V

10.	a)	Summarize roles and responsibilities of teleophthalmology.	8 Marks	L2	CO5
	b)	Enumerate tele-medicine in India and its principle.	8 Marks	L3	CO5
		(OR)			
11.	a)	Describe four types of storage of donor tissue.	8 Marks	L2	CO5
	b)	Explain procedure of full-thickness keratoplasty and partial lamellar keratoplasty.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

NEPHRO-RADIOLOGICAL AND IMAGING SCIENCES

[Dialysis Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Name six organisms causing urinary tract infections.	2 Marks	L1	CO1
	b)	Mention three causes of pyuria.	2 Marks	L2	CO1
	c)	What is post obstructive diuresis?	2 Marks	L2	CO2
	d)	Define hydronephrosis.	2 Marks	L3	CO2
	e)	Enlist the types of primary glomerular diseases.	2 Marks	L3	CO3
	f)	Write the short note on renal function test?	2 Marks	L2	CO3
	g)	Add a short note on refractory peritonitis.	2 Marks	L2	CO4
	h)	Add a short note on Nephrotoxic drugs.	2 Marks	L1	CO4
	i)	Define Azotemia.	2 Marks	L1	CO5
	j)	Write the Causes of Uremic syndrome.	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 biochemical properties of urine.	8 Marks	L2	CO1
	b)	Describe in detail note on microscopical examination of urine.	8 Marks	L2	CO1
		(OR)			
3.	a)	Define nephrolithiasis. What are the causes, stages, pathogenesis and management of nephrolithiasis?	8 Marks	L3	CO1
	b)	What a short note on diabetic nephropathy? Discuss the etiology, pathogenesis and its management of diabetic nephropathy?	8 Marks	L2	CO1

MODULE-II

4.	a)	Define nephrolithiasis. What are the causes, stages, pathogenesis and management of nephrolithiasis?	8 Marks	L2	CO2
	b)	What a short note on diabetic nephropathy? Discuss the etiology, pathogenesis and its management of diabetic nephropathy?	8 Marks	L1	CO2
		(OR)			
5.	a)	Write a brief note on renal carcinoma? Discuss the etiology, pathogenesis and its management of renal carcinoma?	8 Marks	L2	CO2
	b)	Explain “RIFLE” and “AKIN” criteria.	8 Marks	L1	CO2

MODULE-III

6.	a)	Describe about Hemolytic Uremic syndrome and note on master health checkup.	8 Marks	L2	CO3
	b)	Explain the clinical features and diagnosis of nephrotic and nephritic syndrome.	8 Marks	L3	CO3

(OR)

7.	a)	Describe about causes, clinical features, pathogenesis and management of Non – streptococcal infections.	8 Marks	L3	CO3
	b)	Explain causes, clinical features, pathogenesis and management of HELLP syndrome.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain in detail about Glomerulonephritis?	8 Marks	L2	CO4
	b)	Write in detail about the pathology of secondary glomerular nephritis?	8 Marks	L2	CO4

(OR)

9.	a)	Write in detail about the balanced diet for dialysis patients.	8 Marks	L3	CO4
	b)	Explain in detail about Renal function in Congestive heart failure and explain detail about its management.	8 Marks	L3	CO4

MODULE-V

10.	a)	Illustrate the types of electrolyte imbalances in children's and explain it?	8 Marks	L3	CO5
	b)	Explain infection control in dialysis unit and explain detail about its six steps of hand wash.	8 Marks	L2	CO5

(OR)

11.	a)	Illustrate Laboratory diagnosis of dialysis patients.	8 Marks	L2	CO5
	b)	Describe the causes and management of dialyzer reactions in children's.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

TECHNIQUES IN MAGNETIC RESONANCE IMAGING

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Add a note on the selection of TI in an MRI Brain study.	2 Marks	L1	CO1
	b)	Mention the significance of informed consent in MRI procedures.	2 Marks	L1	CO1
	c)	Prepare a note on DWI's importance in early stroke detection.	2 Marks	L1	CO2
	d)	Define the principle of Magnetic Resonance Spectroscopy.	2 Marks	L2	CO2
	e)	Add a note on the importance of patient positioning in MRI cervical spine imaging.	2 Marks	L2	CO3
	f)	Prepare a note on the role of diffusion-weighted imaging (DWI) in soft tissue sarcoma assessment.	2 Marks	L1	CO3
	g)	Identify the anatomical landmarks used for centering in MRI elbow imaging.	2 Marks	L2	CO4
	h)	Define the significance of proton density (PD) sequences in knee MRI.	2 Marks	L1	CO4
	i)	Mention the significance of fat suppression techniques in MRI abdomen.	2 Marks	L2	CO5
	j)	Identify the role of MR Spectroscopy in abdominal imaging.	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 indications, contraindications, patient preparation, planning of sequences, and parameters of sequences for a DBS protocol MRI.	8 Marks	L2	CO1
	b)	Describe the indications, contraindications, patient preparation, planning of sequences, and parameters of sequences for an MRI dynamic study.	8 Marks	L3	CO1

(OR)

3.	a)	Outline the essential planning steps for creating an optimal MRI Brain protocol for epilepsy studies.	8 Marks	L4	CO1
	b)	Identify the key sequence parameters that affect MRI image resolution.	8 Marks	L2	CO1

MODULE-II

4.	a)	Identify the sequences of MRI- Brain plain, contrast and spectroscopy protocol. Mention clinical significance of sequences.	8 Marks	L3	CO2
	b)	Identify any 8 advanced MRI sequences with their clinical applications.	8 Marks	L3	CO2

		(OR)			
5.	a)	Explain in detail on SWI and BOLD sequences in MRI.	8 Marks	L2	CO2
	b)	Discuss in detail on DWI and TOF sequences in MRI.	8 Marks	L3	CO2
		MODULE-III			
6.	a)	Explain the role of axial, sagittal, and coronal planning in MRI spine imaging for disc pathology, discussing indications, contraindications, patient preparation, and sequence parameters.	8 Marks	L2	CO3
	b)	Describe the imaging technique used in spinal cord lesion assessment, including indications, contraindications, patient preparation, sequence planning, and sequence parameters.	8 Marks	L3	CO3
		(OR)			
7.	a)	Outline the whole spine MRI protocol, detailing its role in systemic diseases affecting the spine.	8 Marks	L2	CO3
	b)	Identify the planning considerations for MRI of lymph node assessment in oncology cases.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Identify the standard MRI protocol for knee joint imaging, covering indications, contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L3	CO4
	b)	Outline the MRI approach for thigh imaging, including indications, contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain the imaging protocol for leg MRI, discussing indications, contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L3	CO4
	b)	Describe the role of MRI in ankle joint evaluation, focusing on indications, contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Outline the indications for MRI Fistulogram in perianal fistula assessment, covering contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L2	CO5
	b)	Discuss the advantages of MRI over CT in abdominal imaging, focusing on indications, contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L3	CO5
		(OR)			
11.	a)	Describe the role of MRI in cervical cancer staging, with indications, contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L3	CO5
	b)	Summarize the MRI assessment of uterine fibroids, covering indications, contraindications, patient preparation, planning of sequences, and sequence parameters.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

INTERVENTIONAL RADIOLOGY

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the purpose of lidocaine in interventional procedures?	2 Marks	L2	CO1
	b)	Mention two antibiotics given post-procedure to prevent infections.	2 Marks	L2	CO1
	c)	List out two key differences between conventional fluoroscopy and digital fluoroscopy.	2 Marks	L1	CO2
	d)	Define cine fluoroscopy and mention two of its clinical applications.	2 Marks	L1	CO2
	e)	What is the purpose of vertebroplasty in interventional radiology?	2 Marks	L2	CO3
	f)	Name two common complications of angioplasty procedures.	2 Marks	L2	CO3
	g)	Define fine needle aspiration cytology (FNAC).	2 Marks	L1	CO4
	h)	What is thoracocentesis, and why is it performed?	2 Marks	L2	CO4
	i)	Prepare a note on how digital subtraction angiography (DSA) enhances vascular imaging.	2 Marks	L3	CO5
	j)	What are the advantages of the femoral approach over the arm approach in vascular procedures?	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Demonstrate the use of balloon catheters in angioplasty procedures for revascularization, with an appropriate diagram.	8 Marks	L4	CO1
	b)	Apply the principles of catheter selection for specific diagnostic and therapeutic procedures.	8 Marks	L4	CO1
		(OR)			
3.	a)	Discuss in detail on antihypertensive drugs.	8 Marks	L3	CO1
	b)	Explain in detail antiemetic.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the working principle of a C-Arm and its role in interventional procedures, with a proper diagram.	8 Marks	L2	CO2
	b)	Compare the radial vs femoral access in catheter-based procedures, with a proper diagram.	8 Marks	L2	CO2
		(OR)			
5.	a)	Illustrate the sequence of instrument usage in an interventional vascular procedure, from guidewire insertion to catheter placement, with a proper diagram.	8 Marks	L3	CO2
	b)	Compare conventional fluoroscopy, digital fluoroscopy, and DSA in terms of technology and applications, with a proper diagram.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain Catheter Embolization, including its mechanism, indications, and complications in treating vascular lesions.	8 Marks	L2	CO3
	b)	Compare CT Angiography (CTA) and MR Angiography (MRA) with DSA in interventional procedures.	8 Marks	L4	CO3
		(OR)			
7.	a)	Explain the Uterine Artery Embolization (UAE) procedure, including its benefits in treating fibroids.	8 Marks	L2	CO3
	b)	Describe the procedure and indications for Pulmonary Angiography using DSA in diagnosing pulmonary embolism.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss the role of ultrasound-guided biopsy in breast lesion evaluation.	8 Marks	L3	CO4
	b)	Explain the procedure, equipment, and complications of ultrasound-guided kidney biopsy.	8 Marks	L2	CO4
		(OR)			
9.	a)	What are the advantages and limitations of MRI-guided interventions over CT and ultrasound-guided procedures?	8 Marks	L2	CO4
	b)	Explain the factors affecting the choice of imaging modality for interventional procedures.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the role of ultrasound-guided thoracocentesis, including patient preparation and possible complications.	8 Marks	L3	CO5
	b)	Discuss the importance of percutaneous transhepatic biliary drainage (PTBD) and its complications.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the indications, contraindications, and techniques of CT-guided lung biopsy.	8 Marks	L2	CO5
	b)	Describe the procedure, equipment, and patient preparation for CT-guided liver biopsy.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

CROSS SECTIONAL ANATOMY OF CT AND MR IMAGING

[Radiology & Imaging Technology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is the definition of anatomical position?	2 Marks	L1	CO1
	b)	Define sagittal plane and its relevance in radiographic imaging.	2 Marks	L2	CO1
	c)	What is the major blood vessel that supplies blood to the heart?	2 Marks	L1	CO2
	d)	Draw a labeled diagram of lungs.	2 Marks	L2	CO2
	e)	What is the role of salivary glands in digestion?	2 Marks	L1	CO3
	f)	Name the radiological investigation commonly used to view the pancreas.	2 Marks	L1	CO3
	g)	What are the three primary imaging planes used in cross-sectional anatomy?	2 Marks	L1	CO4
	h)	Name the organs involved in the urinary system.	2 Marks	L2	CO4
	i)	Mention the main subdivisions of the nervous system.	2 Marks	L1	CO5
	j)	What is the function of the meninges in the nervous system?	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 significance of anatomical terminology in radiographic positioning.	8 Marks	L2	CO1
	b)	Describe the role of the coronal plane in visualizing the organs in the abdominal cavity and provide an example of its use in radiology.	8 Marks	L2	CO1

(OR)

3.	a)	Analyze the role of 'CT' scans in diagnosing thoracic pathologies.	8 Marks	L3	CO1
	b)	Discuss in detail about body cavity with suitable diagram.	8 Marks	L2	CO1

MODULE-II

4.	a)	Outline the roles of arteries and veins in blood circulation.	8 Marks	L3	CO2
	b)	Describe the structure and functions of paranasal sinuses with its pathologies.	8 Marks	L2	CO2

(OR)

5.	a)	Explain the role of the respiratory system in blood oxygenation and purification.	8 Marks	L2	CO2
	b)	Discuss in detail about coronary artery disease.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the role of the tongue in the digestive system.	8 Marks	L2	CO3
	b)	Discuss the significance of 3D imaging in 'CT' and 'MRI' scans for visualizing the alimentary system,	8 Marks	L3	CO3

(OR)

7.	a)	Explain the significance of the large intestine in the digestive system with any two pathologies.	8 Marks	L2	CO3
	b)	Describe the role of the esophagus in the digestive process.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the structure and function of the male reproductive systems.	8 Marks	L2	CO4
	b)	Summarize the pathologies of female reproductive system.	8 Marks	L2	CO4

(OR)

9.	a)	Summarize the pathologies of male reproductive system.	8 Marks	L2	CO4
	b)	Describe the structure and function of the female reproductive systems.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the function of the ventricles in the brain and their role in 'CSF' circulation.	8 Marks	L2	CO5
	b)	Classify the difference between arteries and veins.	8 Marks	L3	CO5

(OR)

11.	a)	Discuss about the blood circulation and purification.	8 Marks	L2	CO5
	b)	Explain the function of the meninges and their layers.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

BINOCULAR VISION

[Optometry]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define egocentric location.	2 Marks	L2	CO1
	b)	Mention two types of binocular movements.	2 Marks	L2	CO2
	c)	Define suppression.	2 Marks	L1	CO3
	d)	Name the type of convergence.	2 Marks	L1	CO5
	e)	What is accommodation?	2 Marks	L1	CO4
	f)	Explain reflex convergence.	2 Marks	L2	CO5
	g)	Mention clinical features of excessive accommodation.	2 Marks	L1	CO4
	h)	What is penalization?	2 Marks	L1	CO3
	i)	Define antagonists.	2 Marks	L2	CO2
	j)	What is suppression?	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)	Discuss panum's fusional area with diagram.	8 Marks	L2	CO1
	b)	Explain alternation theory of binocular vision and projection theory of binocular vision.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize theory of correspondence and disparity, mention advantages of BV.	8 Marks	L2	CO1
	b)	Define stereoacuity and explain neurophysiologic theory of binocular vision and stereopsis.	8 Marks	L2	CO1

MODULE-II

4.	a)	Write note on Hering's law of equal innervation and its clinical features**.**	8 Marks	L2	CO2
	b)	Describe Sherrington's law of reciprocal innervation and its clinical features.	8 Marks	L4	CO2
		(OR)			
5.	a)	Explain anatomy oculomotor nerve.	8 Marks	L2	CO2
	b)	Elaborate Donders' law and Listing's law.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write note on anti-suppression therapy, its uses	8 Marks	L2	CO3
	b)	Describe physiological and pathological suppression.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss worth four dot test with interpretation.	8 Marks	L2	CO3
	b)	Summarize indications and contraindication of suppression therapy.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Demonstrate "NRA" and "PRA" procedure.	8 Marks	L3	CO4
	b)	Define ocular accommodation. How does the eye typically adjust to focus on objects at varying distances.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain paralysis of accommodation and its clinical features.	8 Marks	L3	CO4
	b)	Compare convergence insufficiency and accommodative insufficiency.	8 Marks	L2	CO4

MODULE-V

10.	a)	Demonstrate different phases of vision therapy program for divergence insufficiency.	8 Marks	L2	CO5
	b)	Recall divergence insufficiency and its signs and symptoms.	8 Marks	L2	CO5
		(OR)			
11.	a)	Enumerate different phases of vision therapy program for convergence excess, its advantages	8 Marks	L3	CO5
	b)	Describe convergence paralysis and its clinical features.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. VI Semester (MBU-22) Regular Examinations, April – 2025

CONTACT LENS

[Optometry]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define contact lens.	2 Marks	L1	CO1
	b)	What is Lathe cutting?	2 Marks	L2	CO2
	c)	Mention any two indication of rigid gas permeable lens.	2 Marks	L2	CO3
	d)	What is translating vision contact lens?	2 Marks	L1	CO5
	e)	Define soft contact lens.	2 Marks	L2	CO4
	f)	Mention different types contact lens used in keratoconus.	2 Marks	L1	CO5
	g)	What is prism ballast?	2 Marks	L1	CO4
	h)	Define hard gas permeable lens.	2 Marks	L2	CO3
	i)	Write about Rule of Thumb.	2 Marks	L1	CO2
	j)	What is Sagittal Depth?	2 Marks	L2	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Expand "HEMA" and explain contact lens history of it.	8 Marks	L2	CO1
	b)	Elaborate classification of contact lens based on mode of ware and water content.	8 Marks	L3	CO1

(OR)

3.	a)	Define Corneal Ulcer Infected. mention its signs, Symptoms and prevention.	8 Marks	L2	CO1
	b)	Explain about edge lift and sagittal depth with diagram.	8 Marks	L2	CO1

MODULE-II

4.	a)	Enumerate spin casting, its advantages and disadvantages.	8 Marks	L2	CO2
	b)	Define contact lens, explain three methods of manufacturing contact lenses.	8 Marks	L2	CO2

(OR)

5.		Explain lathe cutting, its advantages and disadvantages.	16 Marks	L3	CO2

MODULE-III

6.	a)	Define Fluoro-silicone acrylate as a RGP contact lens material. Write note on manufacturing technique for RGP contact lens.	8 Marks	L2	CO3
	b)	Elaborate two methods used to evaluate the fit of rigid gas permeable lenses.	8 Marks	L2	CO3

(OR)

7.	a)	Write note on dynamic fitting of "RGP" contact lens.	8 Marks	L3	CO3
	b)	Describe flat fitting and ideal fitting of "RGP" contact lens.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Demonstrate insertions and removal techniques of soft contact lens.	8 Marks	L2	CO4
	b)	Explain Symptoms of loose fit and tight fit in soft contact lens and the remedy.	8 Marks	L2	CO4
		(OR)			
9.	a)	Write in detail about Semi-soft contact lens care and maintenance.	8 Marks	L2	CO4
	b)	Describe stabilization techniques in soft toric contact lens.	8 Marks	L2	CO4

MODULE-V

10.	a)	What is monovision contact lens and explain fitting procedure.	8 Marks	L2	CO5
	b)	Define presbyopia, elaborate different types contact lens used in presbyopic correction.	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain translating vision type and simultaneous vision.	8 Marks	L3	CO5
	b)	Describe concentric design and aspheric designs.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T & B.Sc. I Semester (MBU-22) Regular Examinations, May – 2025

NATIONAL HEALTH CARE DELIVERY SYSTEM AND MEDICAL RECORDS 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, 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 four root words used in medical terminology.	2 Marks	L2	CO1
	b)	What is the full form of BLS & CPR?	2 Marks	L1	CO1
	c)	Name any four contents in operation notes.	2 Marks	L3	CO2
	d)	Add a note on retention of medical records.	2 Marks	L1	CO2
	e)	Prepare a note on Sub center.	2 Marks	L3	CO3
	f)	Define CHC and DMHO.	2 Marks	L1	CO3
	g)	Illustrate Vital events.	2 Marks	L2	CO4
	h)	Write a brief note on Pradhan Mantri Jan Arogya Yojana.	2 Marks	L3	CO4
	i)	List out any two spine curvature disorders.	2 Marks	L2	CO1
	j)	Add a note on Acharya Charak.	2 Marks	L1	CO4

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain pathologies, lab investigations related to respiratory system.	8 Marks	L2	CO1
	b)	Identify any 16 common abbreviations used in medical terminology.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain lab investigations and procedures related to cardiovascular system.	8 Marks	L2	CO1
	b)	Discuss about various pathological conditions and diagnostic investigations related to pancreas.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define Medical ethics and explain about principles of medical ethics.	8 Marks	L1	CO2
	b)	Discuss about euthanasia and its types.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain flow of medical records.	8 Marks	L3	CO2
	b)	Define EMR. Discuss about components in EMR.	8 Marks	L1	CO2

MODULE-III

6.	a)	Identify Organization of health services at central level.	8 Marks	L3	CO3
	b)	Evaluate various functions of DGHS.	8 Marks	L3	CO3
		(OR)			
7.	a)	What are the steps for implantation and key elements of health policy?	8 Marks	L1	CO3
	b)	Apply your knowledge on National health programs related to welfare or system strengthening.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Apply your knowledge on Yoga system of medicine.	8 Marks	L3	CO4
	b)	Explain about ayurveda.	8 Marks	L2	CO4
		(OR)			
9.	a)	Define demography and explain scope of demography.	8 Marks	L2	CO4
	b)	Demonstrate census collection.	8 Marks	L4	CO4

MODULE-V

10.	a)	Elaborate full forms of STD, NS, RL, OP, IP, JVD, ICP, & IA.	8 Marks	L3	CO1
	b)	What is Irrational drug usage and explain about reasons and hazards of irrational use of drugs?	8 Marks	L2	CO2
		(OR)			
11.	a)	Outline National health programs for Non-communicable diseases.	8 Marks	L3	CO3
	b)	Discuss about ancient scientists of bharath.	8 Marks	L3	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2025

MEDICAL BIOCHEMISTRY

[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)	Name ketone bodies.	2 Marks	L1	CO1
	b)	Mention the composition of sucrose and lactose.	2 Marks	L2	CO1
	c)	Tabulate aminoacids based on metabolic fate.	2 Marks	L1	CO2
	d)	List the different types of DNA.	2 Marks	L1	CO2
	e)	Name the coenzyme forms of vit B1and vit B6.	2 Marks	L1	CO3
	f)	Mention key points in Wilson's disease.	2 Marks	L2	CO3
	g)	Define dietary fiber.	2 Marks	L1	CO4
	h)	Mention the recommended macronutrient ratios of a balanced diet.	2 Marks	L2	CO4
	i)	Give the normal range for bicarbonate and calcium.	2 Marks	L2	CO5
	j)	List out the causes for hyperventilation.	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 properties of phospholipids.	8 Marks	L2	CO1
	b)	Describe about glycogen storage disorders.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the steps of glycogenolysis.	8 Marks	L2	CO1
	b)	Discuss about glycosaminoglycans.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the classification of proteins by function and what areexamples of each type.	8 Marks	L2	CO2
	b)	Explain the structure of ribosomal RNA.	8 Marks	L2	CO2
		(OR)			
5.	a)	Name aromatic aminoacids. Outline the specialized products formed from aromatic aminoacids and the simplest amino acid.	8 Marks	L1	CO2
	b)	Describe the ornithine cycle.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the process of vitamin D synthesis and its activation in the liver and kidney.	8 Marks	L2	CO3
	b)	Describe the absorption, transport, and storage of iron in the body.	8 Marks	L2	CO3

(OR)

7.	a)	Define coenzyme.List four coenzymes and describe their role in enzyme action.	8 Marks	L1	CO3
	b)	Enumerate the functions of ascorbic acid and add a note on scurvy.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the causes and features of kwashiorkor.	8 Marks	L2	CO4
	b)	Explain zymogen and its role in enzyme activation.	8 Marks	L2	CO4

(OR)

9.	a)	Describe the causes and features of marasmus.	8 Marks	L2	CO4
	b)	Explain nitrogen balance and factors affecting nitrogen balance.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the biochemical basis for measuring alkaline phosphatase (ALP) and its clinical significance in the liver disorders.	8 Marks	L2	CO5
	b)	Describe about respiratory alkalosis.	8 Marks	L2	CO5

(OR)

11.	a)	Describe the types of jaundice and mention their normal range.	8 Marks	L2	CO5
	b)	Describe the causes for metabolic acidosis and interpret ABG values in acute metabolic acidosis.	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, May – 2025

MEDICAL BIOCHEMISTRY-I

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 general molecular formula of carbohydrates?	2 Marks	L3	CO1
	b)	Compare the functions of the smooth and rough endoplasmic reticulum.	2 Marks	L5	CO1
	c)	Add a note on rancidity.	2 Marks	L1	CO2
	d)	Mention the significance of ketone bodies.	2 Marks	L2	CO2
	e)	List the different types of DNA.	2 Marks	L1	CO3
	f)	Define cofactor.	2 Marks	L2	CO3
	g)	Add a note on trans fatty acids.	2 Marks	L1	CO4
	h)	Differentiate visible and invisible fat.	2 Marks	L2	CO4
	i)	List the products of lipid digestion in the jejenum	2 Marks	L1	CO5
	j)	Give the normal range for cholesterol.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain how heteropolysaccharides differ from homopolysaccharides.	8 Marks	L2	CO1
	b)	Describe how glycosidic bonds are formed between monosaccharides.	8 Marks	L2	CO1
		(OR)			
3.	a)	Compare the differences between lactose and maltose.	8 Marks	L5	CO1
	b)	Describe the non-reducing disaccharide of carbohydrates.	8 Marks	L2	CO1

MODULE-II

4.	a)	What is a peptide and explain how a peptide bond is formed.	8 Marks	L3	CO2
	b)	Outline the steps of the urea cycle.	8 Marks	L1	CO2
		(OR)			
5.	a)	Explain the clinical significance of polyunsaturated fatty acids.	8 Marks	L2	CO2
	b)	Describe the classification of compound lipids with examples.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe the IUBMB classification of enzymes.	8 Marks	L2	CO3
	b)	Explain competitive inhibition with its clinical significance.	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain zymogen and its role in enzyme activation.	8 Marks	L2	CO3
	b)	Explain the structure of ribosomal RNA.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Summarize the balanced diet.	8 Marks	L5	CO4
	b)	Describe the respiratory quotient and its significance.	8 Marks	L2	CO4
		(OR)			
9.	a)	Compare marasmus and kwashiorkor.	8 Marks	L4	CO4
	b)	Mention the nutritional importance of lipids.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Describe how phospholipids are digested in the small intestine.	8 Marks	L2	CO5
	b)	Enumerate the steps involved in digestion of proteins in the intestine.	8 Marks	L2	CO5
		(OR)			
11.	a)	List digestive enzymes,and explain digestion of carbohydrates in the intestinal lumen.	8 Marks	L1	CO5
	b)	Summarize the mechanism of absorption of glucose.	8 Marks	L5	CO5



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

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. & B.P.T I Semester (MBU-22) Regular Examinations, May – 2025

TELUGU

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology, Bachelor of Physiotherapy]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	పోతన గురించి వివరించండి?	2 Marks	L1	CO1
	b)	ధ్రువుని తల్లిదండ్రులు ఎవరు?	2 Marks	L1	CO1
	c)	"పెండ్లి పందిరి" ఏ సమాసమో తెలపండి?	2 Marks	L3	CO2
	d)	గొప్పతనము పెరిగే కొద్దీ ఏది పెరగాలి?	2 Marks	L1	CO2
	e)	దువ్వూరి రచనలు ఏవి?	2 Marks	L3	CO2
	f)	యమకం	2 Marks	L1	CO2
	g)	ధువ్వూరి కవితా విశేషాలను వివరించండి?	2 Marks	L2	CO1
	h)	నాడీజంఘుడు ఎవరు?	2 Marks	L3	CO1
	i)	కృషీవలుడు పాఠ్యభాగ రచయిత గురించి తెలపండి?	2 Marks	L3	CO1
	j)	చంపకమాల	2 Marks	L3	CO1

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	భారత భూమి ఎప్పుడు గొప్పగా ప్రకాశిస్తుంది?	8 Marks	L2	CO1
	b)	మనిషి ఉన్నంతవరకు ఏమి ఎదురు చూస్తుంటారు ?	8 Marks	L3	CO1
		(OR)			
3.	a)	గొప్పతనము పెరిగిన కొలదీ ఏది అలవడవలెను ?	8 Marks	L1	CO1
	b)	మానవుడు దేనిని విడువరాదు?	8 Marks	L4	CO1

MODULE-II

4.	a)	వినుమొక బ్రాహ్మణుండు కులవృత్తము పెంపు దొఱంగి బోయదా నినొకత నాలి జేసికొని, నెమ్మి గిరాతుల గూడి వేటకుం జను దిను మాంస మద్దురితసక్తుడు భోగపరుండు గావునన్ ధనము ఘటింపగా దగు విధం బని చూచి వణిగ్జనంబుతోన్? ప్రతిపదార్థం వ్రాయండి.	8 Marks	L4	CO2
	b)	'యిద్దురిత శరీరముందినగ దోసము మాకు 'సందర్భవాఖ్య వివరించండి?	8 Marks	L2	CO2

(OR)

5.	a)	అన్నాహాలిక! నీదు జీవితము నెయ్యంబార వర్ణింప మే కొన్న న్నిర్ఝరసార వేగమున వాక్పూరంబు మాధుర్యం సం పన్నంబై ప్రవహించుగాని యితరుల్ భగ్నాశులై యూర్ష్యతో నన్నుం గర్షకపక్షపాతియని నిందావాక్యముల్పల్కరే! ప్రతిపధార్థం వ్రాయండి	8 Marks	L2	CO2
	b)	'వానికి దు:ఖమేటికిన్? నీదువిధము చెపుమా? సందర్భాలను వివరించండి?	8 Marks	L2	CO2

MODULE-III

6.	a)	"కుడిచిన పళ్ళెరంబును సకుంఠిత హర్షముతోడ నిచ్చినం గడుముదమంది యెత్తికొని గాఢభరంబున మార్చి మోపగా మెడయును వీపు మూపులును మిక్కలి నొప్పున గొంకు వోవ నె క్కుడు వెస నేగుదెంచె గని కొక్కెర సమ్మదమంద మష్టికిన్". పద్యమునకు ప్రతి పదార్థం రాయండి?	10 Marks	L3	CO3
	b)	శ్రీహరిని కవి వర్ణించిన విధమును తెలపండి?	6 Marks	L2	CO3

(OR)

7.	a)	ఫలము లెక్కెడివారు తత్ఫల రసాస్వాద క్రియాలోలురై పలుమాఱమ్మధురత్వము స్నుతుల సంభావింతురేగాని, తత్ఫల హేతుక్రమ వృక్షముందల పరెవ్వారైన, నట్లే రమా కలితుల్భోగములన్ భుజించుచు నినుంగన్నెత్తియుంజూతురే! ప్రతి పదార్థం వివరించండి ?	10 Marks	L3	CO3
	b)	నారదుడు ఉత్తానపాదునకు ఏమని సమాధానమిచ్చాడు ?	6 Marks	L2	CO3

MODULE-IV

8.	a)	'తరువగ జొచ్చినంబెరు గుతాలి మినీయ దెవెన్న భాస్కరా ' పాదాన్ని గణ విభజన చేసి, చందోలక్షణాలు తెలపండి.?	8 Marks	L2	CO4
	b)	నాడీజంఘుని గొప్పతనాన్ని వివరించండి?	8 Marks	L2	CO4

(OR)

9.	a)	ప్రస్తుత రైతు స్థితిగతులు ఏమిటి?	8 Marks	L2	CO4
	b)	ఎంత నిర్మలమోయి నీ హృదయకలిక సందర్భవాఖ్యం రాయండి	8 Marks	L2	CO4

MODULE-V

10	a)	కృషీవలుడు ద్వారా దువ్వూరి రైతు జీవనాన్ని ఎలా వివరించాడు.	8 Marks	L3	CO5
·	b)	విభక్తులను తెలపండి?	8 Marks	L3	CO5

(OR)

11	a)	ఉత్పలమాల, శార్దూలం పద్య లక్షణాలను వివరించండి?	8 Marks	L3	CO5
·	b)	లాటానుప్రాస, వృత్యనుప్రాస అలంకారములను వివరించండి?	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc & B.P.T I Semester (MBU-22) Regular Examinations, May – 2025

SANSKRIT

[Optometry, Anaesthesia & Operation Theatre Technology, Cardio Vascular Technology, Dialysis Technology, Emergency Medical and Critical Care Technology, Respiratory Therapy Technology, Medical Lab Technology, Radiology & Imaging Technology, Bachelor of Physiotherapy]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	हितोपदेशस्य कर्ता कः?	2 Marks	L2	CO1
	b)	दशरदस्या कति पुत्राः सन्ति ?	2 Marks	L1	CO1
	c)	सूर्यस्य परितः के निवसन्ति	2 Marks	L3	CO2
	d)	महाभरतस्य लेखकः कः ?	2 Marks	L1	CO2
	e)	चम्पूरामायणस्य लेखकः कः ?	2 Marks	L3	CO3
	f)	पाणिनि कः ग्रन्थः रचितः ?	2 Marks	L1	CO3
	g)	मोहापनोदः पाठे राजा कः ?	2 Marks	L2	CO4
	h)	गुरुपत्न्याः नाम किम् ?	2 Marks	L3	CO4
	i)	यक्षस्य उत्तराणि कः ददाति ?	2 Marks	L2	CO5
	j)	रामस्य पत्नी का ?	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	आर्यपादुकाभिषेकः पाठ्यभागस्य साराशं लिखत ?	8 Marks	L2	CO1
	b)	रामभरतयोः सम्भाषणम् उपस्थापयत ?	8 Marks	L3	CO1
		(OR)			
3.	a)	यक्षप्रश्नेषु वर्णितान् लौकिकधर्मान् वर्णयत?	8 Marks	L1	CO1
	b)	यक्षयुधिष्ठिरप्रश्नोत्तराणि विवृणुत ?	8 Marks	L3	CO1

MODULE-II

4.	a)	गङ्गावतरणम् पाठ्यभागस्य साराशं लिखत ?	8 Marks	L1	CO2
	b)	गङ्गावतरणम् पाठ्यभागे उक्त विषयान् समुपस्थापयत ?	8 Marks	L3	CO2
		(OR)			
5.	a)	मोहापनोदः पाठ्यभागस्य साराशं लिखत ?	8 Marks	L3	CO2
	b)	गुरुपत्नी कथं सुनन्दयाः मोहापनोदं कृतवती लिखत ?	8 Marks	L1	CO2

MODULE-III

6.	a)	अत्युत्कटैः पापपुण्यैः इहैव फलमश्नुते विशदयत ?	8 Marks	L2	CO3
	b)	शृगालः कथं मारितः लिखत ?	8 Marks	L3	CO3
		(OR)			
7.	a)	वीरवरस्य त्यागभुद्धिं लिखत ?	8 Marks	L3	CO3
	b)	शूद्रकवीरवर कथा पाठ्यभागस्य साराशं लिखत ?	8 Marks	L1	CO3

MODULE-IV

8.	a)	अकॅ देॅव शाब्दरूपुंल्लिखुत:	8 Marks	L3	CO4
	b)	इकॅ कॅवि शाब्दरूपुंल्लिखुत:	8 Marks	L3	CO4
		(OR)			
9.	a)	आकॅ रॅमा शब्दःस्त्रीलिङ्गस:	8 Marks	L3	CO4
	b)	उकॅ गॅुरु शाब्दरूपुंल्लिखुत:	8 Marks	L1	CO4

MODULE-V

10.	a)	पाणिनि कविपरिचयं लिखत	8 Marks	L1	CO5
	b)	कौटिल्य कविपरिचयं लिखत	8 Marks	L3	CO5
		(OR)			
11.	a)	आदिशङ्कराचार्य कविपरिचयं लिखत	8 Marks	L3	CO5
	b)	भरतमुनि कविपरिचयं लिखत	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T & B.Sc. I Semester (MBU-22) Regular Examinations, May – 2025

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, 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 the meaning of the following words: i) Road ii) Scrubland	2 Marks	L1	CO1
	b)	Fill in the blanks with appropriate words to form tongue twisters: i) She sells sea _____ on the sea shore. ii) I scream, you scream, we all _____ for ice cream.	2 Marks	L1	CO1
	c)	Underline the auxiliary verbs in the sentences: i) English is an interesting language. ii) I am staying in Srinagar.	2 Marks	L1	CO2
	d)	Recall the letters to form meaningful words: i) S-R-D-W-O ii) R-E-D-G-A-N	2 Marks	L1	CO2
	e)	Find the type of sentence: i) I am an Indian. ii) Hurrah! We won the match.	2 Marks	L1	CO3
	f)	Find the error in the sentences: i) Does you see it? ii) I am seeing the sun rise this morning.	2 Marks	L1	CO3
	g)	Fill in the blanks with appropriate preposition: i) The ball fell _____ the well. (into, below) ii) I am meeting Jaya _____ 5pm. (on, at)	2 Marks	L1	CO4
	h)	Mark the falling and rising intonation in the following sentences: i) He is my father. ii) You like baking, don't you?	2 Marks	L1	CO4
	i)	Write the meanings of the following idioms and phrases given below: i) raining cats and dogs ii) in black and white	2 Marks	L1	CO5
	j)	Write interrogative sentence using the following words: i) How ii) When	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the significance of the line "if you can't be a pine on the top of the hill."	8 Marks	L2	CO1
	b)	How does the poem 'Be the best whatever you are' encourage resilience and perseverance in the face of challenges?	8 Marks	L3	CO1

(OR)

3.	a)	What role does attitude play in achieving success according to the poem 'Be the best whatever you are'?	8 Marks	L1	CO1
	b)	How does the poem 'Be the best whatever you are' challenge conventional notions of success and achievement?	8 Marks	L1	CO1

MODULE-II

4.	a)	Are the words 'sorry', 'thank you' and 'please' important in conversations- Explain from the short essay 'On Saying Please'.	8 Marks	L2	CO2
	b)	Explain how the stream of general life get affects by one's behaviour from the short essay 'On Saying Please'.	8 Marks	L3	CO2

(OR)

5.	a)	Write about the author of the short essay "On Saying Please".	8 Marks	L1	CO2
	b)	What are Imperative and Exclamatory sentence? Give suitable examples.	8 Marks	L1	CO2

MODULE-III

6.	a)	Write an essay on 'Importance of hygiene and sanitization'.	8 Marks	L2	CO3
	b)	What carries the speaker towards his beloved in the poem 'If You Forget Me'?	8 Marks	L3	CO3

(OR)

7.	a)	Analyse 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.	8 Marks	L4	CO3
	b)	Analyse these lines from the poem 'If You Forget Me'. I shall lift my arms and my roots will set off to seek another land.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain the line from the short story "After the Sunset" 'Where are so many people coming from? Where are they going? Rows and ranks'.	8 Marks	L1	CO4
	b)	Write about the author of the short story "After the Sunset".	8 Marks	L1	CO4

(OR)

9.	a)	Discuss the different degrees of comparison with examples.	8 Marks	L3	CO4
	b)	What is active and passive voice? Give examples.	8 Marks	L1	CO4

MODULE-V

10.	a)	Write about the author of the essay "Man's Peril".	8 Marks	L1	CO5
	b)	What is Concord? Explain briefly with suitable examples.	8 Marks	L2	CO5

(OR)

11.	a)	Write the conversation between parents talking on ill effect of mobile on children.	8 Marks	L3	CO5
	b)	What is work ethics? List out the characteristics of work ethics.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T I Semester (MBU-22) Regular Examinations, May – 2025

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)	What is a nutrient artery?	2 Marks	L2	CO1
	b)	Name the carpal bones.	2 Marks	L1	CO1
	c)	Write a brief note on median cubital vein and its clinical importance.	2 Marks	L3	CO2
	d)	Name the branches of axillary artery.	2 Marks	L1	CO2
	e)	What is femoral canal?	2 Marks	L3	CO3
	f)	Name the tarsal bones in foot.	2 Marks	L1	CO3
	g)	Write a brief note on pleural effusion.	2 Marks	L2	CO4
	h)	Define bronchopulmonary segment of the lung.	2 Marks	L1	CO4
	i)	What is centromere and write its importance.	2 Marks	L2	CO5
	j)	List out abnormal sites of implantation.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Define cartilage, and describe types of cartilage with examples.	8 Marks	L2	CO1
	b)	Compare the features of skeletal muscle and smooth muscle.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain different types of movements possible in upper limb.	8 Marks	L1	CO1
	b)	Write in detail about blood supply of a long bone with a neat labelled diagram.	8 Marks	L3	CO1

MODULE-II

4.	a)	Illustrate anatomy of mammary gland under the following headings: i) Location & Extent ii) Structure iii) Blood supply & Nerve supply iv) Applied anatomy.	8 Marks	L3	CO2
	b)	What are intermuscular spaces? Explain boundaries and contents of intermuscular spaces.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain features of the humerus bone with its muscle attachments.	8 Marks	L1	CO2
	b)	What is cubital fossa? Explain boundaries and contents of cubital fossa.	8 Marks	L2	CO2

MODULE-III

6.	a)	Describe hip joint under the following headings: i) Type & Variety ii) Articular surfaces, Ligaments & Relations iii) Blood supply & Nerve supply iv) Applied anatomy.	8 Marks	L2	CO3
	b)	Explain saphenous nerve under the following headings: i) Origin ii) Course & Relations iii) Branches iv) Applied anatomy.	8 Marks	L3	CO3
		(OR)			
7.	a)	What are hamstring muscles? Describe origin, insertion, nerve supply, action and applied aspects of hamstring muscles.	8 Marks	L3	CO3
	b)	Describe boundaries of popliteal fossa and list out its contents.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe conducting system of the heart and add a note on its clinical anatomy.	8 Marks	L3	CO4
	b)	What is aorta? Explain parts of aorta, branches of aorta & its relations.	8 Marks	L2	CO4
		(OR)			
9.	a)	Write a note on blood supply of heart with a diagram.	8 Marks	L2	CO4
	b)	Explain structures passing through hilum of right lung and left lung.	8 Marks	L1	CO4

MODULE-V

10.	a)	Define connective tissue, and mention it's types with examples.	8 Marks	L1	CO5
	b)	Illustrate the microscopic structure of a bone T.S. & L.S.	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the histological features of a skeletal muscle.	8 Marks	L2	CO5
	b)	Define fertilization. Write the factors that affect fertilization.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.P.T I Semester (MBU-22) Regular Examinations, May – 2025

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)	Define homeostasis and mention an example for it.	2 Marks	L2	CO1
	b)	What is meant by facilitated diffusion?	2 Marks	L1	CO1
	c)	What is normal RBC count in males, females and infants?	2 Marks	L3	CO2
	d)	Define Polycythemia and mention its types with examples.	2 Marks	L1	CO2
	e)	Write in detail about contractility	2 Marks	L3	CO3
	f)	Classify various types of nerve fibers.	2 Marks	L1	CO3
	g)	Add a note on pathological variations of heart rate.	2 Marks	L2	CO4
	h)	Mention the Significance of pulse pressure	2 Marks	L3	CO4
	i)	Add a note on Hering-Breur reflex	2 Marks	L2	CO5
	j)	Mention the importance of Hb-O2 dissociation curve.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain different types of diffusion with neat labeled diagrams.	8 Marks	L2	CO1
	b)	Draw the diagram of homeostatic system and explain the positive and negative feedback mechanism of homeostatic system with examples.	8 Marks	L3	CO1

(OR)

3.	a)	Explain various types of cell junctions.	8 Marks	L1	CO1
	b)	Describe the structure and functions of mitochondria with a neat labeled diagram.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the stages of phagocytosis.	8 Marks	L1	CO2
	b)	Explain the stages of erythropoiesis and factors affecting it.	8 Marks	L3	CO2

(OR)

5.	a)	Write a note on blood indices, calculation of blood indices and its normal values.	8 Marks	L3	CO2
	b)	Classification of WBC cells with a neat labelled diagram.	8 Marks	L1	CO2

MODULE-III

6.	a)	List Earlanger and grasser classification of nerve fibers.	8 Marks	L1	CO3
	b)	Explain wallerian degeneration and retrograde regeneration in nerve fibre.	8 Marks	L3	CO3

(OR)

7.	a)	What is refractory period? Explain Types of refractory period with examples.	8 Marks	L3	CO3
	b)	Explain wallerian degeneration and retrograde regeneration in nerve fibre.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the pressure – volume changes during cardiac cycle.	8 Marks	L3	CO4
	b)	Add a note on angina pectoris.	8 Marks	L3	CO4

(OR)

9.	a)	Explain renin angiotensin aldosterone mechanism.	8 Marks	L3	CO4
	b)	Add a note factors affecting cardiac output.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the mechanism of oxygen transport.	8 Marks	L1	CO5
	b)	Add a note on P50.	8 Marks	L3	CO5

(OR)

11.	a)	Explain the mechanism of carbon dioxide transport.	8 Marks	L3	CO5
	b)	Add a note on Chloride shift.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

B.Sc. I Semester (MBU-22) Regular Examinations, May – 2025

HUMAN ANATOMY – I

[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 an "***elevation"*** and a "***depression"*** on the bone.	2 Marks	L2	CO1
	b)	Define "***abduction"*** and "***adduction"*** movements.	2 Marks	L1	CO1
	c)	Write a brief note on bone fracture.	2 Marks	L3	CO2
	d)	List out the parts of femur.	2 Marks	L1	CO2
	e)	Outline the branches of arch of aorta.	2 Marks	L3	CO3
	f)	Define pericardial cavity. And mention its clinical importance.	2 Marks	L1	CO3
	g)	What is pulmonary ligament? And write it's importance.	2 Marks	L2	CO4
	h)	Prepare a brief note on pleural effusion.	2 Marks	L3	CO4
	i)	Name the coverings of skeletal muscle.	2 Marks	L1	CO5
	j)	Define osteon. What are the structures present in osteon?	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 connective tissue? Add a note on the types of connective tissue with examples.	8 Marks	L2	CO1
	b)	Define anatomy. Add a note on the knowledge of anatomy in clinical practice.	8 Marks	L1	CO1
		(OR)			
3.	a)	Write a note on the terms used for describing blood vessels.	8 Marks	L3	CO1
	b)	Describe the different types of movements possible in lower limb.	8 Marks	L2	CO1

MODULE-II

4.	a)	Prepare a note on the composition of bone & functions of the bone.	8 Marks	L2	CO2
	b)	Explain the structural classification of joints with examples.	8 Marks	L3	CO2
		(OR)			
5.	a)	Define joint. Classify the types of joints with examples.	8 Marks	L3	CO2
	b)	Illustrate the structure of shoulder joint under the following headings: i) Type & Variety ii) Articular surfaces iii) Ligaments iv) Muscles & Movements v) Blood supply & Nerve supply vi) Applied anatomy.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain venous drainage of the heart with a diagram.	8 Marks	L3	CO3
	b)	Name the organs of lymphatic system. Describe structure of the spleen under following headings: External features Internal features Relations Blood supply & Nerve supply Applied anatomy.	8 Marks	L1	CO3
		(OR)			
7.	a)	Describe external features of the heart, and internal features of the left ventricle.	8 Marks	L2	CO3
	b)	Explain in detail about the fetal circulation with a diagram.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss structure of the pancreas under following headings: i) External features ii) Internal features iii) Relations iv) Blood supply & Nerve supply v) Applied anatomy.	8 Marks	L3	CO4
	b)	List out the parts of small intestine. Describe structure of the duodenum under following headings: i) External features ii) Internal features iii) Relations iv) Blood supply & Nerve supply v) Applied anatomy.	8 Marks	L2	CO4
		(OR)			
9.	a)	What are salivary glands? Explain structure of the parotid gland under following headings: i) External features ii) Internal features iii) Relations iv) Blood supply & Nerve supply v) Applied anatomy.	8 Marks	L3	CO4
	b)	Illustrate various positions of the appendix with a neat labeled diagram.	8 Marks	L2	CO4

MODULE-V

10.	a)	Define stratified epithelium. Add a note on the types of epithelium with examples.	8 Marks	L1	CO5
	b)	Draw a neat labeled diagram of microscopic structure of the bone T.S.	8 Marks	L2	CO5
		(OR)			
11.	a)	Illustrate microscopic structure of the cardiac muscle with a diagram.	8 Marks	L2	CO5
	b)	Explain histological features of smooth muscle with a diagram.	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) Regular Examinations, May – 2025

HUMAN PHYSIOLOGY – I

[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 about composition of Blood.	2 Marks	L2	CO1
	b)	What is normal RBC count in males, females and infants?	2 Marks	L1	CO1
	c)	Add a note on length-tension relationship.	2 Marks	L3	CO2
	d)	Draw the graphical representation of Action potential.	2 Marks	L1	CO2
	e)	What are enzymes secreted by pancreas?	2 Marks	L3	CO3
	f)	Add a note on Pendular movements.	2 Marks	L1	CO3
	g)	What is hypercapnia?	2 Marks	L2	CO4
	h)	Add a note High altitude sickness.	2 Marks	L3	CO4
	i)	Draw a neat labeled diagram of urinary bladder.	2 Marks	L2	CO5
	j)	Write about the compositionof urine.	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Discuss the steps involved in phagocytosis.	8 Marks	L2	CO1
	b)	Add a note on bleeding and clotting disorders.	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe about erythroblastosis fetalis.	8 Marks	L1	CO1
	b)	Add a note on hazards of blood transfusion.	8 Marks	L3	CO1

MODULE-II

4.	a)	Define tetanus. Explain the types of tetanus.	8 Marks	L1	CO2
	b)	What is electromyogram? Explain the uses of electromyogram and disorders of skeletal muscle.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the length - tension relationship of a muscle.	8 Marks	L3	CO2
	b)	Write the differences between skeletal and cardiac muscles.	8 Marks	L1	CO2

MODULE-III

6.	a)	Discuss different types of movements in small intestine.	8 Marks	L2	CO3
	b)	Explain the mechanism the HCl formation.	8 Marks	L3	CO3

(OR)

7.	a)	Briefly explain the process of digestion and absorption in small intestine.	8 Marks	L3	CO3
	b)	Add a note on entero-hepatic circulation.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain different types of regulation of respiration.	8 Marks	L3	CO4
	b)	Add a note on hypoxia and it's types.	8 Marks	L3	CO4

(OR)

9.	a)	Add a note on pneumonia and emphysema.	8 Marks	L3	CO4
	b)	Explain decompression sickness.	8 Marks	L1	CO4

MODULE-V

10.	a)	Describe metabolic acidosis and alkalosis.	8 Marks	L1	CO5
	b)	Define GFR. Add a note on filteration membrane.	8 Marks	L3	CO5

(OR)

11.	a)	Enumerate the factors affecting GFR.	8 Marks	L3	CO5
	b)	Explain acidification of urine with a neat labelled diagram.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, April – 2025

CLINICAL ORTHOPAEDICS

[Orthopedics]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How would you analyze the grades II and III sprain based on signs and symptoms?	2 Marks	L2	CO1
	b)	Differentiate Nonunion and Malunion.	2 Marks	L1	CO1
	c)	Write any four clinical features of rickets.	2 Marks	L3	CO2
	d)	What is ganglion?	2 Marks	L1	CO2
	e)	How does the Barlow test is differed from Ortolani test?	2 Marks	L3	CO3
	f)	Define metastasis.	2 Marks	L1	CO3
	g)	Name the two tests for tennis elbow diagnosis.	2 Marks	L2	CO4
	h)	What is cervical radiculopathy?	2 Marks	L3	CO4
	i)	What is pyriformis syndrome?	2 Marks	L2	CO5
	j)	What is Clarke's sign?	2 Marks	L3	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the causes, clinical features, and management of Volkman's contracture.	8 Marks	L2	CO1
	b)	How would you evaluate the diagnosis and treatment options for shoulder dislocation?	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain the types, clinical features, and management of meniscal injuries of the knee.	8 Marks	L1	CO1
	b)	What is sprain? Write the causes, clinical features, and management of acute ankle sprain.	8 Marks	L3	CO1

MODULE-II

4.	a)	What is osteoporosis? Add a note on clinical features and management of osteoporosis.	8 Marks	L1	CO2
	b)	How does Erb's palsy affect the shoulder, arm, and hand functions?	8 Marks	L3	CO2
		(OR)			
5.	a)	Write the causes, and pathophysiology of lumbar stenosis.	8 Marks	L3	CO2
	b)	Explain the mechanism that leads to carpal tunnel syndrome.	8 Marks	L1	CO2

MODULE-III

6.	a)	Write the pathology, clinical features, and management of Ewing's sarcoma.	8 Marks	L2	CO3
	b)	Define poliomyelitis. Discuss the different clinical stages and management of Poliomyelitis.	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss the complications of spinal cord injury – i) Pressure sores ii) DVT iii) Ectopic ossification	8 Marks	L3	CO3
	b)	Define avascular necrosis. Write the causes, clinical features, and management of avascular necrosis.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Explain the concept of thoracic outlet syndrome and its association with cervical ribs.	8 Marks	L3	CO4
	b)	Write the symptoms, diagnosis, and management of cervical rib.	8 Marks	L3	CO4
		(OR)			
9.	a)	Discuss the symptoms, diagnosis, and management of De Quervain's disease.	8 Marks	L3	CO4
	b)	Elaborate the management of trigger finger.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain the concept of radicular pain in the context of sciatica.	8 Marks	L1	CO5
	b)	How would you explain the causes, clinical features, and management of plantar fasciitis?	8 Marks	L3	CO5
		(OR)			
11.	a)	Differentiate Lumbarization and sacralization along with symptoms, and management.	8 Marks	L3	CO5
	b)	Write the causes, clinical features, and management of pre-patellar bursitis.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, April – 2025

CLINICAL CARDIO VASCULAR AND PULMONARY

[Cardio Vascular and Pulmonary]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define arteriosclerosis.	2 Marks	L1	CO1
	b)	What is myocardial infarction?	2 Marks	L1	CO1
	c)	Mention any four indications of Septal myectomy.	2 Marks	L1	CO2
	d)	List out four vascular surgeries.	2 Marks	L1	CO2
	e)	What is the clinical significance of spirometry in diagnosing asthma?	2 Marks	L1	CO3
	f)	Name two pathophysiological changes seen in emphysema.	2 Marks	L1	CO3
	g)	Define pulmonary resection.	2 Marks	L2	CO4
	h)	What is pleurectomy, and when is it performed?	2 Marks	L1	CO4
	i)	Explain types of heart transplantation.	2 Marks	L2	CO2
	j)	Define obstructive lung disease and give two examples.	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)	Define tetralogy of fallot. Identify causes, pathophysiology and complications.	8 Marks	L1	CO1
	b)	Discuss the investigations and medical and surgical management tetralogy of fallot.	8 Marks	L3	CO1
		(OR)			
3.	a)	Evaluate the clinical management of varicose veins.	8 Marks	L5	CO1
	b)	Explain the clinical features treatment procedure of raynaud's disease.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain in detail about heart transplantation.	8 Marks	L1	CO2
	b)	Analyze the complications of stent placement.	8 Marks	L4	CO2
		(OR)			
5.	a)	Define percutaneous coronary intervention, write the procedure and causes.	8 Marks	L1	CO2
	b)	Summarize the types of cardiac implantable electronic devices.	8 Marks	L5	CO2

MODULE-III

6.	a)	Write an essay on the formation and management of lung abscesses.	8 Marks	L1	CO3
	b)	Determine occupational lung diseases with a focus on inhalation injuries and their prevention.	8 Marks	L3	CO3

(OR)

7.	a)	Outline the impact of chest trauma on respiratory function and its management.	8 Marks	L4	CO3
	b)	Discuss chest wall deformities and their implications for respiratory health.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the role and steps involved in a window operation for thoracic infections.	8 Marks	L2	CO4
	b)	Compare the surgical management of localized vs. widespread lung infections.	8 Marks	L5	CO4

(OR)

9.	a)	Describe post-operative care and complications associated with thoracic surgeries.	8 Marks	L2	CO4
	b)	Formulate the process of diagnosing and treating pleural conditions requiring pleurectomy.	8 Marks	L6	CO4

MODULE-V

10.	a)	Write about signs and symptoms of thrombophlebitis.	8 Marks	L1	CO1
	b)	Describe about diseases of the myocardium.	8 Marks	L2	CO1

(OR)

11.	a)	Write about the challenges and management of patients undergoing thoracotomy.	8 Marks	L1	CO4
	b)	Evaluate the clinical importance of thoracic surgeries in treating tuberculosis sequelae.	8 Marks	L5	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, April – 2025

CLINICAL NEUROLOGY

[Neurology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the stages and effects of neurosyphilis?	2 Marks	L1	CO1
	b)	List out the progression and complications of poliomyelitis.	2 Marks	L1	CO1
	c)	Define Aphasia and in which conditions it is commonly seen.	2 Marks	L1	CO2
	d)	What is dystonia?	2 Marks	L1	CO2
	e)	What is compression of spinal cord?	2 Marks	L1	CO3
	f)	Difference between epidural abscess and extra dural abscess.	2 Marks	L1	CO3
	g)	Write any four the symptoms of cerebellar lesions.	2 Marks	L2	CO4
	h)	What are the types of motor neuron disease?	2 Marks	L1	CO4
	i)	Write about any four symptoms and management strategies for viral encephalitis.	2 Marks	L2	CO5
	j)	Brief about subacute sclerosing panencephalitis.	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 hypoglycemic encephalopathy, and its effects on the central nervous system.	8 Marks	L2	CO1
	b)	Discuss hepatic encephalopathy and its neurological manifestations.	8 Marks	L2	CO1

(OR)

3.	a)	Write a detailed note on spina bifida, its types, and management.	8 Marks	L2	CO1
	b)	Explain the causes, types, and treatment of hydrocephalus.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the different types of cerebellar disorders and its common clinical manifestations.	8 Marks	L2	CO2
	b)	Describe the pathophysiological mechanisms, clinical features and neuro imaging techniques involved in traumatic brain injury.	8 Marks	L2	CO2

(OR)

5.	a)	Discuss about the chorea, athetosis, tremors and ballism's.	8 Marks	L2	CO2
	b)	Describe the various types of dystonia, their pathophysiology, clinical presentation, and treatment.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write about the transverse myelitis, clinical features, diagnostic approaches and treatment options.	8 Marks	L2	CO3
	b)	Discuss the acute disseminated encephalomyelitis, clinical features, diagnostic approaches and treatment options.	8 Marks	L2	CO3

(OR)

7.	a)	Summarise the pathophysiology, and clinical features of intervertebral disc prolapse.	8 Marks	L2	CO3
	b)	Explain the multiple sclerosis, aetiology, diagnostic approaches and treatment options.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss detail about Erb's and klumpke's palsy.	8 Marks	L2	CO4
	b)	Explain in detail about types of learning disorders.	8 Marks	L2	CO4

(OR)

9.	a)	Describe the causes, clinical features, types and prevention peripheral plexus lesion.	8 Marks	L2	CO4
	b)	Explain pathophysiology of motor neuron disease. Classify motor neuron disease.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the anomalies of the craniovertebral junction and their neurological consequences.	8 Marks	L2	CO5
	b)	Describe the surgical management of intracranial neoplasms.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss about the management and rehabilitation of patients with neurological infections.	8 Marks	L2	CO5
	b)	Write about the diagnostic tools used in the evaluation of CNS infections and tumors.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, April – 2025

BASIC SCIENCE - ORTHOPAEDICS

[Orthopedics]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Classification of lumbar spondylolisthesis.	2 Marks	L1	CO1
	b)	List the names of the bones in the appendicular skeleton.	2 Marks	L1	CO1
	c)	Define boutonniere deformity.	2 Marks	L1	CO2
	d)	What is cubitus valgus and varus?	2 Marks	L1	CO2
	e)	What is Tennis leg?	2 Marks	L1	CO3
	f)	Define Q-angle.	2 Marks	L1	CO3
	g)	Define lumbosacral angle.	2 Marks	L2	CO4
	h)	Define lumbopelvic rythm.	2 Marks	L1	CO4
	i)	Define cadence.	2 Marks	L1	CO5
	j)	What is the percentage of swing phase and stance phase?	2 Marks	L2	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Draw and explain the structure and formation of brachial plexus	8 Marks	L2	CO1
	b)	Describe ulnar nerve under the following headings i) root value ii) course iii) relations iv) clinical anatomy	8 Marks	L1	CO1
		(OR)			
3.	a)	Describe pectoral region muscles and serratus anterior under the following headings. i) origin and insertion ii) nerve supply iii) action iv) Applied anatomy	8 Marks	L1	CO1
	b)	Draw and explain the structure and formation of brachial plexus	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe mechanics and pathomechanics of elbow flexors.	8 Marks	L2	CO2
	b)	Explain the mechanics and pathomechanics of ligaments of elbow complex with neat labelled diagram.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain about the mechanics of extensor mechanism influence on metacarpophalangeal joint and interphalangeal joint.	8 Marks	L3	CO2
	b)	Describe mechanics and pathomechanics of elbow flexors.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain about the pathomechanics of Sartorius muscle.	8 Marks	L2	CO3
	b)	Elaborate pathomechanics of iliotibial band.	8 Marks	L1	CO3

(OR)

7.	a)	Elucidate the mechanics of Ankle osteoarthritis. Add a note forces on the great toe during gait.	8 Marks	L2	CO3
	b)	Explain about the pathomechanics of Sartorius muscle.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss about pelvic floor muscles. Elucidate about the pregnancy impact on sacral mechanics.	8 Marks	L2	CO4
	b)	Explain the loads on the low back during lifting and walking.	8 Marks	L2	CO4

(OR)

9.	a)	What are the specific functions of pelvic and perineal musculature?	8 Marks	L3	CO4
	b)	Discuss about pelvic floor muscles. Elucidate about the pregnancy impact on sacral mechanics.	8 Marks	L2	CO4

MODULE-V

10.	a)	Describe the parameters of gait.	8 Marks	L2	CO5
	b)	Explain about stance phase of gait cycle.	8 Marks	L2	CO5

(OR)

11.	a)	Write about muscle activity during locomotion	8 Marks	L2	CO5
	b)	Describe the parameters of gait.	8 Marks	L2	CO5

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

MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, April – 2025

BASIC SCIENCE - CARDIOVASCULAR AND PULMONARY

[Cardio Vascular and Pulmonary]

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 hemodynamic?	2 Marks	L1	CO1
	b)	Write about four chambers of heart.	2 Marks	L1	CO1
	c)	Define atherosclerosis.	2 Marks	L1	CO2
	d)	Name the diagnostic method for detecting cardiac tumors.	2 Marks	L1	CO2
	e)	What is a pulmonary function test, and why is it performed?	2 Marks	L1	CO3
	f)	Define hypercapnia.	2 Marks	L1	CO3
	g)	State the significance of cough reflex in respiratory mechanics.	2 Marks	L1	CO4
	h)	What is bronchopulmonary dysplasia?	2 Marks	L1	CO4
	i)	List out common congenital heart defects.	2 Marks	L1	CO2
	j)	Differentiate between pectus carinatum and pectus excavatum.	2 Marks	L3	CO4

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Summarize the origin and clinical significance of normal and abnormal heart sounds.	8 Marks	L2	CO1
	b)	Analyse the cardiovascular adjustments during exercises.	8 Marks	L4	CO1
		(OR)			
3.	a)	Define circulatory shock and explain its classification.	8 Marks	L1	CO1
	b)	Explain the determinants of stroke volume and heart rate in cardiac output.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the role of valvular calcification in heart disease.	8 Marks	L2	CO2
	b)	Explain the pathomechanics of acute pericarditis.	8 Marks	L2	CO2
		(OR)			
5.	a)	Describe the compensatory mechanisms involved in cardiac hypertrophy.	8 Marks	L2	CO2
	b)	Define mitral valve stenosis. Explain the pathomechanics of mitral valve stenosis.	8 Marks	L2	CO2

MODULE-III

6.	a)	Illustrate the adaptations of the respiratory system to high altitude using a diagram.	8 Marks	L3	CO3
	b)	Compare and contrast the physiological challenges faced during high-altitude exposure and deep-sea diving.	8 Marks	L4	CO3
		(OR)			

7.	a)	Write about the mechanics of ventilation.	8 Marks	L1	CO3
	b)	Describe the processes of oxygen and carbon dioxide transport in the blood.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain the Pathomechanics of flail chest and its management.	8 Marks	L2	CO4
	b)	What are the common respiratory challenges in pediatric asthma?	8 Marks	L1	CO4
		(OR)			
9.	a)	Define the key respiratory mechanics in conditions like ARDS and interstitial lung disease.	8 Marks	L1	CO4
	b)	Describe the impact of cystic fibrosis on lung function.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Describe fetal circulation.	8 Marks	L1	CO1
	b)	Discuss the anatomical and physiological changes in the cardiovascular system during growth and development.	8 Marks	L2	CO1
		(OR)			
11.	a)	Illustrate the mechanics of inspiration and expiration.	8 Marks	L3	CO3
	b)	Explain the role of alveolar air in the gas exchange process.	8 Marks	L2	CO3



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.P.T. III Semester (MBU-22) Regular Examinations, April – 2025

BASIC SCIENCE - NEUROLOGY

[Neurology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Patho mechanics of peripheral nerves.	2 Marks	L2	CO1
	b)	Write any four properties of nerve fibers.	2 Marks	L1	CO1
	c)	Define the internal capsule.	2 Marks	L2	CO2
	d)	Mention the primary function of the hypothalamus.	2 Marks	L1	CO2
	e)	Write about the classification of muscle.	2 Marks	L2	CO3
	f)	What is neuromuscular junction?	2 Marks	L1	CO3
	g)	List the ascending tracts of the spinal cord and their specific functions.	2 Marks	L1	CO4
	h)	What are the functions of the descending tracts in the spinal cord?	2 Marks	L1	CO4
	i)	Draw the parts of brain stem.	2 Marks	L1	CO5
	j)	Enlist the nerves emerging from the pons.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Draw the structure and function of internal capsule and its significance in motor and sensory pathways.	8 Marks	L3	CO1
	b)	Explain the anatomy and function of the basal ganglia along with their clinical importance?	8 Marks	L3	CO1
		(OR)			
3.	a)	Describe the ascending and descending pathways of the CNS with examples of tracts and their functions?	8 Marks	L2	CO1
	b)	Summarize the structures and functional organization of the PNS.	8 Marks	L3	CO1

MODULE-II

4.	a)	Summarize the anatomy and functions of medulla, midbrain and pons.	8 Marks	L3	CO2
	b)	Explain in detail about parts of the cerebellum and its functions.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the role of pons in regulating respiration.	8 Marks	L2	CO2
	b)	Describe the role of sympathetic nervous system and parasympathetic nervous system.	8 Marks	L3	CO2

MODULE-III

6.	a)	Differentiate the afferent and efferent connections of the cerebellum with other parts of the central nervous system and analyze their role in fine-tuning motor activity.	8 Marks	L3	CO3
	b)	Summarize the physiological functions of the cerebral cortex in sensory processing, motor control, and higher cognitive activities.	8 Marks	L3	CO3
		(OR)			
7.	a)	Discuss the integrative role of the cerebral cortex through its connections with subcortical structures.	8 Marks	L2	CO3
	b)	Describe the structural organization of nerve fibers and their classification.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Illustrate the anatomy and physiology of the peripheral nervous system.	8 Marks	L3	CO4
	b)	Correlate the autonomic nervous system (ANS) and its role in maintaining homeostasis.	8 Marks	L2	CO4
		(OR)			
9.	a)	Write about the cranial nerves, their nuclei, and their functional classification.	8 Marks	L2	CO4
	b)	Explain the principles of motor control and its relevance in neurological physiotherapy.	8 Marks	L3	CO4

MODULE-V

10.	a)	Summarize the structure and functions of the midbrain, pons, and medulla.	8 Marks	L3	CO5
	b)	Elaborate the special senses of human body.	8 Marks	L3	CO5
		(OR)			
11.	a)	Discuss about the neuron and its classification.	8 Marks	L2	CO5
	b)	Illustrate the parts of mid brain and its functions.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

CELL BIOLOGY AND INTRODUCTION TO CANCER BIOLOGY

[Biotechnology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	How does the nuclear envelope contribute to cellular compartmentalization?	2 Marks	L1	CO1
	b)	What is a nuclear pore?	2 Marks	L1	CO1
	c)	What is the main function of the Golgi apparatus in protein processing?	2 Marks	L1	CO2
	d)	How do proteins enter the mitochondria?	2 Marks	L1	CO2
	e)	What is the role of myosin in muscle contraction?	2 Marks	L1	CO3
	f)	Describe the basic structure of cilia.	2 Marks	L2	CO3
	g)	What are G-protein coupled receptors (GPCRs)?	2 Marks	L1	CO4
	h)	Describe the cAMP signaling pathway.	2 Marks	L2	CO4
	i)	What are the intrinsic and extrinsic pathways of apoptosis?	2 Marks	L1	CO5
	j)	What distinguishes oncogenes from proto-oncogenes?	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 process and regulation of nuclear import and export of proteins and RNA.	9 Marks	L2	CO1
	b)	Compare the structure and function of the endoplasmic reticulum in protein and lipid synthesis.	7 Marks	L2	CO1
		(OR)			
3.	a)	Discuss the role of the Golgi apparatus in modifying, sorting, and packaging cellular products.	7 Marks	L5	CO1
	b)	Explain the significance of mitochondria in cellular respiration and energy production.	9 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the mechanisms of import and sorting of chloroplast proteins.	8 Marks	L5	CO2
	b)	Compare and contrast co-translational and post-translational protein targeting to the ER.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain how misfolded proteins are managed in the ER.	7 Marks	L2	CO2
	b)	Discuss the significance of glycosylation in protein processing within the ER and Golgi.	9 Marks	L5	CO2

MODULE-III

6.	a)	Describe the molecular mechanism of muscle contraction involving actin and myosin.	7 Marks	L2	CO3
	b)	Explain the structure and function of cilia in eukaryotic cells.	9 Marks	L2	CO3
		(OR)			
7.	a)	Discuss the structure and function of flagella in eukaryotic cells.	9 Marks	L5	CO3
	b)	Compare the mechanisms of movement in cilia and flagella.	7 Marks	L2	CO3

MODULE-IV

8.	a)	Discuss the role of cGMP in cellular signaling and its associated pathways.	9 Marks	L5	CO4
	b)	Explain how phospholipids and calcium ions are involved in signal transduction.	7 Marks	L2	CO4
		(OR)			
9.	a)	Describe the MAP kinase pathway and its role in cellular responses to external signals.	8 Marks	L2	CO4
	b)	Explain the JAK-STAT pathway and its importance in cytokine signaling.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the different types of cancer based on origin and behavior.	9 Marks	L2	CO5
	b)	Discuss the stages involved in the development of cancer.	7 Marks	L5	CO5
		(OR)			
11.	a)	Define oncogenes and describe their role in cancer development.	8 Marks	L1	CO5
	b)	Explain the transformation of proto-oncogenes into oncogenes.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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)	Define heterocyclic compounds.	2 Marks	L1	CO1
	b)	Name important applications of heterocyclic compounds in biological systems.	2 Marks	L1	CO1
	c)	List the sigma and pi electrons present in pyrrole.	2 Marks	L1	CO2
	d)	Identify the hybridization on each carbon and nitrogen in pyrrole.	2 Marks	L1	CO2
	e)	Give a general method for the synthesis of azetidines.	2 Marks	L1	CO3
	f)	Identify the general reactivity trend of azetidines compared to aziridines.	2 Marks	L1	CO3
	g)	Name the starting materials and reagents used in the Paal-Knorr synthesis of pyrrole.	2 Marks	L1	CO4
	h)	State the role of the lone pair of electrons on the nitrogen atom of pyrrole in its basicity.	2 Marks	L1	CO4
	i)	State why is indole susceptible to electrophilic attack at the 3-position.	2 Marks	L1	CO5
	j)	Identity the importance of indole in biological 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 how ring strain and other factors influence the stability of 3-7 membered rings with examples.	7 Marks	L2	CO1
	b)	Provide the systematic names (using the Hantzsch-Widman system) for the following monocyclic heterocycles: (Provide 5-6 structures with varying ring sizes and heteroatoms).	9 Marks	L3	CO1

(OR)

3.	a)	Describe the nomenclature rules for specifying the bridgehead atoms and the number of atoms in each bridge. Give examples of bridged heterocycles and their IUPAC names.	8 Marks	L2	CO1
	b)	Give the systematic names and draw the structures of indole, benzofuran, quinoline, Isoquinine.	8 Marks	L3	CO1

MODULE-II

4.	a)	Discuss the molecular orbital diagram for furan.	8 Marks	L2	CO2
	b)	Explain the concept of aromaticity in heterocyclic compounds.	8 Marks	L3	CO2

(OR)

5.	a)	Explain the amine and imine tautomerism in heterocyclic aromatic compounds.	8 Marks	L2	CO2
	b)	Compare the aromatic character of five-membered and six-membered heterocyclic rings. Illustrate with examples like pyrrole, pyridine.	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the acid-catalyzed ring-opening of oxiranes with alcohols. Provide a mechanism for the reaction.	8 Marks	L3	CO3
	b)	Compare and contrast the reactivity of azetidines with aziridines.	8 Marks	L3	CO3

(OR)

7.	a)	Discuss the base-catalyzed ring-opening of oxetanes. Provide a specific example.	8 Marks	L3	CO3
	b)	Describe the reaction of thietanes with alkyl halides. Explain the mechanism.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Describe the reaction of thiophene with strong oxidizing agents. Explain the formation of thiophene sulfone and its significance.	8 Marks	L3	CO4
	b)	Describe the reaction of furan with halogens. Explain the formation of the observed products and the reaction mechanism.	8 Marks	L3	CO4

(OR)

9.	a)	Explain the reaction of thiophene with organolithium reagents. Outline the formation of 2-thienyllithium and its uses.	8 Marks	L3	CO4
	b)	Explain why piperidine is more basic than pyridine. Use structural arguments and orbital hybridization to support your answer.	8 Marks	L3	CO4

MODULE-V

10.	a)	Describe the Bischler-Napieralski synthesis of isoquinoline and outline the reagents and mechanism.	8 Marks	L3	CO5
	b)	Explain the regioselectivity of electrophilic substitution in isoquinoline and provide a suitable example.	8 Marks	L3	CO5

(OR)

11.	a)	Describe the reactions of isoquinoline with strong nucleophiles and explain the products.	8 Marks	L3	CO5
	b)	Discuss the oxidation of isoquinoline with different oxidizing agents and the resulting products.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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)	Mention two examples of tetracycline antibiotics.	2 Marks	L1	CO1
	b)	What are the current trends in antibiotic therapy?	2 Marks	L1	CO1
	c)	Define NSAIDs with examples.	2 Marks	L1	CO2
	d)	What are the uses of naproxen?	2 Marks	L2	CO2
	e)	Name two drugs effective against the liver stage of Plasmodium vivax.	2 Marks	L1	CO3
	f)	Write the chemical formula of Chloroquine.	2 Marks	L2	CO3
	g)	What is glucagon-like peptide-1 (GLP-1)?	2 Marks	L2	CO4
	h)	Name any two biguanides used in diabetes treatment.	2 Marks	L1	CO4
	i)	What is the primary target of Rifampin in tuberculosis treatment?	2 Marks	L1	CO5
	j)	Name any two drugs synthesized for the treatment of tuberculosis.	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 theories of drug-receptor interaction with suitable examples.	8 Marks	L3	CO1
	b)	Discuss the synthesis and therapeutic uses of tetracyclines.	8 Marks	L3	CO1
		(OR)			
3.		Discuss the mechanisms and causes of drug resistance on various medicinal products.	16 Marks	L4	CO1

MODULE-II

4.		Explain the preparation, properties, and side effects of sodium salicylate.	16 Marks	L4	CO2
		(OR)			
5.		Explain the synthesis, uses, and adverse effects of diclofenac.	16 Marks	L4	CO2

MODULE-III

6.		Compare the therapeutic uses, mechanism of action, and side effects of Chloroquine and Quinine.	16 Marks	L5	CO3
		(OR)			
7.	a)	Explain the current treatment strategy for malaria, including drug combinations for uncomplicated and severe malaria.	8 Marks	L4	CO3
	b)	Write the synthesis and chemical properties of Chloroquine.	8 Marks	L4	CO3

MODULE-IV

8.		Discuss the chemical structure and biosynthesis of insulin.	16 Marks	L4	CO4
		(OR)			
9.		Explain the role of lifestyle modifications in managing diabetes mellitus.	16 Marks	L3	CO4

MODULE-V

10.		Write a detailed note on the mechanism of action of drugs employed for the treatment of tuberculosis.	16 Marks	L5	CO5
		(OR)			
11.	a)	Discuss the current treatment strategy for tuberculosis as per WHO guidelines.	8 Marks	L4	CO5
	b)	Explain the differences between first-line and second-line drugs used in tuberculosis treatment.	8 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

MICROBIAL GENETICS & RDNA TECHNOLOGY

[Biotechnology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Nucleotide.	2 Marks	L2	CO1
	b)	Explain differences between DNA and RNA.	2 Marks	L3	CO1
	c)	Define Mutation.	2 Marks	L1	CO2
	d)	Define Nucleosome.	2 Marks	L2	CO2
	e)	Explain Expression Vectors.	2 Marks	L3	CO3
	f)	Define Fusion Protein.	2 Marks	L2	CO3
	g)	Define cDNA.	2 Marks	L1	CO4
	h)	Explain His Tag.	2 Marks	L2	CO4
	i)	Explain about antisense molecules.	2 Marks	L3	CO5
	j)	Explain labeling of DNA.	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 DNA replication in detail.	8 Marks	L2	CO1
	b)	Explain B - Structure of DNA.	8 Marks	L3	CO1
		(OR)			
3.	a)	Explain Transformation and mechanism of Transformation in detail.	8 Marks	L3	CO1
	b)	Explain DNA Repair Mechanisms in detail.	8 Marks	L2	CO1

MODULE-II

4.	a)	Define Mutation and Explain types of Mutations in detail.	8 Marks	L3	CO2
	b)	Explain the types of plasmids in detail.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain Physical and Chemical Mutagens in detail.	8 Marks	L2	CO2
	b)	Define mutagenesis and Explain Ames test in detail.	8 Marks	L3	CO2

MODULE-III

6.	a)	Define Fusion Protein and Explain HisTag in detail.	10 Marks	L2	CO3
	b)	Explain Signal Transduction in Microbes.	6 Marks	L3	CO3
		(OR)			
7.	a)	Explain Bacteriophage vectors in detail.	10 Marks	L2	CO3
	b)	Explain pBAD vectors and pET based vectors in detail.	6 Marks	L3	CO3

MODULE-IV

8.	a)	Explain Enzyme inducible expression systems in detail.	8 Marks	L2	CO4
	b)	Explain construction of Genome and cDNA libraries in detail.	8 Marks	L3	CO4

(OR)

9.	a)	Explain Cloning vectors in detail.	10 Marks	L2	CO4
	b)	Explain Lambda phage vectors in detail.	6 Marks	L3	CO4

MODULE-V

10.	a)	Explain DNA sequencing in detail.	8 Marks	L2	CO5
	b)	Explain Gene Therapy in detail.	8 Marks	L3	CO5

(OR)

11.	a)	Explain Synthesis of Insulin by rDNA technology in detail.	8 Marks	L3	CO5
	b)	Explain recombinant vaccines in detail.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

BIOPROCESS TECHNOLOGY

[Biotechnology]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define bioprocess technology.	2 Marks	L1	CO1
	b)	What are traditional applications of biotechnology?	2 Marks	L1	CO1
	c)	Define fermentation.	2 Marks	L1	CO2
	d)	What are the general applications of fermentation?	2 Marks	L1	CO2
	e)	What are the basic medium requirements for fermentation processes?	2 Marks	L1	CO3
	f)	Define microbial growth parameters.	2 Marks	L1	CO3
	g)	Define convective mass transfer.	2 Marks	L1	CO4
	h)	What is gas-liquid mass transfer?	2 Marks	L1	CO4
	i)	What are the phases of cell growth in batch cultures?	2 Marks	L1	CO5
	j)	What is product inhibition in microbial growth?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the various traditional and modern applications of biotechnology in the industry.	9 Marks	L2	CO1
	b)	Discuss the concept of an integrated bioprocess with a detailed example.	7 Marks	L2	CO1

(OR)

3.	a)	Describe in detail the unit operations involved in upstream processing	10 Marks	L2	CO2
	b)	Outline the steps in downstream processing and their significance in product recovery.	6 Marks	L3	CO1

MODULE-II

4.	a)	Explain the general concepts of fermentation with suitable examples.	9 Marks	L2	CO2
	b)	Discuss the applications of fermentation in the production of microbial biomass, enzymes, and metabolites.	7 Marks	L2	CO2

(OR)

5.	a)	Describe the structure and components of a typical fermenter.	10 Marks	L2	CO2
	b)	Outline the differences between aerobic and anaerobic fermentation, providing examples of each.	6 Marks	L3	CO2

MODULE-III

6.	a)	Explain the medium requirements for fermentation processes with examples.	9 Marks	L2	CO3
	b)	Explain the importance of understanding thermal death kinetics in sterilization processes.	7 Marks	L2	CO3

(OR)

7.	a)	Discuss the kinetics of microbial growth and its application in bioprocess design	10 Marks	L2	CO3
	b)	Describe the methods used for the optimization of fermentation media.	6 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the principles of convective mass transfer and its relevance in bioprocessing.	9 Marks	L2	CO4
	b)	Discuss gas-liquid mass transfer mechanisms and their industrial applications.	7 Marks	L2	CO4

(OR)

9.	a)	Discuss the applications of advanced technologies for improving oxygen transfer in bioreactors.	10 Marks	L2	CO4
	b)	Describe the importance of oxygen transfer coefficient in scaling up bioprocesses.	6 Marks	L2	CO4

MODULE-V

10.	a)	Explain the different phases of cell growth in batch cultures with a diagram.	9 Marks	L2	CO5
	b)	Discuss the Monod model and its applications in microbial growth kinetics.	7 Marks	L2	CO5

(OR)

11.	a)	Explain the relevance of kinetic modeling in optimizing bioprocess operations.	10 Marks	L2	CO5
	b)	Describe the impact of environmental conditions on the phases of cell growth in batch cultures.	6 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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)	Name emerging areas in Genomics.	2 Marks	L1	CO1
	b)	What is Composite database?	2 Marks	L1	CO1
	c)	Recall EST.	2 Marks	L1	CO2
	d)	Define Single nucleotide polymorphism.	2 Marks	L1	CO2
	e)	What is SnRNA?	2 Marks	L1	CO3
	f)	Name structure prediction tools of RNA.	2 Marks	L1	CO3
	g)	What is protein folding? Give few examples.	2 Marks	L1	CO4
	h)	What is protein Domain?	2 Marks	L1	CO4
	i)	Define Global sequence alignment.	2 Marks	L1	CO4
	j)	What is CINEMA?	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 databases.	8 Marks	L2	CO1
	b)	Explain SCOP and CATH databases.	8 Marks	L2	CO1
		(OR)			
3.	a)	Compare different Protein sequence databases.	8 Marks	L4	CO1
	b)	Justify drug related information can be obtained from drug databases.	8 Marks	L5	CO1

MODULE-II

4.	a)	Explain expressed sequence tag and dbEST.	8 Marks	L2	CO2
	b)	Outline whole genome analysis methods.	8 Marks	L2	CO2
		(OR)			
5.	a)	Summarize the significance of SNP analysis.	8 Marks	L3	CO2
	b)	Identify the methods for prediction of Coding region.	8 Marks	L3	CO2

MODULE-III

6.	a)	Evaluate different RNA structure prediction methods.	8 Marks	L5	CO3
	b)	Analyze the role of SnRNA's in different human diseases.	8 Marks	L4	CO3
		(OR)			
7.	a)	Identify the applications of SiRNA's	8 Marks	L3	CO3
	b)	Discuss miRNA structure and functions.	8 Marks	L6	CO3

MODULE-IV

8.	a)	Identify the hydrophobic patterns of proteins.	8 Marks	L3	CO4
	b)	Discuss Post translational modifications.	8 Marks	L6	CO4
		(OR)			
9.	a)	Compare different tertiary structure prediction methods	8 Marks	L2	CO4
	b)	How protein folding complexes modeling of proteins. Explain.	8 Marks	L2	CO4

MODULE-V

10.	a)	Illustrate different steps in the multiple sequence alignment.	8 Marks	L2	CO4
	b)	Identify the method for Multiple sequence alignment.	8 Marks	L3	CO4
		(OR)			
11.	a)	Summarize unit and dot Matrix methods for sequence alignment.	8 Marks	L2	CO4
	b)	Discuss different BLAST methods.	8 Marks	L6	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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)	Write about adaptive immunity.	2 Marks	L1	CO1
	b)	Define lymphocyte and write about T cell in immune response.	2 Marks	L1	CO1
	c)	Write about B cell activation.	2 Marks	L1	CO2
	d)	What is MHC restriction?	2 Marks	L1	CO2
	e)	What is Allergy?	2 Marks	L1	CO3
	f)	Note about immune therapy.	2 Marks	L1	CO3
	g)	Identify importance of active immunity.	2 Marks	L1	CO4
	h)	Note about passive immunity.	2 Marks	L1	CO4
	i)	Write about ELISA.	2 Marks	L1	CO5
	j)	Note about significance of monoclonal antibodies.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is innate immunity? Explain the mechanism of innate immunity.	8 Marks	L1	CO1
	b)	Discuss in detail about lymph nodes and spleen.	8 Marks	L2	CO1
		(OR)			
3.	a)	Summarize about the importance of immune cells and their functions.	8 Marks	L2	CO1
	b)	Briefly discuss about stem cells and its clinical uses.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain MHC restriction and its causes.	10 Marks	L2	CO2
	b)	Discuss about mechanism of antigen recognition.	6 Marks	L2	CO2
		(OR)			
5.	a)	Draw a neat and labeled diagram of a antibody.	7 Marks	L2	CO2
	b)	Discuss in detail about activation of B- cell.	9 Marks	L2	CO2

MODULE-III

6.	a)	Describe the immunotherapy of tumor.	8 Marks	L2	CO3
	b)	Summarize detail about T and B cells activation.	8 Marks	L6	CO3
		(OR)			
7.	a)	Describe the biology of T and B cells.	8 Marks	L2	CO3
	b)	Summarize difference between autoimmunity disorders and hypersensitivity reactions.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the use of monoclonal antibodies in diagnosis.	8 Marks	L2	CO4
	b)	Describe the active and passive immunization.	8 Marks	L2	CO4
		(OR)			
9.	a)	List out of vaccines. Discuss about any 2 types of vaccines.	8 Marks	L1	CO4
	b)	Explain in detail about Monoclonal antibodies.	8 Marks	L2	CO4

MODULE-V

10.	a)	Summarize the immune-electrophoresis techniques.	8 Marks	L2	CO5
	b)	Comment on RIA and ELISA techniques.	8 Marks	L2	CO5
		(OR)			
11.	a)	What are monoclonal antibodies? Explain applications of monoclonal antibodies.	8 Marks	L2	CO5
	b)	Discuss about hybridoma 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, May – 2025

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)	Define 1, 2-shift in the molecular rearrangement.	2 Marks	L1	CO1
	b)	List the types of molecular rearrangements.	2 Marks	L1	CO1
	c)	Write the applications of SeO_2.	2 Marks	L1	CO2
	d)	Write about periodate oxidation reactions.	2 Marks	L1	CO2
	e)	Recall any two reducing agents.	2 Marks	L1	CO3
	f)	How Boran aluminium hydride is prepared?	2 Marks	L1	CO3
	g)	Write the preparation of BF_3.	2 Marks	L1	CO4
	h)	Write any one application of LTA.	2 Marks	L1	CO4
	i)	Define organometallic compounds.	2 Marks	L1	CO5
	j)	What is homogeneous catalytic hydrogenation?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.		Explain the mechanism and applications of Fries and Claisen Rearrangements.	16 Marks	L2	CO1

(OR)

3.		Discuss the mechanism and applications of Curtius and Schmidt Rearrangements with suitable examples.	16 Marks	L2	CO1

MODULE-II

4.		Explain the mechanism of oxidation of alcohols to carbonyls using dimethyl sulfoxide.	16 Marks	L2	CO2

(OR)

5.		What is epoxidation? Explain the mechanism of peroxide induced epoxidation with suitable examples.	16 Marks	L2	CO2

MODULE-III

6.		Identify the products obtained by the reduction with $LiAlH_4$ and $NaBH_4$ of the following substrates. i) RCOOH ii) $RCOOC_2H_5$ iii) RCOCI iv) RCH_2Br v) $ArNO_2$ vi) RCH=CHR	16 Marks	L3	CO3

(OR)

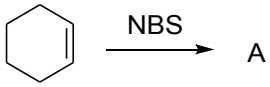
7.	a)	Discuss Clemmenson reduction with suitable examples.	8 Marks	L2	CO3
	b)	Explain the applications of Boran aluminium hydride with suitable examples.	8 Marks	L2	CO3

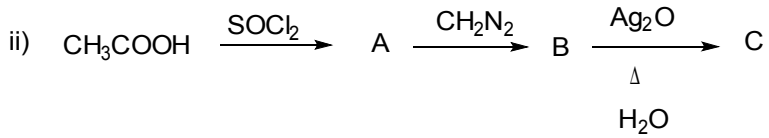
MODULE-IV

8.	Explain various reactions involving *N,N*-Dicyclo hexylcarbodiimide as dehydrating agent.	16 Marks	L2	CO4

(OR)

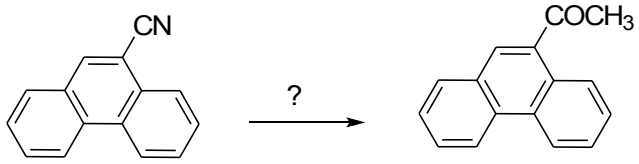
9.	Identify the product and write the mechanism of the following reactions.	16 Marks	L3	CO4

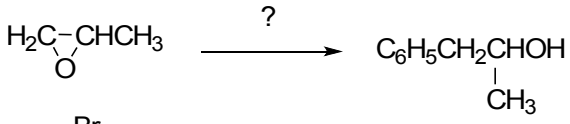
i) 

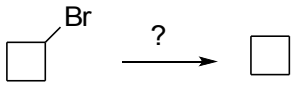
ii) 

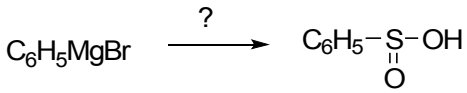
MODULE-V

10.	Predict the reagent used for the following conversions. Explain the mechanism for the following reactions.	16 Marks	L3	CO5

i) 

ii) 

iii) 

iv) 

(OR)

11.	Explain the preparation and chemical reactions of organolithium.	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, May – 2025

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)	List any two diseases caused by iron deficiency.	2 Marks	L1	CO1
	b)	Why is zinc essential for the human body?	2 Marks	L1	CO1
	c)	What is Russell-Saunders coupling?	2 Marks	L1	CO2
	d)	Write the term symbols for a d^1 configuration.	2 Marks	L2	CO2
	e)	Define Pearson's HSAB theory in simple terms.	2 Marks	L1	CO3
	f)	Differentiate between hard acids and soft acids.	2 Marks	L2	CO3
	g)	What is the role of Cu(II) in metal-catalyzed reactions?	2 Marks	L2	CO4
	h)	Give an example of a reaction involving Os(VIII).	2 Marks	L1	CO4
	i)	Mention one property of iron oxide nanoparticles that makes them useful in medicine.	2 Marks	L1	CO5
	j)	What are fullerenes?	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 how metal ions contribute to the prevention and treatment of diseases.	8 Marks	L3	CO1
	b)	Discuss the therapeutic applications of gold and platinum compounds, including their use in cancer treatment and arthritis management.	8 Marks	L3	CO1

(OR)

3.		Discuss the medical applications of lithium, gold, and platinum compounds, providing examples.	16 Marks	L4	CO1

MODULE-II

4.	a)	Analyze the electronic spectra of aquo complexes of Ti(III), V(III), and Cr(III).	8 Marks	L3	CO2
	b)	Compare the electronic spectra of Fe(II) and Fe(III) aquo complexes and interpret the differences.	8 Marks	L4	CO2

(OR)

5.		Differentiate between electronic configurations, terms, states, and microstates, with suitable illustrations.	16 Marks	L4	CO2

MODULE-III

6.		Analyze the role of the nature of metal ions and ligands in determining complex stability, supported by examples.	16 Marks	L4	CO3

(OR)

7.	a)	Discuss the relationship between the chelate effect and the HSAB principle in stabilizing metal complexes.	8 Marks	L4	CO3
	b)	Explain how pH affects metal-ligand equilibria and the determination of formation constants.	8 Marks	L4	CO3

MODULE-IV

8.		Discuss chain reactions with examples, including their importance in homogeneous catalysis.	16 Marks	L4	CO4

(OR)

9.		Analyze the H-Br reaction mechanism and its role in chain reactions.	16 Marks	L4	CO4

MODULE-V

10.	a)	Discuss the advantages and challenges of using nanomaterials in medicine.	8 Marks	L3	CO5
	b)	Explain the role of gold nanoparticles in cancer therapy and imaging.	8 Marks	L3	CO5

(OR)

11.		Analyze the potential environmental and health risks associated with nanomaterials.	16 Marks	L4	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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 a reference electrode and give two examples.	2 Marks	L1	CO1
	b)	State cyclic voltammetry and why is it used.	2 Marks	L1	CO1
	c)	Name different types of crystal systems.	2 Marks	L1	CO2
	d)	What are non-stoichiometric defects? Give one example.	2 Marks	L1	CO2
	e)	Define the Gibbs Phase Rule.	2 Marks	L1	CO3
	f)	Tell about Zeotropic Mixtures.	2 Marks	L1	CO3
	g)	What happens in a system with three pairs of partially miscible liquids?	2 Marks	L1	CO4
	h)	What is ternary azeotropic mixture and their impact on distillation?	2 Marks	L1	CO4
	i)	State physisorption.	2 Marks	L1	CO5
	j)	Write the BET 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)	Explain in brief of reference electrode with examples.	8 Marks	L2	CO1
	b)	Calculate the emf of the following cell whose reduction potentials of half-cells are: Ag^{+}/Ag= +0.80V and Zn/Zn^{+2} = -0.76V.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss in brief of SHE.	8 Marks	L2	CO1
	b)	Derive Nernst equation.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the different types of crystal systems.	8 Marks	L2	CO2
	b)	Discuss the applications of X-ray Diffraction (XRD).	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain on Stoichiometric / Intrinsic defects.	8 Marks	L2	CO2
	b)	Explain the X-ray diffraction pattern of crystal structure using JCPDS software.	8 Marks	L2	CO2

MODULE-III

6.	a)	Elaborate on Vapor pressure –composition diagrams.	8 Marks	L2	CO3
	b)	Discuss upper and lower critical solution temperatures with examples.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss about phase diagram of Phenol-water system.	8 Marks	L2	CO3

	b)	Explain the influence of foreign substances on CST.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Discuss on ternary Systems with one pair of partially miscible liquids.	8 Marks	L2	CO4
	b)	Describe azeotropic distillation with an example.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain the plait point in three component system.	8 Marks	L2	CO4
	b)	Discuss on ternary Systems with two pairs of partially miscible liquids.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain the thermodynamics of adsorption.	8 Marks	L2	CO5
	b)	Discuss the various factors which affects the rate of adsorption.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss the significance of B.E.T equation.	8 Marks	L2	CO5
	b)	Differentiate Langmuir and Freundlich adsorption isotherms.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

TECHNICAL REPORT WRITING

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the essential elements of a technical report.	2 Marks	L2	CO1
	b)	List any two key components of a technical report.	2 Marks	L2	CO1
	c)	Why is it important to present findings and results clearly in a technical report?	2 Marks	L1	CO2
	d)	What are the main objectives of writing an introduction in a scientific report?	2 Marks	L1	CO2
	e)	Write the meaning of in-text citation in technical report writing.	2 Marks	L1	CO3
	f)	What are the challenges for writing publication in a scientific journal?	2 Marks	L1	CO3
	g)	What is the purpose of copyright laws in the context of technical report writing?	2 Marks	L1	CO4
	h)	What role do word processing and desktop publishing (DTP) systems play in technical report creation?	2 Marks	L1	CO4
	i)	What are the key elements to consider when reviewing and analyzing a technical presentation?	2 Marks	L1	CO5
	j)	Name one rhetorical strategy that can enhance the effectiveness of a presentation.	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)	Design a framework for planning a technical report. What steps should be followed from research to final draft?	8 Marks	L3	CO1
	b)	What steps should be followed from conducting research to finalizing a technical report draft?	8 Marks	L1	CO1

(OR)

3.	a)	Evaluate the importance of precise and clear language in technical report writing.	8 Marks	L4	CO1
	b)	How does the title affect the report's accessibility and relevance to its target audience?	8 Marks	L1	CO1

MODULE-II

4.	a)	What are the best practices to ensure that tables are clear, concise, and effective in conveying data?	8 Marks	L1	CO2
	b)	How do the variations in the structure of the materials and methods section reflect the nature of the research and the field of study?	8 Marks	L1	CO2

(OR)

5.	a)	How does the presentation of data influence the interpretation and reliability of the report's conclusions?	8 Marks	L1	CO2
	b)	Synthesize the relationship between the results and discussion sections of a technical report.	8 Marks	L3	CO2

MODULE-III

6.	a)	Compare various citation styles (APA, MLA, Chicago, etc.) and explain how they impact the way references are cited and arranged in scientific writing.	8 Marks	L3	CO3
	b)	Explain the key differences between citation styles like APA, MLA, and Chicago.	8 Marks	L3	CO3

(OR)

7.	a)	Compare the different types of citations (in-text citations, footnotes, endnotes) used in technical report writing.	8 Marks	L3	CO3
	b)	How can writers ensure they comply with copyright regulations when using third-party content such as figures, images, or direct quotes?	8 Marks	L2	CO3

MODULE-IV

8.	a)	How can a poorly designed graph mislead the reader or distort the data's true meaning?	8 Marks	L1	CO4
	b)	What are the specific consequences of using misleading graphs in technical reports or scientific papers?	8 Marks	L1	CO4

(OR)

9.	a)	Analyze the various reasons for including literature citations in a technical report.	8 Marks	L3	CO4
	b)	How can writers ensure they comply with copyright regulations when using third-party content such as figures, images, or direct quotes?	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain Rhetoric tips from A to Z.	8 Marks	L3	CO5
	b)	How do literature citations contribute to the credibility and scholarly value of the report?	8 Marks	L1	CO5

(OR)

11.	a)	What criteria would you use to assess the strengths and weaknesses of the presentation's structure, delivery, and content?	8 Marks	L1	CO5
	b)	Create a strategy for effectively dealing with difficult questions from the audience during a 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, May – 2025

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)	Name one example of a polyalphabetic cipher.	2 Marks	L1	CO1
	b)	Name the two main processes in symmetric encryption.	2 Marks	L1	CO1
	c)	How is feedback implemented in CFB mode?	2 Marks	L1	CO2
	d)	What is the role of the counter value in CTR mode?	2 Marks	L1	CO2
	e)	What are the two main operations involved in using digital signatures?	2 Marks	L1	CO3
	f)	What is the main principle behind public key cryptography?	2 Marks	L1	CO3
	g)	What is the purpose of a Certificate Authority (CA) in PKI?	2 Marks	L1	CO4
	h)	What is the purpose of user authentication in security systems?	2 Marks	L2	CO4
	i)	How does PGP ensure the confidentiality and authenticity of email messages?	2 Marks	L1	CO5
	j)	What is the main purpose of IP Security (IPSec)?	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 working of the Vigenère cipher, including encryption and decryption processes, with an example?	8 Marks	L2	CO1
	b)	Explain the working of a mono alphabetic cipher. Provide an example and discuss its strengths and weaknesses?	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss the working of OFB mode with a diagram. Explain how it differs from other modes like CBC and CFB in handling errors and maintaining synchronization.	8 Marks	L2	CO1
	b)	Explain the basic concepts of computer security and describe its key goals? Provide examples for each?	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the working of CTR mode with an example. Highlight how it enables parallel processing during encryption and decryption?	8 Marks	L2	CO2
	b)	Discuss the advantages of CTR mode over other modes of operation, particularly in high-speed network environments?	8 Marks	L2	CO2
		(OR)			
5.		Explain the DES and AES encryption process in detail? What are the strengths and weaknesses of DES and AES in detail?	16 Marks	L2	CO2

MODULE-III

6.	a)	Explain the process of digital signature generation and verification?	8 Marks	L2	CO3
	b)	What are the benefits of using digital signatures in secure communication?	8 Marks	L1	CO3
		(OR)			
7.	a)	What is the difference between a simple hash function and a cryptographic hash function? Provide examples?	8 Marks	L1	CO3
	b)	Explain the working of SHA-512 and how it ensures data integrity?	8 Marks	L2	CO3

MODULE-IV

8.		Describe the Kerberos authentication system in detail, including its components, working principles, and advantages?	16 Marks	L2	CO4
		(OR)			
9.	a)	What is the role of biometric authentication in Personal Identity Verification systems?	8 Marks	L1	CO4
	b)	Explain how PIV systems are used for secure authentication in government and enterprise environments?	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the two main protocols of IPSec: Authentication Header (AH) and Encapsulating Security Payload (ESP)?	8 Marks	L2	CO5
	b)	Describe the role and components of IPSec security policies in securing IP communication?	8 Marks	L2	CO5
		(OR)			
11.	a)	Explain the role of public and private keys in PGP for encryption and digital signatures?	8 Marks	L2	CO5
	b)	How does TLS protect against common attacks like eavesdropping and man-in-the-middle attacks?	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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)	Write the negation of the following statements . i) Bangalore is always cool. ii) Exponential series is convergent.	2 Marks	L1	CO1
	b)	Identify the maxi terms for the three variables P, Q, R	2 Marks	L3	CO1
	c)	Define PDNF and PCNF.	2 Marks	L1	CO2
	d)	Define partial ordering relation.	2 Marks	L1	CO2
	e)	Define Lattice.	2 Marks	L1	CO3
	f)	Define Monoid and Sub Group.	2 Marks	L1	CO3
	g)	Define Semi Group and give one example.	2 Marks	L1	CO4
	h)	Find the generating function for the sequence 1,1,0,1,1,1…	2 Marks	L1	CO4
	i)	Let G be a connected planar simple graph with 20 vertices and degree of each vertex is 3. Find the total number of edges.	2 Marks	L1	CO5
	j)	Define Hamiltonian path and Hamiltonian circuit.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Find a DNF of $(p \wedge \neg (q \vee r)) \vee (((p \wedge q) \vee \neg r) \wedge p)$.	8 Marks	L5	CO1
	b)	Define Boolean function and explain different types of Boolean algebra operations.	8 Marks	L6	CO1

(OR)

3.	a)	Show that $\neg (p \vee (\neg p \wedge q))$ and $\neg p \wedge \neg q$ are logically equivalent.	8 Marks	L2	CO1
	b)	Without using truth table, find the PCNF of $p \rightarrow ((p \rightarrow q) \wedge \neg (\neg q \vee p))$.	8 Marks	L1	CO1

MODULE-II

4.	a)	What is the simplified sum of products form for the Boolean expression $(A + B'+ C)(A + B'+ C)(A + B + C')$.	8 Marks	L1	CO2
	b)	Construct truth table for $(A + B) \cdot C = A \cdot C + B \cdot C$.	8 Marks	L5	CO2

(OR)

5.	a)	Construct Hasse diagram for representing the positive divisors of 36.	8 Marks	L3	CO2
	b)	For the two sets P_1 and P_2 $P_1 = \{2,3,6,12,24,36\}$ and $P_2 = \{3,6,12,24,48\}$ draw the Hasse diagram of the POSET $(P_1, \leq)$ and $(P_2, \leq)$, where the partial order $\leq$ is given by the relation "divides".	8 Marks	L3	CO2

MODULE-III

6.	a)	Examine the relation $a * b = a + b + 1$ for all $a, b \in G$ is a group or not.	8 Marks	L3	CO3
	b)	Let $G = \{-1,0,1\}$, Examine whether G forms a group under usual addition.	8 Marks	L4	CO3

(OR)

7.	a)	Show that the set $\{0,1,2,3,4,5\}$ is not a group under multiplication Modulo 6.	8 Marks	L2	CO3
	b)	Examine the relation $a * b = a + b - ab$ for all $a, b \in G$ is a group or not.	8 Marks	L1	CO3

MODULE-IV

8.	a)	Find the Coefficient of x^{20} in $\left(x^2 + x^3 + x^4 + x^5 + x^6\right)^5$.	8 Marks	L1	CO4
	b)	Find a generating function for the Fibonacci sequence $< F_n >$ and hence obtain an expression for F_n.	8 Marks	L1	CO4

(OR)

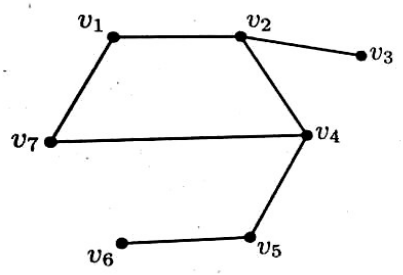
9.	a)	Solve the recurrence relation using generating function $a_n - 6a_{n-1} - 1 = 0$ for $n \geq 1$ where $a_0 = 1$.	8 Marks	L3	CO4
	b)	Use generating function to determine the number of four element subsets of $S = \{1,2,3,...15\}$ that contain no consecutive integers.	8 Marks	L3	CO4

MODULE-V

10.	a)	Prove that complete graph of 5 vertices is non planar.	8 Marks	L5	CO5
	b)	Define the following with examples: i) Directed Graph ii) Non-directed Graph iii) simple Graph.	8 Marks	L1	CO5

(OR)

11.	a)	Construct an algorithm to obtain a Minimum spanning tree and illustrate the algorithm with an example.	8 Marks	L3	CO5
	b)	Find DFS for the following Graph.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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)	What is the main purpose of a data warehouse?	2 Marks	L2	CO1
	b)	Provide an example of a measure in a data warehouse.	2 Marks	L1	CO1
	c)	What is data pre-processing in data mining?	2 Marks	L2	CO2
	d)	Give an example of a classification pattern in data mining.	2 Marks	L2	CO2
	e)	Explain the concept of "support" in frequent item set mining.	2 Marks	L1	CO3
	f)	What is classification in data mining?	2 Marks	L2	CO3
	g)	What is outlier analysis in clustering in data mining?	2 Marks	L1	CO4
	h)	What are the major types of clustering methods used in data mining?	2 Marks	L1	CO4
	i)	Define web data mining and its significance in today's digital age.	2 Marks	L1	CO5
	j)	What are the challenges in mining multimedia data?	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	What are concept hierarchies in the context of data warehousing?	8 Marks	L1	CO1
	b)	Define a data warehouse and explain its significance in business intelligence.	8 Marks	L1	CO1
		(OR)			
3.	a)	Discuss the key components of a data warehouse architecture with examples.	8 Marks	L2	CO1
	b)	Why is indexing important in OLAP systems?	8 Marks	L1	CO1

MODULE-II

4.	a)	Discuss the steps involved in data pre-processing, including data cleaning, data integration, and data transformation, and how they prepare data for more effective analysis.	8 Marks	L2	CO2
	b)	What are the different kinds of patterns that can be discovered in data mining?	8 Marks	L1	CO2
		(OR)			
5.	a)	What is data cleaning in the context of data mining?	6 Marks	L1	CO2
	b)	Explain the concept of data reduction in data mining.	10 Marks	L2	CO2

MODULE-III

6.	a)	Describe Bayesian classification methods and the underlying principles of the Naive Bayes algorithm.	8 Marks	L2	CO3
	b)	What is linear regression and how is it used for prediction in data mining?	8 Marks	L1	CO3
		(OR)			
7.	a)	Discuss how linear regression can be applied for predicting real-world outcomes, such as sales forecasting.	8 Marks	L2	CO3
	b)	What is a decision tree and how does it work as a classification model?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Describe the k-Means algorithm in detail, including how it partitions data into clusters.	8 Marks	L2	CO4
	b)	Explain the steps involved in k-Means with an example and discuss its limitations.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain hierarchical clustering methods.	8 Marks	L2	CO4
	b)	Compare agglomerative and divisive approaches, detailing the steps involved in each.	8 Marks	L4	CO4

MODULE-V

10.	a)	Explain the techniques used for mining multimedia data such as images, audio and video.	8 Marks	L2	CO5
	b)	Discuss the role of content-based retrieval and the challenges of handling large-scale unstructured multimedia datasets.	8 Marks	L2	CO5
		(OR)			
11.	a)	Highlight advancements in methodologies, tools and technologies for mining complex datasets.	8 Marks	L2	CO5
	b)	Provide examples of how data mining is applied in industries such as healthcare, finance, e-commerce, and education.	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

INTRODUCTION TO MACHINE LEARNING

[Computer Science]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the types of machine learning.	2 Marks	L1	CO1
	b)	What is unsupervised learning?	2 Marks	L1	CO1
	c)	What is the purpose of cross-validation?	2 Marks	L1	CO2
	d)	Why is Bayesian concept learning important?	2 Marks	L1	CO2
	e)	What is a decision tree?	2 Marks	L1	CO3
	f)	Define polynomial regression.	2 Marks	L1	CO3
	g)	What is the main objective of unsupervised learning?	2 Marks	L2	CO4
	h)	What is the K-Medoids clustering algorithm?	2 Marks	L1	CO4
	i)	What is generalization in neural networks?	2 Marks	L1	CO5
	j)	Define bagging in machine learning.	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 how machine learning is used in healthcare, finance, and autonomous vehicles.	8 Marks	L1	CO1
	b)	Explain how reinforcement learning works with a real-life example.	8 Marks	L1	CO1
		(OR)			
3.	a)	Write short notes on: i) Training and testing datasets ii) Model evaluation metrics.	8 Marks	L2	CO1
	b)	Explain how machine learning is used in fraud detection and cyber security.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the concept of bias-variance tradeoff and its impact on model performance.	8 Marks	L2	CO2
	b)	Discuss cross-validation techniques and their role in model evaluation.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the concept of Bayesian learning and its significance in machine learning.	8 Marks	L3	CO2
	b)	Derive and explain Bayes' theorem with an example.	8 Marks	L3	CO2

MODULE-III

6.	a)	Discuss overfitting in decision trees and explain how pruning helps prevent it.	8 Marks	L3	CO3
	b)	Compare and contrast K-NN, SVM, and Decision Trees in terms of performance and application.	8 Marks	L3	CO3
		(OR)			
7.	a)	Explain multiple linear regression with its mathematical representation.	8 Marks	L2	CO3
	b)	Describe polynomial regression and discuss how it differs from linear regression.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Describe partitioning-based clustering methods with an example.	8 Marks	L3	CO4
	b)	Explain the working of the K-Medoids algorithm and compare it with K-Means.	8 Marks	L2	CO4
		(OR)			
9.	a)	Compare and contrast K-Means, K-Medoids, Hierarchical Clustering, and DBSCAN.	8 Marks	L2	CO4
	b)	Discuss how DBSCAN handles noise and outliers in clustering.	8 Marks	L3	CO4
		MODULE-V			
10.	a)	Discuss the representational power of feed forward neural networks.	8 Marks	L2	CO5
	b)	Explain the concept of hypothesis space search and inductive bias in neural networks.	8 Marks	L2	CO5
		(OR)			
11.	a)	What is ensemble learning? Explain its advantages and applications.	8 Marks	L3	CO5
	b)	Explain the working of bagging with an example.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Sc. II Semester (MBU-22) Regular Examinations, May – 2025

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)	What are the types of relationships in a database?	2 Marks	L1	CO1
	b)	What is the difference between ER Model and ER Diagram?	2 Marks	L1	CO1
	c)	Write an SQL query to retrieve all orders along with customer names from the Orders and Customers tables. Assume Customer ID is the foreign key.	2 Marks	L1	CO2
	d)	Write an SQL query to find the total sales for each product from the Sales table grouped by Product ID.	2 Marks	L1	CO2
	e)	What is a trigger and What are the two main types of triggers in SQL?	2 Marks	L1	CO3
	f)	What is a PL/SQL block and What are the four main components of a PL/SQL block?	2 Marks	L1	CO3
	g)	What is the difference between Atomicity and Durability?	2 Marks	L1	CO4
	h)	What is Serializability and what are the types of Serializabilitys?	2 Marks	L2	CO4
	i)	What is the difference between a primary index and secondary index**?**	2 Marks	L1	CO5
	j)	What is the difference between tree based indexing and hash based indexing?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.		Draw the architecture of a Database Management System (DBMS). Discuss the three-level architecture and its significance in database design.	16 Marks	L2	CO1

(OR)

3.	a)	Discuss the concept of weak entities in an ER model.	8 Marks	L2	CO1
	b)	What are multivalued attributes in an ER model? Explain how multivalued attributes are represented in ER diagrams and provide an example of a multivalued attribute.	8 Marks	L1	CO1

MODULE-II

4.	a)	Write SQL queries to retrieve data from a table with conditions, sorting, and limiting results. Explain each query.	8 Marks	L1	CO2
	b)	Write SQL queries to perform various types of joins and aggregations on multiple tables.	8 Marks	L1	CO2

(OR)

5.		Explain the process of creating and modifying relations in a relational database. Discuss the SQL commands used for these tasks with suitable syntax and examples.	16 Marks	L2	CO2

MODULE-III

6.	a)	Explain the different control structures available in PL/SQL. Discuss with examples.	8 Marks	L2	CO3
	b)	How do you create a function in PL/SQL? Provide an example of a function that returns the salary of an employee.	8 Marks	L1	CO3

(OR)

7.	a)	Explain the concept of a database trigger in PL/SQL. Discuss the different types of triggers (BEFORE, AFTER) and their use cases with examples.	8 Marks	L2	CO3
	b)	What is a cursor in PL/SQL? Explain the difference between an implicit cursor and an explicit cursor. Provide examples for both.	8 Marks	L1	CO3

MODULE-IV

8.	a)	What is redundancy in a relational schema? Explain the problems caused by redundancy with suitable examples.	8 Marks	L1	CO4
	b)	What is decomposition in schema refinement? Explain the purpose of decomposition and its types with examples.	8 Marks	L1	CO4

(OR)

9.	a)	What are multivalued dependencies? Explain Fourth Normal Form (4NF) with an example.	8 Marks	L1	CO4
	b)	Explain Armstrong's Axioms for reasoning about functional dependencies. Discuss their significance with examples.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain validation-based concurrency control protocol. What are its phases? Illustrate with an example?	8 Marks	L2	CO5
	b)	What is a deadlock in concurrency control? Discuss techniques to detect and prevent deadlocks with examples.	8 Marks	L1	CO5

(OR)

11.		Explain the concepts of database storage structures: primary storage, secondary storage, and tertiary storage. How do these affect database performance?	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, May-2025

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)	What are the fundamental activities of a software process?	2 Marks	L1	CO1
	b)	Explain about SDLC.	2 Marks	L2	CO1
	c)	What is the role of data dictionary in structured system analysis?	2 Marks	L1	CO2
	d)	Why is requirement validation necessary?	2 Marks	L1	CO2
	e)	What is an interface in object-oriented design?	2 Marks	L1	CO3
	f)	What are the four major elements of a design model?	2 Marks	L1	CO3
	g)	What is basis path testing?	2 Marks	L1	CO4
	h)	What are the different approaches to integration testing?	2 Marks	L1	CO4
	i)	What is Earned Value Analysis?List the the key components of EVA?	2 Marks	L1	CO5
	j)	What are the benefits of using CASE tools in project management?	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 Agile Manifesto and its four fundamental values.	8 Marks	L2	CO1
	b)	Explain about both waterfall model and prototyping model in detail?	8 Marks	L2	CO1

(OR)

3.	a)	Describe the major characteristics of Agile Software Development.	8 Marks	L3	CO1
	b)	What is the difference between the Waterfall Model and the Agile Model?	8 Marks	L2	CO1

MODULE-II

4.		Discuss the role of functional and non-functional requirements in defining the scope of a software project. How do these requirements impact the design and implementation phases?	16 Marks	L2	CO2

(OR)

5.	a)	Explain the Petri Nets model and its applications in system modeling. Provide a real-world example.	8 Marks	L2	CO2
	b)	Discuss the methods and challenges of requirements elicitation and analysis. How can effective elicitation improve the overall quality of requirements?	8 Marks	L2	CO2

MODULE-III

6.	a)	Discuss the software design process, explaining each key stage in detail. How does the design process contribute to the overall success of a software project?	8 Marks	L2	CO3
	b)	Explain the concepts of abstraction and modularity in software design. How do these concepts help in managing the complexity of software systems?	8 Marks	L2	CO3
		(OR)			
7.	a)	Explain the concept of architectural mapping using data flow diagrams.	8 Marks	L3	CO3
	b)	Discuss how this architectural mapping helps in visualizing system architecture and guiding the development process.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain the concept of Black Box Testing. How does it differ from White Box Testing?	8 Marks	L2	CO4
	b)	Discuss the advantages and disadvantages of Black Box Testing. Provide examples to illustrate the types of faults Black Box Testing can detect.	8 Marks	L1	CO4
		(OR)			
9.	a)	Describe Integration Testing and its role in the software testing lifecycle.	8 Marks	L2	CO4
	b)	Differentiate between Incremental Integration Testing and Non-Incremental Integration Testing. Provide scenarios where each approach would be most effective.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Analyze the role of CASE tools in software project management.	8 Marks	L2	CO5
	b)	Explain the various CASE tools for project management and how they are useful in achieving the objectives?	8 Marks	L3	CO5
		(OR)			
11.		Compare and contrast LOC-based and FP-based estimation techniques. Discuss the scenarios in which each technique is most effective, and explain the limitations of each approach.	16 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

DATA ANALYTICS

[Computer Science and Engineering (Artificial Intelligence and Data Science)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Data Analytics and its significance.	2 Marks	L1	CO1
	b)	What are the different types of Data Analytics?	2 Marks	L2	CO1
	c)	Why is data cleaning important in analytics?	2 Marks	L2	CO3
	d)	Differentiate between supervised and unsupervised learning.	2 Marks	L2	CO3
	e)	Explain the significance of ARIMA in Time Series Forecasting.	2 Marks	L2	CO4
	f)	What is Term Frequency-Inverse Document Frequency (TF-IDF)?	2 Marks	L1	CO4
	g)	Why are final deliverables critical in analytics projects?	2 Marks	L2	CO5
	h)	List two common challenges in data visualization.	2 Marks	L1	CO5
	i)	What is feature extraction in text mining?	2 Marks	L2	CO6
	j)	Define social influence in social network analysis.	2 Marks	L1	CO6

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the phases of the Data Analytics Life Cycle with examples.	8 Marks	L3	CO1
	b)	Compare and contrast Business Intelligence (BI) with Data Science.	8 Marks	L3	CO1

(OR)

3.	a)	How can data be imported and exported in R? Provide examples.	8 Marks	L3	CO2
	b)	Explain the importance of descriptive statistics in R.	8 Marks	L3	CO2

MODULE-II

4.	a)	Discuss the role of data visualization before analysis.	8 Marks	L3	CO3
	b)	Explain the difference between Type I and Type II errors in hypothesis testing.	8 Marks	L3	CO3

(OR)

5.	a)	Explain the concept of the Wilcoxon Rank-Sum Test and its applications.	8 Marks	L4	CO3
	b)	Describe the process of implementing decision trees in R with an example.	8 Marks	L3	CO3

MODULE-III

6.	a)	Explain the Box-Jenkins Methodology and its applications.	8 Marks	L4	CO4
	b)	Describe the components and evaluation of an ARIMA model.	8 Marks	L4	CO4

(OR)

7.	a)	Describe the key steps in text analysis with an example.	8 Marks	L3	CO4
	b)	Discuss the role of TF-IDF in text classification.	8 Marks	L4	CO4

MODULE-IV

8.	a)	What are the key challenges in operationalizing an analytics project?	8 Marks	L4	CO5
	b)	Discuss different visualization techniques used in analytics projects.	8 Marks	L3	CO5
		(OR)			
9.	a)	How can analytics project reports be customized for different audiences?	8 Marks	L4	CO5
	b)	Discuss the best practices for preparing a data-driven final presentation.	8 Marks	L4	CO5

MODULE-V

10.	a)	Explain different approaches used in web mining.	8 Marks	L3	CO6
	b)	What are the different techniques used in recommender systems?	8 Marks	L4	CO6
		(OR)			
11.	a)	How is social network analysis applied to real-world problems?	8 Marks	L4	CO6
	b)	Discuss the key properties of social networks and their significance.	8 Marks	L4	CO6



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

DATA MINING

[Computer Science and Engineering (Artificial Intelligence and Data Science)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define feature extraction in data preparation.	2 Marks	L1	CO1
	b)	What is data type portability?	2 Marks	L1	CO1
	c)	What is a Closed Frequent Itemset?	2 Marks	L2	CO2
	d)	What are interestingness measures in pattern mining?	2 Marks	L1	CO2
	e)	What is the difference between agglomerative and divisive hierarchical clustering?	2 Marks	L1	CO3
	f)	Name two common distance metrics used in hierarchical clustering.	2 Marks	L1	CO3
	g)	What is the primary objective of Support Vector Machines (SVMs)?	2 Marks	L2	CO3
	h)	Differentiate between hard margin and soft margin in SVM.	2 Marks	L1	CO3
	i)	How do Density-Based Methods identify outliers?	2 Marks	L2	CO4
	j)	What is an Information-Theoretic Model in outlier analysis?	2 Marks	L2	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the concept of feature extraction in data mining with examples.	8 Marks	L4	CO1
	b)	What is data type portability? How does it impact data mining applications?	8 Marks	L4	CO1
		(OR)			
3.	a)	Discuss the different techniques used for data cleaning and their importance.	8 Marks	L2	CO1
	b)	Explain the different types of data reduction techniques with examples.	8 Marks	L4	CO1

MODULE-II

4.	a)	Discuss the role of hash-based techniques in frequent itemset mining.	8 Marks	L2	CO2
	b)	Explain closed frequent itemsets and maximal frequent itemsets with examples.	8 Marks	L2	CO2
		(OR)			

5.	a)	What are interestingness measures in association rule mining? Explain with examples.	8 Marks	L3	CO2
	b)	Explain meta-algorithms in pattern mining and their role in improving efficiency.	8 Marks	L4	CO2

MODULE-III

6.	a)	What are the different types of linkage methods used in hierarchical clustering? Compare them.	8 Marks	L4	CO3
	b)	Discuss the advantages and disadvantages of hierarchical clustering compared to k-Means.	8 Marks	L2	CO3

(OR)

7.	a)	What is a Dendrogram? How can it be used to determine the number of clusters?	8 Marks	L2	CO3
	b)	Explain the Expectation-Maximization (EM) algorithm in the context of clustering.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Describe the K-Nearest Neighbors (KNN) algorithm with an example.	8 Marks	L2	CO3
	b)	How does instance-based learning differ from model-based learning?	8 Marks	L4	CO3

(OR)

9.	a)	Explain classifier evaluation metrics such as accuracy, precision, recall, and F1-score.	8 Marks	L2	CO3
	b)	What is a ROC curve? How is it used for classifier evaluation?	8 Marks	L2	CO3

MODULE-V

10.	a)	How does High-Dimensional Outlier Detection work? What are the difficulties involved?	8 Marks	L4	CO4
	b)	Discuss the role of Outlier Ensembles in improving outlier detection accuracy.	8 Marks	L2	CO4

(OR)

11.	a)	Explain the application of outlier detection in Quality Control and Fault Detection.	8 Marks	L2	CO4
	b)	How is outlier analysis used in Financial Fraud Detection? Provide real-world examples.	8 Marks	L4	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

BIG DATA FRAMEWORKS

[Computer Science and Engineering (Artificial Intelligence and Data Science)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define the term block in HDFS.	2 Marks	L1	CO1
	b)	How does Hadoop handle fault tolerance?	2 Marks	L1	CO1
	c)	What is the function of the DataNode in Hadoop?	2 Marks	L1	CO2
	d)	What is the role of the JobTracker in Hadoop?	2 Marks	L1	CO2
	e)	Write about the Worker in Spark.	2 Marks	L2	CO3
	f)	How does Spark Standalone differ from YARN mode?	2 Marks	L1	CO3
	g)	What are accumulators and how are they used in Spark?	2 Marks	L1	CO4
	h)	What is the purpose of task parallelism in Spark?	2 Marks	L1	CO4
	i)	What are Resilient Distributed Datasets (RDDs)?	2 Marks	L1	CO5
	j)	What is lineage in Spark and how does it support fault tolerance?	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)	How does Hadoop facilitate querying large datasets across distributed nodes?	8 Marks	L2	CO1
	b)	What are the advantages and disadvantages of using Hadoop over traditional databases?	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the key advantages of using Hadoop for big data storage and analysis?	8 Marks	L1	CO1
	b)	Describe the different types of file systems supported by Hadoop and how do they differ?	8 Marks	L4	CO1

MODULE-II

4.	a)	How do you determine the appropriate hardware and software specifications for a Hadoop cluster?	8 Marks	L2	CO2
	b)	Discuss in detail about two-level network architecture for a Hadoop cluster.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the purpose of MRUnit in Hadoop development?	8 Marks	L2	CO2
	b)	What is the purpose of the Configuration API in a MapReduce job?	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the Spark Standalone-Architecture?	8 Marks	L2	CO3
	b)	How does Spark's in-memory computing model improve the performance of data processing tasks?	8 Marks	L4	CO3
		(OR)			
7.	a)	What is dynamic resource allocation in Spark, and how does it work within YARN?	8 Marks	L2	CO3
	b)	Explain the key components of Mesos and their roles in managing Spark applications.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	What factors should be considered when deciding the number of partitions in a Spark job?	8 Marks	L4	CO4
	b)	What are the different memory regions in Spark, and how are they utilized?	8 Marks	L2	CO4
		(OR)			
9.	a)	What are the challenges of using accumulators in Spark, particularly with fault tolerance and re-execution?	8 Marks	L2	CO4
	b)	Describe the different levels of data locality in Spark.	8 Marks	L1	CO4
		MODULE-V			
10.	a)	What is the function of the Spark Driver, and how does it interact with the Spark Master and Workers?	8 Marks	L2	CO5
	b)	Compare and contrast fault tolerance in Spark for batch processing versus streaming applications	8 Marks	L4	CO5
		(OR)			
11.	a)	How does Spark handle job scheduling within an application? What are the key factors that influence task scheduling?	8 Marks	L2	CO5
	b)	Discuss in detail about Service Level Agreements?	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

CLOUD PRACTITIONER

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is the AWS Shared Responsibility Model?	2 Marks	L1	CO1
	b)	Describe the AWS Elastic Load Balancing (ELB) service.	2 Marks	L2	CO4
	c)	What is AWS CloudFormation, and how does it help in automating cloud infrastructure?	2 Marks	L2	CO2
	d)	Explain the concept of Amazon EC2 instance types.	2 Marks	L1	CO5
	e)	What is AWS S3's versioning feature, and how does it help in data protection?	2 Marks	L2	CO3
	f)	Define AWS IAM roles and explain how they differ from IAM users.	2 Marks	L1	CO2
	g)	What are the differences between AWS CloudWatch and CloudTrail?	2 Marks	L1	CO1
	h)	What is AWS Direct Connect, and how does it benefit businesses?	2 Marks	L2	CO5
	i)	Explain the concept of Availability Zones in AWS and their significance.	2 Marks	L2	CO4
	j)	What are AWS Cost Explorer and its key features?	2 Marks	L2	CO3

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Discuss the AWS regions, Availability Zones, and Edge Locations. How do they contribute to fault tolerance and low latency?	8 Marks	L4	CO1
	b)	Explain the various types of storage available in AWS and provide use case examples for each.	8 Marks	L4	CO1

(OR)

3.	a)	How does Amazon VPC enable you to create a secure network infrastructure? Discuss its key components.	8 Marks	L4	CO4
	b)	Explain the purpose of an AWS Elastic Load Balancer and how it works in distributing traffic.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the different types of EC2 instances. How do you choose the right instance for a particular use case?	8 Marks	L5	CO3
	b)	Explain the concept of Auto Scaling in AWS. How does it optimize resource usage?	8 Marks	L4	CO3

(OR)

5.	a)	Explain the role of AWS CloudFormation in automating the provisioning of AWS resources	8 Marks	L4	CO2
	b)	Describe how AWS S3 handles data durability and availability	8 Marks	L4	CO2

MODULE-III

6.	a)	Discuss the importance of IAM policies and how they ensure security in the cloud.	8 Marks	L4	CO3
	b)	Explain how to implement multi-factor authentication (MFA) to secure AWS resources.	8 Marks	L5	CO5

(OR)

7.	a)	Compare AWS IAM roles with IAM users. When would you use one over the other?	8 Marks	L4	CO2
	b)	Explain the function of AWS CloudTrail and how it helps in auditing AWS activities	8 Marks	L5	CO2

MODULE-IV

8.	a)	How does AWS Direct Connect establish dedicated network connections between on-premises data centers and AWS?	8 Marks	L5	CO3
	b)	Explain how AWS CloudWatch can be used for monitoring and alerting in AWS environments	8 Marks	L5	CO4

(OR)

9.	a)	What is AWS Elastic Beanstalk, and how does it help in deploying and managing applications?	8 Marks	L5	CO3
	b)	Describe the steps to create a backup strategy for critical AWS resources using Amazon S3 and AWS Backup.	8 Marks	L5	CO4

MODULE-V

10.	a)	Discuss the importance of scaling applications in the cloud. How does AWS Auto Scaling support this need?	8 Marks	L5	CO2
	b)	What are the best practices for managing cost and optimizing AWS cloud spending?	8 Marks	L5	CO5

(OR)

11.	a)	Explain the AWS Well-Architected Framework. Discuss its five pillars and their significance in designing efficient and cost-effective applications.	8 Marks	L4	CO5
	b)	How does AWS Lambda contribute to serverless architecture? Discuss its advantages and limitations	8 Marks	L5	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

DEEP LEARNING

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

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the basic components of a neural network?	2 Marks	L2	CO1
	b)	What is the role of activation functions in neural networks?	2 Marks	L1	CO1
	c)	Define a Boltzmann machine.	2 Marks	L2	CO2
	d)	Compare visible and hidden units in a Boltzmann machine .	2 Marks	L1	CO2
	e)	What are the types of RNN?	2 Marks	L2	CO3
	f)	What are the Challenges of Training Recurrent Networks?	2 Marks	L1	CO3
	g)	Why do we use RELU?	2 Marks	L2	CO4
	h)	What is max pooling?	2 Marks	L1	CO4
	i)	How does convolutional autoencoder differ from fully connected autoencoder?	2 Marks	L2	CO5
	j)	What is the role of the encoder and decoder in a convolutional autoencoder?	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)	Analyze the problem of overfitting in neural networks.	8 Marks	L2	CO1
	b)	Discuss any three techniques to avoid overfitting, with examples.	8 Marks	L2	CO1
		(OR)			
3.	a)	Evaluate the impact of vanishing and exploding gradient problems on training deep neural networks.	8 Marks	L4	CO1
	b)	Suggest solutions and justify their effectiveness.	8 Marks	L2	CO1

MODULE-II

4.	a)	Describe the structure and working of a Boltzmann machine .	8 Marks	L2	CO2
	b)	Discuss the challenges associated with training Boltzmann machines.	8 Marks	L2	CO2
		(OR)			
5.	a)	Explain the architecture and functioning of a Restricted Boltzmann Machine (RBM).	8 Marks	L2	CO2
	b)	How do visible and hidden layers interact during training?	8 Marks	L2	CO2

MODULE-III

6.		Apply the concept of Gated Recurrent Units (GRUs) to model a simple time-series forecasting problem.	16 Marks	L3	CO3
		(OR)			
7.	a)	Explain the challenges associated with training recurrent neural networks.	8 Marks	L2	CO3
	b)	How do these challenges impact the overall performance of RNN models?	8 Marks	L2	CO3

MODULE-IV

8.	a)	Compare the architectures of AlexNet, ZFNet.	8 Marks	L2	CO4
	b)	Discuss how each architecture introduced innovations to improve deep learning models.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain the process of training a Convolutional Neural Network	8 Marks	L2	CO4
	b)	Illustrate the structure of CNN .	8 Marks	L3	CO4

MODULE-V

10.	a)	Discuss the use of convolutional autoencoders for image denoising.	8 Marks	L2	CO5
	b)	What role do convolutional and deconvolutional layers play?	8 Marks	L2	CO5
		(OR)			
11.	a)	Describe how recurrent models of visual attention work.	8 Marks	L2	CO6
	b)	Explain the role of glimpse networks and recurrent units in processing visual input.	8 Marks	L2	CO6



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

COMPUTER VISION

[Computer Science and Engineering,
Computer Science and Engineering (Artificial Intelligence and Data Science)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the differences between a cut and a flow in graph cuts?	2 Marks	L2	CO5
	b)	How does the Harris Corner Detector identify corners in an image?	2 Marks	L2	CO1
	c)	Explain the epipolar constraint and its significance in stereo vision.	2 Marks	L2	CO2
	d)	What is augmented reality and how is it implemented using computer vision techniques?	2 Marks	L1	CO2
	e)	What is the role of geometric ranking in image retrieval?	2 Marks	L1	CO3
	f)	Identify challenges in ranking images based on their geometry and visual features.	2 Marks	L3	CO3
	g)	What is the primary principle behind Bayes' Theorem in classification tasks?	2 Marks	L1	CO4
	h)	What is the goal of Support Vector Machines in classifying image content?	2 Marks	L1	CO4
	i)	Explain how graph cuts can be used for image segmentation.	2 Marks	L2	CO5
	j)	What are the potential challenges when matching geotagged images from different camera systems?	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)	Illustrate how the Harris Corner Detector can be used in image matching applications. Provide examples where corner detection is crucial.	8 Marks	L3	CO1
	b)	Compare the performance of feature-based matching versus traditional image registration methods in geotagged image applications.	8 Marks	L2	CO1

(OR)

3.	a)	Describe the key steps in the SIFT algorithm. How does it ensure invariance to rotation, scale, and affine transformations?	8 Marks	L3	CO1
	b)	Explain the process of creating a panorama using multiple images. What role do homographies and image warping play in this task?	8 Marks	L2	CO1

MODULE-II

4.	a)	Define image descriptors and their role in computer vision.	8 Marks	L1	CO2
	b)	Apply the concept of epipolar geometry to rectify stereo image pairs for 3D reconstruction.	8 Marks	L3	CO2

(OR)

5.	a)	Explain how keypoint-based image descriptors are computed.	8 Marks	L2	CO2
	b)	Analyze the challenges associated with pose estimation in environments with occlusion and noise	8 Marks	L3	CO2

MODULE-III

6.	a)	Describe the relationship between clustering algorithms and image search techniques. How can clustering be used to improve image retrieval?	8 Marks	L2	CO3
	b)	Apply both K-means clustering and hierarchical clustering to a dataset of images. Discuss how each method influences the search results.	8 Marks	L3	CO3, CO6

(OR)

7.	a)	Implement the K-means clustering algorithm on a given set of image data. Discuss how the algorithm can be used to segment an image into different regions.	8 Marks	L3	CO3, CO6
	b)	Explain the concept of image retrieval and the role of feature extraction in the process. How does image retrieval differ from image classification?	8 Marks	L1	CO3

MODULE-IV

8.	a)	Show how Bayes' classifier can be applied in classifying images based on texture or color features.	8 Marks	L3	CO4
	b)	Compare the performance of SVM with a linear kernel and a radial basis function (RBF) kernel in classifying image data.	8 Marks	L2	CO4

(OR)

9.	a)	In brief explain the strengths and weaknesses of the Naive Bayes classifier in handling noisy image data.	8 Marks	L2	CO4
	b)	Implement an Optical Character Recognition (OCR) system to extract text from a given image.	8 Marks	L3	CO4, CO6

MODULE-V

10.	a)	Explain the K-means algorithm and its role in image segmentation, including its limitations.	8 Marks	L2	CO5
	b)	Discuss how optical flow can be integrated with other tracking methods (e.g., Kalman filters) to improve object tracking performance.	8 Marks	L3	CO5

(OR)

11.	a)	Given an image, demonstrate how graph cuts can be applied for segmentation using appropriate energy functions.	8 Marks	L2	CO5
	b)	Define optical flow and explain its role in object tracking within video sequences.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

MACHINE LEARNING FOR CYBER SECURITY

[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)	Compare and contrast the performance of logistic regression and decision trees in classifying malicious and benign network traffic	2 Marks	L2	CO1
	b)	Describe the concept of adversarial machine learning in the context of cyber security.	2 Marks	L2	CO1
	c)	Define anomaly detection and explain its difference from supervised learning	2 Marks	L2	CO2
	d)	Define malware and explain its types.	2 Marks	L2	CO2
	e)	Explain the concept of dead malware analysis.	2 Marks	L2	CO3
	f)	Define the types of machine learning algorithms used in network security.	2 Marks	L2	CO3
	g)	Explain the role of user behavior data in detecting and preventing abuse.	2 Marks	L2	CO4
	h)	Discuss the importance of user data in monetizing the consumer web	2 Marks	L2	CO4
	i)	What is clustering abuse in the context of consumer web monetization?	2 Marks	L2	CO5
	j)	What is the purpose of user data in monetizing the consumer web?	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 limitations of traditional rule-based approaches to spam filtering and how machine learning can improve them. Explain the benefits and challenges of using machine learning in spam filtering and provide examples of real-world applications.	8 Marks	L2	CO1
	b)	Compare and contrast the performance of k-means clustering and hierarchical clustering algorithms in grouping similar cyber security threats together. Explain the strengths and weaknesses of each algorithm and provide examples of their application.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the concept of dimensionality reduction in machine learning and its applications in cyber security. Describe the benefits and challenges of using dimensionality reduction techniques in cyber security and provide examples of real-world applications.	8 Marks	L2	CO1

	b)	Explain the concept of ensemble learning in machine learning and its applications in cyber security. Describe the benefits and challenges of using ensemble learning techniques in cyber security and provide examples of real-world applications.	8 Marks	L2	CO1

MODULE-II

4.	a)	Discuss the role of anomaly detection in finance, including credit risk assessment and portfolio management. Explain the advantages and disadvantages of using anomaly detection in finance	8 Marks	L3	CO2
	b)	Discuss the challenges of anomaly detection in big data environments, including scalability and interpretability. Explain the strategies to address these challenges.	8 Marks	L3	CO2
		(OR)			
5.	a)	Explain the application of anomaly detection in healthcare, including disease diagnosis and patient monitoring. Discuss the advantages and disadvantages of using anomaly detection in healthcare.	8 Marks	L3	CO2
	b)	Discuss the role of graph-based anomaly detection methods, including graph neural networks. Explain the advantages and disadvantages of using graph-based methods for anomaly detection	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the concept of network traffic analysis. Discuss the different techniques used for network traffic analysis.	8 Marks	L4	CO3
	b)	Explain the concept of malware attribution. Discuss the different techniques used for malware attribution.	8 Marks	L4	CO3
		(OR)			
7.	a)	Discuss the importance of memory forensics in malware analysis. Explain the different memory forensics techniques used	8 Marks	L4	CO3
	b)	Explain the concept of classification in malware analysis. Discuss the different machine learning algorithms used for malware classification.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Discuss the importance of user data in monetizing the consumer web. Explain the different types of user data that can be collected, and provide examples of tools that can be used to collect and analyze user data.	8 Marks	L4	CO4
	b)	Discuss the importance of user behavior data in detecting and preventing abuse. Explain the different types of user behavior data that can be collected, and provide examples of tools that can be used to collect and analyze user behavior data.	8 Marks	L4	CO4
		(OR)			
9.	a)	Explain the concept of clustering ensemble methods in clustering abuse detection. Discuss the benefits and challenges of using clustering ensemble methods, and provide examples of clustering ensemble algorithms that can be used.	8 Marks	L4	CO4
	b)	Explain the concept of lookalike targeting in online advertising. Discuss the benefits and challenges of using lookalike targeting, and provide examples of machine learning algorithms that can be used.	8 Marks	L4	CO4

MODULE-V

10.	a)	Discuss the importance of user behavior data in detecting and preventing abuse. Explain the different types of user behavior data that can be collected, and provide examples.	8 Marks	L3	CO5
	b)	Explain the concept of targeted advertising in the context of consumer web monetization. Discuss the benefits and challenges of using targeted advertising	8 Marks	L3	CO5
		(OR)			
11.	a)	Explain the concept of machine learning system maturity and scalability. Discuss the importance of maturity and scalability in production environments.	8 Marks	L3	CO5
	b)	Discuss the importance of data quality in machine learning systems. Explain the different types of data quality issues and provide examples.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

COMPUTER SYSTEM SECURITY

[Computer Science and Engineering (Cyber Security)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What are the three main goals of computer security?	2 Marks	L1	CO1
	b)	What is the difference between administrative security and technical security?	2 Marks	L2	CO1
	c)	What is the purpose of a reference monitor in system security?	2 Marks	L2	CO2
	d)	Define trustworthy computing in the context of security.	2 Marks	L4	CO2
	e)	Mention two key aspects of modern storage security.	2 Marks	L2	CO3
	f)	What is risk remediation in storage security?	2 Marks	L1	CO3
	g)	What is the role of the Data-Link Layer in wireless security?	2 Marks	L1	CO4
	h)	Mention one common security feature of the Data-Link Layer in wireless networks.	2 Marks	L2	CO4
	i)	What is spam, and why is it a security concern?	2 Marks	L1	CO5
	j)	Name two common spam control techniques	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 administrative security? Discuss its importance in an organization.	8 Marks	L2	CO1
	b)	Explain the role of security policies in maintaining administrative security.	8 Marks	L4	CO1
		(OR)			
3.	a)	Discuss various authentication mechanisms used in administrative security	8 Marks	L1	CO1
	b)	Explain access control models and their significance in securing systems.	8 Marks	L4	CO1

MODULE-II

4.	a)	Discuss the various International Standards for Operating System Security and their implementation.	8 Marks	L2	CO2
	b)	How can a Unix System be secured? Explain various security measures.	8 Marks	L4	CO2
		(OR)			
5.	a)	Discuss the importance of placing servers into network zones for better security.	8 Marks	L1	CO2
	b)	Explain different Authentication Processes in Unix security.	8 Marks	L4	CO2

MODULE-III

6.	a)	Explain how encryption is used to enhance storage security.	8 Marks	L2	CO3
	b)	Compare on-premise storage security with cloud storage security	8 Marks	L5	CO3
		(OR)			
7.	a)	What role does access control play in ensuring storage security?	8 Marks	L5	CO3
	b)	Discuss the importance of data redundancy and backup in storage security.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Explain the security features implemented at the Data-Link Layer in wireless networks.	8 Marks	L2	CO4
	b)	Discuss common flaws and threats in Data-Link Layer security and how they can be exploited.	8 Marks	L2	CO4
		(OR)			
9.	a)	Compare WEP, WPA, and WPA2 security protocols, highlighting their strengths and weaknesses	8 Marks	L4	CO4
	b)	Explain the vulnerabilities of MAC address filtering and how attackers can bypass it.	8 Marks	L1	CO4

MODULE-V

10.	a)	What is spam, and what techniques are used for spam control?	8 Marks	L2	CO5
	b)	How does email encryption (PGP, S/MIME) enhance security, and what are its challenges?	8 Marks	L4	CO5
		(OR)			
11.	a)	Discuss the common types of attacks on web servers, such as DDoS, SQL Injection, and Cross-Site Scripting (XSS)?	8 Marks	L5	CO5
	b)	Explain the best web server security practices for preventing unauthorized access.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

NETWORK FORENSICS

[Computer Science and Engineering (Cyber Security)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define network forensics and explain its primary objective in digital investigations.	2 Marks	L1	CO1
	b)	List two challenges faced during the collection and preservation of network evidence.	2 Marks	L1	CO1
	c)	What is the purpose of physical interception in evidence acquisition, and name one method used for it?	2 Marks	L1	CO2
	d)	Write a short note on the role of libpcap in network traffic acquisition and mention one platform where it is commonly used.	2 Marks	L1	CO2
	e)	What is the primary goal of wireless network forensics?	2 Marks	L1	CO3
	f)	Name two challenges faced in wireless network forensics.	2 Marks	L1	CO3
	g)	What is the purpose of event log correlation in network forensics?	2 Marks	L1	CO4
	h)	Name two key components of a network log architecture.	2 Marks	L1	CO4
	i)	Explain the purpose of tunneling for functionality in network communication.	2 Marks	L1	CO5
	j)	What is covert tunneling, and how does it differ from regular tunneling?	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 digital and network evidence. Describe their characteristics and explain why they are critical in forensic investigations.	8 Marks	L1	CO1
	b)	Discuss the differences between digital evidence and traditional physical evidence, highlighting the unique challenges posed by the digital nature of network data.	8 Marks	L2	CO1

(OR)

3.	a)	Discuss how firewalls can serve as a source of forensic evidence. What specific data should investigators look for during analysis?	8 Marks	L1	CO1
	b)	Examine the evidentiary value of web proxies and application servers in network forensic investigations. How can logs from these devices aid in the reconstruction of events?	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the different methods of physical interception used for evidence acquisition in network forensics.	8 Marks	L2	CO2
	b)	Discuss the role of hardware and software tools in physical interception for digital evidence acquisition.	8 Marks	L2	CO2
		(OR)			
5.	a)	Compare and contrast libpcap and WinPcap in terms of their functionalities and applications.	8 Marks	L3	CO2
	b)	Describe the key features and working principles of traffic acquisition software used for network forensics.	8 Marks	L2	CO2
		MODULE-III			
6.	a)	Explain the importance of wireless network forensics in cybersecurity investigations.	8 Marks	L2	CO3
	b)	Describe the IEEE Layer 2 Protocol Series and its significance in wireless network forensics.	8 Marks	L2	CO3
		(OR)			
7.	a)	Discuss the role of Wireless Access Points (WAPs) in wireless network forensics and security monitoring.	8 Marks	L1	CO3
	b)	Explain the process and tools used for wireless traffic capture and analysis in network forensics.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	Explain the importance of event log aggregation in network forensics and describe how log correlation helps in forensic analysis.	8 Marks	L2	CO4
	b)	Discuss the different sources of logs in network devices and servers and their significance in forensic investigations.	8 Marks	L1	CO4
		(OR)			
9.	a)	Describe the architecture of network log aggregation and its role in forensic investigations.	8 Marks	L2	CO4
	b)	Explain the key components of a centralized log management system and their relevance in forensic analysis.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain the concept of network tunneling and its importance in modern network communications.	8 Marks	L2	CO5
	b)	Differentiate between tunneling for functionality and tunneling for confidentiality with relevant examples.	8 Marks	L3	CO5
		(OR)			
11.	a)	What is covert tunneling, and how can it be used for malicious activities? Provide a real-world scenario.	8 Marks	L1	CO5
	b)	Discuss the Ann Tunnels Underground case study and its significance in understanding network tunneling threats.	8 Marks	L1	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

NETWORK ANOMALY DETECTION SYSTEM

[Computer Science and Engineering (Cyber Security)]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define taxonomy in the context of network attacks?	2 Marks	L1	CO1
	b)	What is the primary objective of detecting anomalies in network data?	2 Marks	L2	CO1
	c)	What are the key steps involved in feature selection?	2 Marks	L2	CO2
	d)	Name any two existing methods of feature selection.	2 Marks	L4	CO2
	e)	How does knowledge-based anomaly detection work?	2 Marks	L2	CO3
	f)	What is the significance of combination learners in network anomaly detection?	2 Marks	L1	CO3
	g)	What are the main components of data quality in evaluation methods?	2 Marks	L1	CO4
	h)	Explain the importance of validity and reliability in testing evaluation methods	2 Marks	L2	CO4
	i)	Name two commonly used tools for launching cyberattacks	2 Marks	L1	CO5
	j)	How are attack-related tools categorized in cybersecurity?	2 Marks	L2	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Describe the role of datasets in network anomaly detection and their characteristics.	8 Marks	L2	CO1
	b)	How can machine learning models be used for network anomaly detection? Provide examples.	8 Marks	L4	CO1
		(OR)			
3.	a)	Explain the challenges in accurately detecting anomalies in network data.	8 Marks	L1	CO1
	b)	Discuss the importance of datasets in training anomaly detection systems. Provide examples of commonly used datasets.	8 Marks	L4	CO1

MODULE-II

4.	a)	Discuss the role of subset evaluation measures in the feature selection process.	8 Marks	L2	CO2
	b)	Provide an overview of **systems and tools** used for feature selection.	8 Marks	L4	CO2
		(OR)			
5.	a)	What are the advantages and limitations of filter-based feature	8 Marks	L1	CO2

		selection techniques?			
	b)	Explain how wrapper-based feature selection works. Provide examples of algorithms.	8 Marks	L4	CO2
		MODULE-III			
6.	a)	Compare the effectiveness of supervised learning and unsupervised learning in detecting network anomalies.	8 Marks	L2	CO3
	b)	What role do probabilistic models play in identifying anomalies in large networks?	8 Marks	L5	CO3
		(OR)			
7.	a)	Discuss the importance of knowledge-based approaches in anomaly detection systems.	8 Marks	L5	CO3
	b)	Explain the impact of using ensemble methods (combination learners) in anomaly detection.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Discuss the impact of data quality on the performance of machine learning models in cybersecurity.	8 Marks	L2	CO4
	b)	How can data preprocessing improve data quality in ML-based security systems? Provide examples.	8 Marks	L2	CO4
		(OR)			
9.	a)	Differentiate between validity and reliability in the context of cybersecurity evaluation methods.	8 Marks	L4	CO4
	b)	How would you test the validity and reliability of a machine learning model in threat detection?	8 Marks	L1	CO4
		MODULE-V			
10.	a)	What is an attack detection system, and how does it function in identifying security breaches? Provide examples of such systems.	8 Marks	L2	CO5
	b)	Discuss the differences between signature-based and anomaly-based attack detection systems. Which is more effective in detecting unknown attacks?	8 Marks	L4	CO5
		(OR)			
11.	a)	How does an attacker's motivation influence the choice of tools used in an attack? Discuss with examples.	8 Marks	L5	CO5
	b)	Discuss how attackers modify or develop new tools to circumvent security systems based on their attack objectives	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

MERN STACK DEVELOPMENT

[Computer Science and Engineering]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	What is ReactJS in MERN stack development?	2 Marks	L1	CO1
	b)	What is routing in ExpressJS?	2 Marks	L1	CO1
	c)	Write the command to install ExpressJS?	2 Marks	L1	CO2
	d)	What is NodeJS in MERN stack development?	2 Marks	L1	CO2
	e)	List the CRUD operations of Mongoose.	2 Marks	L1	CO3
	f)	Name any two middleware functions of Mongoose.	2 Marks	L1	CO3
	g)	What is React.PureComponent?	2 Marks	L1	CO4
	h)	Define React event handler?	2 Marks	L1	CO4
	i)	What are the action creators?	2 Marks	L1	CO5
	j)	What is the dispatch method?	2 Marks	L1	CO5

PART - B

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

10 x 8 = 80 Marks

MODULE-I

2.	a)	What is NodeJS? Explain NodeJS and installing npm packages.	8 Marks	L1	CO1
	b)	Explain about View and Controller components of MVC architectural pattern with a diagram.	8 Marks	L2	CO1
		(OR)			
3.	a)	Discuss about componenets of MERN STACK in detail	8 Marks	L2	CO1
	b)	Discuss ExpressJS of MERN stack development.	8 Marks	L2	CO1

MODULE-II

4.	a)	How do you create and use router-level middleware functions in an Express.js application with example?	8 Marks	L2	CO2
	b)	Explain about Using an HTTP request logger.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss parsing the HTTP request body. Develop an expressJS program to have two routers.	8 Marks	L2	CO2
	b)	Discuss writing middleware functions.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain CRUD operations using ExpressJS route methods.	8 Marks	L2	CO3
	b)	How to use Mongoose query builder? Discuss in detail.	8 Marks	L2	CO3

(OR)

7.	a)	Explain writing middleware functions for Mongoose with an example.	8 Marks	L2	CO3
	b)	Build a Restful API to manage users with ExpressJS and Mongoose.	8 Marks	L3	CO3

MODULE-IV

8.	a)	Discuss about composing components with an example.	8 Marks	L2	CO4
	b)	How to split reducers? Discuss in detail.	8 Marks	L2	CO4

(OR)

9.	a)	Build a program for React event handlers.	8 Marks	L3	CO4
	b)	What is React Portal? Explain React elements and React components.	8 Marks	L2	CO4

MODULE-V

10.	a)	Discuss the writing of Redux store enhancers .	8 Marks	L2	CO5
	b)	Explain about combining reducers with an example.	8 Marks	L2	CO5

(OR)

11.	a)	Discuss in detail about Redux middleware.	8 Marks	L2	CO5
	b)	Write a program to create reducer function.	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

DEVICE MODELING

[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)	State Accumulation, Depletion &Inversion region	2 Marks	L1	CO1
	b)	What is Pinch off voltage and write the necessary Expression,	2 Marks	L1	CO1
	c)	Draw the effect of breakdown on ID-VDS characteristics	2 Marks	L1	CO1
	d)	Draw the ID-VDS characteristics for p-channel MOS transistor for two different VSB values.	2 Marks	L1	CO1
	e)	State hot carrier effect	2 Marks	L1	CO2
	f)	Draw the schematic representation of hot carrier effects in the channel of nMOS.	2 Marks	L1	CO2
	g)	Write any two limitation of quasi static model?	2 Marks	L2	CO3
	h)	Define non quasi static model?	2 Marks	L1	CO3
	gi)	What is velocity saturation	2 Marks	L1	CO3
	hj)	Distinguish quasi and non quasi analysis.	2 Marks	L4	CO3
	i				

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Assess the CV characteristics of a MOS structure	8 Marks	L2	CO1
	b)	Explain in detail about pinchoff voltage and body effect.	8 Marks	L2	CO1

(OR)

3.	a)	Illustrate the Effects of Gate-substrate voltage on surface condition .	8 Marks	L3	CO1
	b)	Sketch a 3 terminal MOS structure of open circuited, short circuited, with biased voltage and illustrate.	8 Marks	L3	CO1

MODULE-II

4.	a)	Draw the necessary diagrams of IDS-VDS Characteristics in moderate inversion with VGS as a parameter	8 Marks	L1	CO2
	b)	Explain the process of channel length modulation in MOSFETs. How does it impact the drain current in the saturation region?	8 Marks	L1	CO2

(OR)

5.	a)	Define effective mobility in MOS transistors. Discuss the factors affecting mobility and its impact on MOSFET performance.	8 Marks	L2	CO2
	b)	Differentiate the source-referenced and body referenced modeling	8 Marks	L1	CO2

MODULE-III

6.	a)	What is threshold voltage. Derive the expression of threshold voltage.	8 Marks	L3	CO2
	b)	Explain the modes of operation of NMOS depletion-mode transistor.	8 Marks	L2	CO2

(OR)

7.		Discuss i) Punchthrough effects ii) Hot carrier effects iii) Scaling iv) DIBL	16 Marks	L2	CO2

MODULE-IV

8.	a)	Draw a MOS device structure with charges and currents of under DC excitation and varying terminal voltages and explain	8 Marks	L1	CO3
	b)	What is Non quasi-static Analyses. How is it different from Quasi-static.	8 Marks	L2	CO3

(OR)

9.	a)	Distinguish quasi static and non quasi static analyses a MOS device	8 Marks	L4	CO3
	b)	Identify the Evaluation of Charges in Quasi-static operation	8 Marks	L1	CO3

MODULE-V

10.	a)	Analyze the two path view of MOS transistor in DC operation.	8 Marks	L4	CO3
	b)	Discuss in detail about Y parameter model of MOS Device.	8 Marks	L2	CO3

(OR)

11.	a)	Explain the effects of high-frequency operation on small signal models and describe how non-quasi-static models help in improving accuracy.	8 Marks	L1	CO3
	b)	Derive the Y-parameter model for a common-source MOSFET amplifier and explain its advantages.	8 Marks	L3	CO3

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

SYSTEM-ON-CHIP 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 SoC (System on Chip).	2 Marks	L1	CO1
	b)	List the key stages in the SoC design flow.	2 Marks	L1	CO1
	c)	What does "macro verification" mean in the context of IP design?	2 Marks	L2	CO2
	d)	Identify two stages in the IP planning and specification process.	2 Marks	L1	CO2
	e)	Mention two features that make System Verilog a preferred language for SoC verification.	2 Marks	L1	CO3
	f)	How does the choice of verification language impact the efficiency of the verification process?	2 Marks	L1	CO3
	g)	Define HW/SW Co-verification.	2 Marks	L1	CO3
	h)	What is the purpose of an emulation environment in HW/SW Co-verification?	2 Marks	L1	CO3
	i)	What are on-chip communication architectures?	2 Marks	L2	CO4
	j)	Recall the significance of system-level analysis in designing communication architectures.	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)	Contrast various System Design Flow Models.	8 Marks	L3	CO1
	b)	Recall Manufacturing Test strategies and Low Power Design for SoC	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain in detail about System Interconnects and On-Chip Buses.	8 Marks	L2	CO1
	b)	Design a verification strategy for a complex SoC that includes on-chip buses and interfaces. Illustrate strategy with a flow diagram.	8 Marks	L4	CO1

MODULE-II

4.	a)	Organise the process of Selecting the IP.	8 Marks	L2	CO2
	b)	Analyze model development for Hard Macros.	8 Marks	L1	CO2
		(OR)			
5.	a)	List the Characteristics of a Good IP.	8 Marks	L1	CO2
	b)	Develop the Design Process which involves manufacturing a IP.	8 Marks	L4	CO2

MODULE-III

6.	a)	Discuss the meaning of design verification and also the basic Verification Principle.	8 Marks	L1	CO3
	b)	Analyze the steps in verification Methodology steps to verify a SoC Design.	8 Marks	L3	CO3
		(OR)			
7.	a)	Identify the challenges in design test and test strategies of various SOC Cores.	8 Marks	L1	CO3
	b)	Compare and contrast the use of code coverage analysis and protocol checking in verifying IP blocks. Discuss their strengths and limitations.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Illustrate a methodology for creating a Soft Prototype. Also List the limitations of Soft Prototype.	8 Marks	L3	CO3
	b)	Model a Soft Prototype for modelling a Bluetooth based SoC design.	8 Marks	L4	CO3
		(OR)			
9.	a)	Summarize the Physical Effects in Deep Sub-Micron Geometries.	8 Marks	L2	CO3
	b)	Identify the reasons for the necessarily of the Co –Verification and Discuss the Co-verification Environment.	8 Marks	L1	CO3

MODULE-V

10.	a)	Inspect possible solutions for developing battery efficient system in communication architectures.	8 Marks	L3	CO4
	b)	Explain On chip communication architectures in detail.	8 Marks	L2	CO4
		(OR)			
11.	a)	Model a design methodology for CAT based system.	8 Marks	L4	CO4
	b)	Survey some examples of bus functional models and explain them in detail.	8 Marks	L1	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

VLSI DESIGN VERIFICATION AND TESTING

[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)	Develop 3 – Value Logic Truth Table for Universal Logic Gates.	2 Marks	L3	CO1
	b)	Define and Illustrate Transport Delay Model.	2 Marks	L2	CO1
	c)	Classify and illustrate the Stuck at Fault Models.	2 Marks	L4	CO2
	d)	Justify the role of Masking relations among faults in Multiple Fault Modeled circuits.	2 Marks	L4	CO2
	e)	Justify why Test Generation is more difficult for Asynchronous Circuit than for Synchronous Circuit.	2 Marks	L4	CO3
	f)	Develop an algorithm for Error Propagation in a Fanout-Free Circuit.	2 Marks	L3	CO3
	g)	List the various LSSD Design Rules.	2 Marks	L1	CO4
	h)	Summarize the various additional attributes of Ones – Count Compression.	2 Marks	L2	CO4
	i)	Develop a 4-stage LFSR/SR for a (4,2) Circuit Under Test.	2 Marks	L3	CO4
	j)	Differentiate Condensed and Cyclic LFSRs.	2 Marks	L4	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Sketch and Explain the concept of modelling & digital circuits at logic level & register level.	8 Marks	L2	CO1
	b)	Outline any two delay models.	8 Marks	L1	CO1
		(OR)			
3.	a)	Explain the internal representation of a structural model of a circuit with emphasis on element table, signal table, fan in and fan out table.	8 Marks	L2	CO1
	b)	Categorize the different levels of modeling.	8 Marks	L4	CO1

MODULE-II

4.	a)	Define and illustrate Fault Sampling.	8 Marks	L2	CO2
	b)	Describe the Simulation for Design Verification and Test Evaluation.	8 Marks	L2	CO2
		(OR)			
5.	a)	Compare the various algorithms for fault simulations.	8 Marks	L4	CO2
	b)	Illustrate the method of series fault simulation.	8 Marks	L2	CO2

MODULE-III

6.	a)	Illustrate Non-Feedback Bridging fault models.	8 Marks	L2	CO3
	b)	Develop a algorithm to detect Feedback Bridging Faults.	8 Marks	L3	CO3
		(OR)			
7.	a)	Illustrate D - Algorithm using combinational circuit.	8 Marks	L2	CO3
	b)	Compare 9V algorithm and PODEM used for ATG.	8 Marks	L4	CO3

MODULE-IV

8.	a)	Explain the Board-Level and System-Level DFT Approaches	8 Marks	L2	CO4
	b)	Justify the role of Boundary Scan Cell for board level testing.	8 Marks	L4	CO4
		(OR)			
9.	a)	Illustrate Ones-Count Compression.	8 Marks	L2	CO4
	b)	Show that Syndrome Testing relies on Exhaustive Testing.	8 Marks	L4	CO4

MODULE-V

10.	a)	Describe in detail about Self-Testing Using MISR and Parallel SRSG (STUMPS) for Board and Chip Level Testing.	8 Marks	L2	CO4
	b)	Appraise the additional features of Circular Self-Test Path (CSTP) BIST Architectures.	8 Marks	L4	CO4
		(OR)			
11.	a)	Show that a Concurrent BIST Architecture (CBIST) is an extension of Off-Line and On-Line BIST.	8 Marks	L4	CO4
	b)	Analyze the functionality of n-bit BILBO register in Normal Mode.	8 Marks	L4	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

NANO MATERIALS AND NANOTECHNOLOGY

[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)	How a equiaxed crystallites are arranged?	2 Marks	L1	CO1
	b)	What is surface-to volume ratio in nano materials?	2 Marks	L1	CO1
	c)	Define Bragg's law.	2 Marks	L2	CO1
	d)	Write short notes on Small angle X-ray scattering.	2 Marks	L1	CO1
	e)	What are the techniques of Self-assembly of nanoparticles?	2 Marks	L1	CO2
	f)	What are the two types of Photoloithography?	2 Marks	L2	CO2
	g)	What are the biomedical applications of CNTs?	2 Marks	L1	CO3
	h)	Brief the methods of CNT growth.	2 Marks	L2	CO3
	i)	Brief the significance of of Quantum well devices	2 Marks	L1	CO4
	j)	How Quantum dot heterostructures are synthesized?	2 Marks	L2	CO4

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Recall intrinsic size effects.	8 Marks	L1	CO1
	b)	Outline nanoscale dimension on the optical properties of materials.	8 Marks	L2	CO1
		(OR)			
3.		Demonstrate the Extended internal surface strategy of nanostructures materials.	16 Marks	L3	CO1

MODULE-II

4.		Discuss the principal working and application of X-ray diffraction (XRD) for the characterization of nanomaterials.	16 Marks	L4	CO1
		(OR)			
5.	a)	Identify the different Optical spectroscopy methods in material characterization.	8 Marks	L3	CO1
	b)	Solve the issue of providing both image and diffraction information from a single sample using TEM.	8 Marks	L3	CO1

MODULE-III

6.	a)	Summarize the application of Surface plasmon resonance as the coherent excitation of all the "free" electrons within the conduction band, leading to an in-phase oscillation.	8 Marks	L2	CO2
	b)	Analyze the two possible mechanisms proposed to explain the enhanced strength of nanowires.	8 Marks	L4	CO2

(OR)

7.		Recall the SPM-based nanolithography for exploitation of local oxidation and passivation.	16 Marks	L1	CO2

MODULE-IV

8.	a)	Interpret different electrical Properties of CNT	8 Marks	L2	CO3
	b)	Develop the flowchart of Arc Discharge method and explain the extraordinary Electrical Properties of CNT.	8 Marks	L3	CO3
		(OR)			
9.	a)	Interpret different optical properties, thermal properties of CNT.	8 Marks	L2	CO3
	b)	Develop the flowchart of Physical Vapor Deposition of Carbon Nanotubes.	8 Marks	L3	CO3

MODULE-V

10.	a)	Design and develop sustainable nano sensors and nano twizers using SPM.	8 Marks	L3	CO4
	b)	Interpret the sustainable Carbon Nanotube Emitters based on thermionic emission of electrons from heated filaments with low work functions.	8 Marks	L2	CO4
		(OR)			
11.	a)	Analyze the challenges in tailoring Photonic crystals for photonic light emitting diodes serve as anti counterfeit protection on credit cards.	8 Marks	L4	CO4
	b)	Solve by investigating the complex challenges in catalysing Gold Nanoparticles in Biological field.	8 Marks	L2	CO4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

ADVANCED EMBEDDED SYSTEMS

[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 a Watchdog Timer (WDT)?	2 Marks	L3	CO1
	b)	Mention two characteristics of embedded systems.	2 Marks	L2	CO1
	c)	Mention one tool used for debugging embedded systems.	2 Marks	L2	CO2
	d)	List any two components of an Embedded System Development Environment (IDE).	2 Marks	L2	CO2
	e)	Name any two pins used for oscillator connection in PIC18F452.	2 Marks	L1	CO3
	f)	What is the purpose of assembler directives in PIC programming?	2 Marks	L1	CO3
	g)	Name one advantage of using macros in embedded programming.	2 Marks	L2	CO4
	h)	What is the role of Timer 0 in PIC18F452?	2 Marks	L2	CO4
	i)	Which port of PIC18 is commonly used for interfacing a 4x4 keypad?	2 Marks	L3	CO5
	j)	Name one application of PWM in embedded systems.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	a)	Explain the different types Actuator, working principles, and importance in embedded systems with examples.	8 Marks	L3	CO1
	b)	Explain Real-Time Clock (RTC) in embedded systems working and common use cases.	8 Marks	L2	CO1

(OR)

3.	a)	Explain the embedded component roles and interactions with a block diagram.	8 Marks	L1	CO1
	b)	Explain about quality attributes of Embedded Systems.	8 Marks	L3	CO1

MODULE-II

4.	a)	Explain the various files generated during the compilation of embedded firmware.	8 Marks	L2	CO2
	b)	Compare simulators and emulators in embedded system development.	8 Marks	L4	CO2

(OR)

5.		What is debugging in embedded systems? Explain different debugging techniques, including hardware debugging and software debugging, with examples.	16 Marks	L4	CO2

	MODULE-III			
6.	Explain the process of integrating hardware and firmware in embedded systems.	16 Marks	L4	CO3
	(OR)			
7.	Describe the different addressing modes supported by the PIC18 microcontroller.	16 Marks	L3	CO3
	MODULE-IV			
8.	Explain the interrupt structure of PIC18F452. Discuss how to configure and use interrupts in embedded applications.	16 Marks	L3	CO4
	(OR)			
9.	Describe the structure of the serial port in PIC18F452. Explain the steps involved in serial communication programming with examples.	16 Marks	L3	CO4
	MODULE-V			
10.	Discuss the steps involved in configuring the PWM mode using the CCP module with an example in C.	16 Marks	L1	CO5
	(OR)			
11.	Explain the basics of interrupts in PIC18F452.	16 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

M.Tech II Semester (MBU-22) Regular Examinations, May – 2025

INNOVATION AND INTELLECTUAL PROPERTY RIGHTS

[Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence and Data Science),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 creativity?	2 Marks	L1	CO1
	b)	List the steps involved in the innovation process.	2 Marks	L2	CO1
	c)	Differentiate between design and geographical indication.	2 Marks	L1	CO1
	d)	Why is there a need for IPR?	2 Marks	L2	CO1
	e)	Explain the purpose of trademarks.	2 Marks	L1	CO2
	f)	What is protectable matter in trademarks?	2 Marks	L3	CO2
	g)	State the fundamental principles of copyright law.	2 Marks	L3	CO3
	h)	Discuss the rights of reproduction under copyright law.	2 Marks	L2	CO3
	i)	What is the role of trade secret litigation?	2 Marks	L1	CO4
	j)	Explain the impact of unfair competition.	2 Marks	L2	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the obstacles to creativity and how they can be overcome.	8 Marks	L2	CO1
	b)	Discuss the types of intellectual property.	8 Marks	L2	CO1
		(OR)			
3.	a)	Describe the role of international organizations in intellectual property.	8 Marks	L4	CO1
	b)	Explain the need for IPR with examples.	8 Marks	L2	CO1

MODULE-II

4.	a)	What are protectable matters in trademarks? Explain.	8 Marks	L3	CO1
	b)	Discuss the process of acquiring trademark rights.	8 Marks	L3	CO1
		(OR)			
5.	a)	Evaluate the importance of trademarks in business.	8 Marks	L2	CO1
	b)	How can trademarks be selected and evaluated?	8 Marks	L2	CO1

MODULE-III

6.	a)	Explain the rights to perform work publicly under copyright law.	8 Marks	L4	CO2
	b)	Discuss the copyright registration process.	8 Marks	L2	CO2
		(OR)			
7.	a)	Explain the foundation of patent law.	8 Marks	L3	CO2
	b)	Discuss ownership rights in patent law.	8 Marks	L2	CO2

MODULE-IV

8.	a)	Discuss the legalities involved in protecting against unfair competition.	8 Marks	L2	CO4
	b)	Discuss about false advertising. Explain briefly with an example.	8 Marks	L1	CO4
		(OR)			
9.	a)	State and explain the trade secret Law. Explain the liability for misappropriations of trade secrets.	8 Marks	L2	CO4
	b)	Explain about the remedies for misappropriation in Trade Secrets.	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain about international – trade mark law in detail. What are the new developments in Trade mark Law?	8 Marks	L3	CO5
	b)	Explain about International patent protection.	8 Marks	L2	CO5
		(OR)			
11.	a)	What are the Intellectual Property issue areas? Explain them in detail and also explain the International IPR laws.	8 Marks	L2	CO5
	b)	Explain in detail about the international development in trade secrets law.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2025

BUSINESS LAW

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What are the essentials of valid consideration?	2 Marks	L1	CO1
	b)	Define indemnity and guarantee.	2 Marks	L1	CO1
	c)	Define a limited liability partnership (LLP).	2 Marks	L1	CO2
	d)	What are the rights of an unpaid seller?	2 Marks	L1	CO2
	e)	What is an article of association?	2 Marks	L1	CO3
	f)	What is the difference between a memorandum and articles of association?	2 Marks	L1	CO3
	g)	What is the Right to Information (RTI) Act?	2 Marks	L1	CO4
	h)	What is the significance of the RTI Act?	2 Marks	L1	CO4
	i)	Define business ethics and morals	2 Marks	L1	CO5
	j)	What is a meeting of directors?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Describe the negotiation and endorsement of negotiable instruments.	16 Marks	L2	CO1
	(OR)			
3.	Differentiate between indemnity and guarantee with case laws.	16 Marks	L2	CO1

MODULE-II

4.	Explain the difference between a sale and an agreement to sell with illustrations.	16 Marks	L2	CO2
	(OR)			
5.	Discuss the concept of conditions and warranties under the Sale of Goods Act	16 Marks	L2	CO2

MODULE-III

6.	Compare and contrast private and public companies.	16 Marks	L2	CO3
	(OR)			
7.	Discuss the importance of arbitration in corporate disputes.	16 Marks	L2	CO3

MODULE-IV

8.	Compare and contrast the RTI Act and the Consumer Protection Act.	16 Marks	L2	CO4
	(OR)			
9.	Create a real-world example of consumer protection and dispute resolution.	16 Marks	L2	CO4

MODULE-V

10.	Create a case study on the winding-up process of a failed company.	16 Marks	L2	CO5
	(OR)			
11.	Compare and contrast voluntary and compulsory winding up.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2025

FINANCIAL MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is wealth maximization?	2 Marks	L1	CO1
	b)	What is investment decision?	2 Marks	L1	CO1
	c)	Define preference shares.	2 Marks	L1	CO2
	d)	What is retained earnings?	2 Marks	L1	CO2
	e)	What is profitability index?	2 Marks	L1	CO3
	f)	List out the capital budgeting techniques.	2 Marks	L1	CO3
	g)	What do you mean by gross working capital?	2 Marks	L1	CO4
	h)	What is cash management?	2 Marks	L1	CO4
	i)	What is Walter approach?	2 Marks	L1	CO5
	j)	Define dividend.	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.	Define Financial management. Explain the importance of Financial decisions.	16 Marks	L2	CO1
	(OR)			
3.	Discuss about the objectives of Financial Management.	16 Marks	L2	CO1

MODULE-II

4.	X ltd has 10% perpetual debt of Rs.1,00,000; the tax rate is 35%, Flotation costs are 5% of face value. Determine the cost of capital assuming the Debt is i) issued at par ii) 10% discount and iii) 10% Premium	16 Marks	L4	CO2
	(OR)			
5.	What is Financial Leverage and how does it impact a company's profitability?	16 Marks	L4	CO2

MODULE-III

6.	What is capital structure, and why is it important in financial management?	16 Marks	L4	CO3
	(OR)			
7.	What are the key assumptions of the Modigliani and Miller (M&M) theorem?	16 Marks	L4	CO3

MODULE-IV

8. The expected cash flows of a project are as follows — 16 Marks — L4 — CO4

Year	0	1	2	3	4	5
Cash flow	- 100000	20,000	30,000	40,000	50,000	30,000

The cost of capital is 12%. Calculate the following

i) Net present Value

ii) Internal Rate of Return.

(OR)

9. Write short notes on the following — 16 Marks — L2 — CO4

i) Determinants of working Capital

ii) Operating cycle

iii) Economic order Quantity.

MODULE-V

10. The following information is available is respect of a firm: Capitalization rate (Ke) = 0.10 Earnings per Share (E) = Rs.10 Assume rate of return on investments (r); i) 15% ii) 8% and iii) 10%. Show the effect of dividend policy on the market price of shares, using Walter"s model. — 16 Marks — L2 — CO5

(OR)

11. Discuss about the dividend decisions impact on shareholder's wealth maximization. — 16 Marks — L4 — CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2025

HUMAN RESOURCE MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is Controlling?	2 Marks	L1	CO1
	b)	Define the term staffing.	2 Marks	L1	CO1
	c)	What do you mean by employee referrals?	2 Marks	L1	CO2
	d)	Define the term Campus recruitment.	2 Marks	L1	CO2
	e)	What is stress interview?	2 Marks	L1	CO3
	f)	What is paired comparison method?	2 Marks	L1	CO3
	g)	Define compensation.	2 Marks	L1	CO4
	h)	What is job evaluation?	2 Marks	L1	CO4
	i)	List the advantages of Quality Circles.	2 Marks	L1	CO5
	j)	State the need of balancing work life and personal life.	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.	Mention the Significance of HRM and how it interconnected to other departments. Explain	16 Marks	L2	CO1
	(OR)			
3.	Describe the major components of HRM.	16 Marks	L2	CO1

MODULE-II

4.	Discuss the process involved in e-Recruitment. How does it differ from Traditional recruitment?	16 Marks	L2	CO2
	(OR)			
5.	What are the challenges faced by recruitment manager to attract the potential candidates in Present business Environment?	16 Marks	L2	CO2

MODULE-III

6	Narrate MBO and 360 degree employee appraisal methods	16 Marks	L2	CO3
	(OR)			
7	Define Selection. Differentiate between Recruitment and Selection.	16 Marks	L2	CO3

MODULE-IV

8	Define Job evaluation. Explain the methods of Job evaluation.	16 Marks	L2	CO4
	(OR)			
9	Explain the concept Employee welfare and safety.	16 Marks	L2	CO4

MODULE-V

10	Briefly explain the obstacles associated with TQM implementation.	16 Marks	L2	CO5
	(OR)			
11	Explain how do you balance work life and personal life.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2025

MARKETING MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	How does marketing create value for customers?	2 Marks	L1	CO1
	b)	What are the two primary steps in the marketing research process?	2 Marks	L1	CO1
	c)	What are the stages of the product life cycle?	2 Marks	L1	CO2
	d)	What is the significance of idea generation in the new product development process?	2 Marks	L1	CO2
	e)	Differentiate between direct and indirect distribution channels.	2 Marks	L1	CO3
	f)	Name any two key functions of wholesalers in the distribution process.	2 Marks	L1	CO3
	g)	Name any two mass communication tools used by marketers.	2 Marks	L1	CO4
	h)	How does advertising differ from public relations in mass communication?	2 Marks	L1	CO4
	i)	Why is marketing evaluation important for business success?	2 Marks	L1	CO5
	j)	What is a marketing audit, and why is it necessary?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Discuss the concept of corporate strategic planning. How does marketing strategy align with organizational mission, vision, and objectives?	16 Marks	L1	CO1
	(OR)			
3.	Describe the steps involved in the marketing research process. How does marketing research support decision-making in a competitive business environment?	16 Marks	L2	CO1

MODULE-II

4.	Define branding and brand equity. Discuss the elements that contribute to building strong brand equity and its impact on consumer behavior and business success.	16 Marks	L1	CO2
	(OR)			
5.	What is a trademark, and why is it important for protecting brand identity? Explain the concept of brand positioning and its role in creating a competitive advantage.	16 Marks	L2	CO2

MODULE-III

6.	Analyze the role of retailing in a distribution strategy. Discuss how retailers can create value for customers and differentiate themselves in competitive markets.	16 Marks	L1	CO3
	(OR)			
7.	What is the role of wholesalers in the distribution system? Explain how wholesalers contribute to efficiency and effectiveness in product distribution.	16 Marks	L2	CO3
	MODULE-IV			
8.	Compare and contrast advertising and public relations as tools for mass communication. Provide examples of how each can be effectively utilized in a marketing campaign.	16 Marks	L1	CO4
	(OR)			
9.	Discuss the role of media selection and planning in managing mass communication. How can marketers ensure that their message reaches the right audience?	16 Marks	L2	CO4
	MODULE-V			
10.	Evaluate the role of marketing control in ensuring the success of marketing strategies. Discuss how performance can be measured and what corrective actions can be taken when needed.	16 Marks	L1	CO5
	(OR)			
11.	Explain the process of evaluating and controlling marketing activities. Discuss the importance of ongoing monitoring and feedback in adapting marketing strategies.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2025

PRODUCTION AND OPERATIONS MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Production and Operations Management.	2 Marks	L1	CO1
	b)	What is the role of Production Management?	2 Marks	L1	CO1
	c)	What is a product layout?	2 Marks	L1	CO2
	d)	Define breakdown maintenance.	2 Marks	L1	CO2
	e)	Define Production Planning and Control (PPC).	2 Marks	L1	CO3
	f)	What are the major objectives of PPC?	2 Marks	L1	CO3
	g)	What is safety stock?	2 Marks	L1	CO4
	h)	Define the term "lead time" in inventory control.	2 Marks	L1	CO4
	i)	What is the critical path in a project network?	2 Marks	L1	CO5
	j)	What is project crashing?	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 significance of productivity measurement and methods to improve productivity.	8 Marks	L2	CO1
	b)	Describe the role of a production manager in an organization.	8 Marks	L2	CO1
		(OR)			
3.	a)	Explain the objectives, advantages, and disadvantages of work measurement.	8 Marks	L2	CO1
	b)	Discuss the impact of lean manufacturing on production systems.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the factors affecting plant location with suitable examples.	8 Marks	L2	CO2
	b)	Discuss the different types of plant layouts with their advantages and disadvantages.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the role of automation in plant layout and maintenance.	8 Marks	L2	CO2
	b)	Explain the relationship between plant maintenance and cost-effectiveness in production.	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the functions and importance of Production Planning and Control (PPC).	8 Marks	L2	CO3
	b)	Describe the different stages involved in PPC.	8 Marks	L2	CO3

(OR)

7.	a)	How does PPC contribute to the overall efficiency of an organization?	8 Marks	L2	CO3
	b)	Explain the significance of Statistical Quality Control (SQC) in manufacturing industries.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the scope and importance of materials management in an organization.	8 Marks	L2	CO4
	b)	Discuss the different types of inventories with examples.	8 Marks	L2	CO4

(OR)

9.	a)	Discuss how automation and technology impact modern materials management.	8 Marks	L3	CO4
	b)	Explain how demand forecasting affects inventory management decisions.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain the concept and importance of project management.	8 Marks	L2	CO5
	b)	A project consists of the following activities and durations:	8 Marks	L3	CO5

Activity	Predecessor (s)	Duration (Days)
A	-	5
B	A	6
C	A	4
D	B,C	8
E	C	5
F	D, E	6

Identify the earliest and latest start/finish times for each activity.
Compute the total float and free float for all non-critical activities.

(OR)

11.	a)	Describe the significance of time-cost trade-off in project planning.	8 Marks	L2	CO5
	b)	A project has a total cost structure as follows: i) Fixed cost: $50,000 ii) Variable cost per day: $2,000 iii) Delay penalty per day: $500 If the project duration is reduced from 30 days to 25 days with an additional crashing cost of $8,000, determine whether crashing is beneficial based on the total cost analysis.	8 Marks	L3	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA II Semester (MBU-22) Regular Examinations, May – 2025

OPERATIONS RESEARCH

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define Operations Research.	2 Marks	L1	CO1
	b)	What is a Basic Variable?	2 Marks	L1	CO1
	c)	Define optimal solution.	2 Marks	L1	CO2
	d)	Describe the balanced transportation problem.	2 Marks	L1	CO2
	e)	What is degeneracy in transportation?	2 Marks	L1	CO3
	f)	What is an Assignment Problem?	2 Marks	L1	CO3
	g)	State different types of games.	2 Marks	L1	CO4
	h)	Define Minmax and Maximin Criterion.	2 Marks	L1	CO4
	i)	What is an Activity in a network?	2 Marks	L1	CO5
	j)	State the meaning of project management.	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 terminologies of linear programming model.	8 Marks	L1	CO1
	b)	Discus the scope of Operations Research.	8 Marks	L1	CO1

(OR)

3. Solve the following LP problem using Simplex method — 16 Marks | L3 | CO1

$Maxz = 6x_1 + 8x_2$

$5x_1 + 10x_2 \leq 60$

$4x_1 + 4x_2 \leq 40$

$x_1, x_2 \geq 0$

MODULE-II

4. Determine an initial basic feasible solution to the following transportation problem using Northwest corner cell method — 16 Marks | L3 | CO2

	W1	W2	W3	W4	Supply
F1	3	1	7	4	300
F2	2	6	5	9	400
F3	8	3	3	2	500
Demand	250	350	400	200	

(OR)

5. What are the types of Transportation Problem? Explain them with suitable examples. — 16 Marks | L3 | CO2

MODULE-III

6.	a)	Define Assignment Problem. Write its significance.	8 Marks	L1	CO3
	b)	Present the mathematical formulation of Assignment Problem.	8 Marks	L2	CO3

(OR)

7. Solve the following assignment problem using Hungarian method. The matrix entries are processing times in hours. — 16 Marks — L3 — CO3

Jobs						
Machines		1	2	3	4	5
	A	10	12	15	12	8
	B	7	16	14	14	11
	C	13	14	7	9	9
	D	12	10	11	13	10
	E	8	13	15	11	15

MODULE-IV

8.	a)	Define the following terminologies of game theory i) Players ii) Strategy iii) Maximin principle	8 Marks	L1	CO4
	b)	Write about the following Minimax principle, Saddle point, Value of the game	8 Marks	L1	CO4

(OR)

9. Find the optimum strategies of the players in the following game — 16 Marks — L3 — CO4

		Player B		
		1	2	3
Player A	A	30	20	40
	B	55	50	60
	C	60	30	40

MODULE-V

10.	a)	Define Project. What are the steps involved in CPM?	8 Marks	L2	CO5
	b)	Explain the concept of different time floats in a network	8 Marks	L2	CO5

(OR)

11. Find the Critical Path for the following problem — 16 Marks — L3 — CO5

Activity	1-2	1-3	2-4	3-4	4-5
Duration	6	2	4	3	4

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2025

STRATEGIC MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

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

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.		Explain the concept of environmental scanning in the context of strategic management.	16 Marks	L2	CO1

(OR)

3.		Explain the strategic management process and its stages in detail.	16 Marks	L2	CO1

MODULE-II

4.		Porter's five forces model is an effective tool for attaining competitive advantage. Justify this statement.	16 Marks	L2	CO2

(OR)

5.		Illustrate the concept of the Market Life Cycle Model and its relevance in strategic management.	16 Marks	L2	CO2

MODULE-III

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

(OR)

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

MODULE-IV

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

(OR)

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

MODULE-V

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

(OR)

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

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2025

INERNATIONAL FINANCIAL MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	What is Bretton Wood System?	2 Marks	L1	CO1
	b)	Define European Monetary System.	2 Marks	L1	CO1
	c)	Define triangular arbitrage.	2 Marks	L1	CO2
	d)	Define market based transfer pricing.	2 Marks	L1	CO2
	e)	Define hostile takeover.	2 Marks	L1	CO3
	f)	Define transfer risk.	2 Marks	L1	CO3
	g)	List out various underlying assets in derivatives.	2 Marks	L1	CO4
	h)	What is strike price?	2 Marks	L1	CO4
	i)	Define sponsored ADRs.	2 Marks	L1	CO5
	j)	What is global bond?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Explain the objectives, features and phases of European Monetary system.	16 Marks	L2	CO1
	(OR)			
3.	Critically evaluate various phases under International Financial system.	16 Marks	L5	CO1

MODULE-II

4.	Analyze the Motives and Methods of transfer pricing in International Accounting and Reporting.	16 Marks	L4	CO2
	(OR)			
5.	What is transfer pricing? Explain its advantages and criterions to measure the performance of transfer pricing.	16 Marks	L2	CO2

MODULE-III

6.	Discuss various measures to manage country specific risk in foreign investment.	16 Marks	L2	CO3
	(OR)			
7.	Briefly discuss strategies to manage both country risk and firm risk in international investment.	16 Marks	L2	CO3

MODULE-IV

8.	What is a currency option? Distinguish between a call option and a put option.	16 Marks	L2	CO4
	(OR)			
9.	What is currency swap? What are the economic benefits of swaps?	16 Marks	L2	CO4
	MODULE-V			
10.	What is Depository Receipt? Illustrate the types and process of global depository receipt.	16 Marks	L3	CO5
	(OR)			
11.	What is American depository receipt? How is it different from global depository receipt?	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2025

FINANCIAL DERIVATIVES

[Business Analytics]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define derivatives.	2 Marks	L1	CO1
	b)	List out the elements of derivatives?	2 Marks	L1	CO1
	c)	What is the meaning of forwards?	2 Marks	L1	CO2
	d)	List out the characteristics of forwards.	2 Marks	L1	CO2
	e)	Define options.	2 Marks	L1	CO3
	f)	List out the sailent features of options.	2 Marks	L1	CO3
	g)	List out the trading strategies	2 Marks	L1	CO4
	h)	Write about bullish	2 Marks	L1	CO4
	i)	What is the meaning of swaps?	2 Marks	L1	CO5
	j)	List out the features of swaps.	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	State the evolution of financial derivatives market.	16 Marks	L2	CO1
	(OR)			
3.	Discuss the Growth and developments of derivatives in the Indian context.	16 Marks	L2	CO1

MODULE-II

4.	what is forwards' contract? How is forwards contract different from futures contract?	16 Marks	L2	CO2
	(OR)			
5.	A futures contract for silver is set to expire in 3 months. The spot price of silver is Rs.80,000 per kilogram, and the risk-free interest rate is 4% per annum. The dividend yield is 0%. Calculate the futures price for silver for the 3-month contract and also calculate the payoff for both the long and short positions in the futures contract.	16 Marks	L2	CO2

MODULE-III

6.	What is options contract? Explain its features?	16 Marks	L2	CO3
	(OR)			
7.	An investor buys a European call option on Reliance Industries Ltd. with a strike price of Rs.2,000. The stock is currently trading at Rs.1,950. The premium paid for the option is Rs.120. Calculate the payoff of the call option at expiration when the stock price at expiration is: i) Rs.1,800 ii) Rs.2,100 iii) Rs.2,000	16 Marks	L2	CO3

	MODULE-IV			
8.	How do you create a Bullish Spread Strategy? How does it work?	16 Marks	L2	CO4
	(OR)			
9.	Explain the different bullish options trading strategies.	16 Marks	L2	CO4
	MODULE-V			
10.	Define the term Swap Contract? Who are the parties involved in a swap?	16 Marks	L2	CO5
	(OR)			
11.	An investor enters into a 1-year interest rate swap with a notional amount of Rs.5,000,000. The fixed rate is 5% annually, and the floating rate is tied to the 1-year LIBOR, currently at 4%. The fixed leg is paid annually, and the floating leg is reset annually. The discount factor for 1 year is 0.95. Calculate the value of the swap at the initiation date.	16 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2025

INTERNATIONAL HUMAN RESOURCE MANAGEMENT

[Business Analytics]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define IHRM	2 Marks	L1	CO1
	b)	List any four functions of IHRM	2 Marks	L1	CO1
	c)	Define Organization Structure	2 Marks	L1	CO2
	d)	List any four functions of Competitive Strategies	2 Marks	L1	CO2
	e)	Define Geocentric Method	2 Marks	L1	CO3
	f)	List any four functions of Recruitment	2 Marks	L1	CO3
	g)	Define Development	2 Marks	L1	CO4
	h)	List any four functions of Global Training	2 Marks	L1	CO4
	i)	Define Welfare	2 Marks	L1	CO5
	j)	List any Three functions of Fring Benefits	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Explain the importance of IHRM in present day context.	16 Marks	L2	CO1
	(OR)			
3	Elaborate the challenges associated with IHRM in Indian Companies.	16 Marks	L2	CO1

MODULE-II

4	What is Competitive Strategy? What is the importance of Competitiveness Globally Followed by Companies.	16 Marks	L2	CO2
	(OR)			
5	Discuss the methods and techniques of Strategic Control Needs.	16 Marks	L2	CO2

MODULE-III

6	What is selection? What is the importance of Selection.	16 Marks	L2	CO3
	(OR)			
7	Discuss the methods and techniques of Recruitment in IHRM.	16 Marks	L2	CO3

MODULE-IV

8	What are the considerations for Employee Promotions in Organizations. Explain	16 Marks	L2	CO4
	(OR)			
9	Why the companies implemented different Methods in Transfers. Comment.	16 Marks	L2	CO4

MODULE-V

10	What are the non-monetary forms of Compensation. Explain	16 Marks	L2	CO5
	(OR)			
11	Elucidate the Significance of Wage Incentive Plans.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2025

ORGANIZATIONAL CHANGE AND DEVELOPMENT

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 planned and unplanned change?	2 Marks	L1	CO1
	b)	Explain the external forces for change.	2 Marks	L1	CO1
	c)	Explain briefly the three stages of Lewin's change model.	2 Marks	L1	CO2
	d)	What are the strengths of the McKinsey 7S model?	2 Marks	L1	CO2
	e)	Why measuring organizational effectiveness is important?	2 Marks	L1	CO3
	f)	Explain the concept and nature of Organizational development.	2 Marks	L1	CO3
	g)	Write briefly on Structural Interventions.	2 Marks	L1	CO4
	h)	What are interventions?	2 Marks	L1	CO4
	i)	What is Microcosm?	2 Marks	L1	CO5
	j)	Mention any four issues related to the consultant and client relationship.	2 Marks	L1	CO5

MODULE-I

2.	a)	How do organizational changes affect profits? Explain with examples.	8 Marks	L2	CO1
	b)	Elucidate the change process in detail and throw light on HR's role in strategic change management.	8 Marks	L2	CO1
3.	a)	Explain the different types of change with examples.	8 Marks	L2	CO1
	b)	Discuss the causes of both human and organizational resistance to change.	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain the Work Redesign model Meaning, Process, and its Advantages.	8 Marks	L2	CO2
	b)	Explain the Burke-Litwin model in the context of Organization Development with the help of an example.	8 Marks	L2	CO2
5.	a)	Explain the advantages and disadvantages of Lewin's Change Model with examples.	8 Marks	L2	CO2
	b)	How to Use the McKinsey 7-S Model for Strategic Planning?	8 Marks	L2	CO2

MODULE-III

6.	a)	Explain the six-box model of organizational development.	8 Marks	L2	CO3
	b)	Explain the concept, value, process, and characteristics of organizational development.	8 Marks	L2	CO3

(OR)

7.	a)	Explain the Action-Research model of OD in detail.	8 Marks	L2	CO3
	b)	"The future of OD is bright, but only if the field continues to evolve." Discuss the statement.	8 Marks	L2	CO3
		MODULE-IV			
8.	a)	What are some of the challenges in implementing team- building interventions? What issues can team-building interventions help solve?	8 Marks	L1	CO4
	b)	Explain different OD techniques. Explain the six-box model of organizational development.	8 Marks	L2	CO4
9.	a)	What are the purposes of team building? Explain the features of an effective team.	8 Marks	L2	CO4
	b)	Explain Group and Team OD intervention.	8 Marks	L2	CO4
		MODULE-V			
10.	a)	Explain the steps in implementing OD interventions.	8 Marks	L2	CO5
	b)	Discuss the Obstacles in OD development	8 Marks	L2	CO5
		(OR)			
11.	a)	What are the efforts behind the struggle to change in OD?	8 Marks	L1	CO5
	b)	Describe the conditions for failure and success in O.D.	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2025

INTEGRATED MARKETING COMMUNICATION

[Business Analytics]

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Define Integrated Marketing Communication.	2 Marks	L1	CO1
	b)	List out the Promotional tools used in IMC.	2 Marks	L1	CO1
	c)	Define Advertising.	2 Marks	L1	CO2
	d)	What is Outdoor Advertising?	2 Marks	L1	CO2
	e)	What is Media planning?	2 Marks	L1	CO3
	f)	Name two types of media commonly used in advertising.	2 Marks	L1	CO3
	g)	Define Sales Promotion.	2 Marks	L1	CO4
	h)	What is Flash sale?	2 Marks	L1	CO4
	i)	Define Publicity.	2 Marks	L1	CO5
	j)	What is Media Relation?	2 Marks	L1	CO5

PART - B

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

5 X 16 = 80 Marks

MODULE-I

2.	Explain the significance of Integrated Marketing Communication in modern marketing.	16 Marks	L2	CO1
	(OR)			
3.	What are the various Integrated Marketing Communication tools and how is each one of them important for the overall Marketing Communication function.	16 Marks	L3	CO1

MODULE-II

4.	How will you Classify Advertising?	16 Marks	L2	CO2
	(OR)			
5.	How will you select the Advertisement agency and remuneration offered to advertisement agency?	16 Marks	L3	CO2

MODULE-III

6.	Explain the methods of evaluating effectiveness of advertising?	16 Marks	L2	CO3
	(OR)			
7.	What are the essentials of a good advertising appeal? Explain the different types of appeals used in advertising.	16 Marks	L3	CO3

MODULE-IV

8.	What is online sales promotion and explain its advantages and disadvantages.	16 Marks	L3	CO4
	(OR)			
9.	Discuss the sales promotion techniques.	16 Marks	L2	CO4

MODULE-V

10.	How will you measure the effectiveness of public relation.	16 Marks	L3	CO5
	(OR)			
11.	Explain the various methods of publicity commonly used by businesses and organizations and discuss their effectiveness in generating brand awareness and influencing public perception.	16 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MBA IV Semester (MBU-22) Regular Examinations, April – 2025

PRODUCT AND BRAND MANAGEMENT

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Give few examples of brand image.	2 Marks	L1	CO1
	b)	New product development.	2 Marks	L1	CO1
	c)	Explain about the brand crisis.	2 Marks	L1	CO2
	d)	Brand image in service sector.	2 Marks	L1	CO2
	e)	Describe the types of products.	2 Marks	L1	CO3
	f)	Define brand.	2 Marks	L1	CO3
	g)	Explain Role and Qualities of a product manager.	2 Marks	L1	CO4
	h)	Define brand audit.	2 Marks	L1	CO4
	i)	What are the Advantages of branding in Insurance sector?	2 Marks	L1	CO5
	j)	Write a short note on branding in service sector.	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	What is a product? Explain the characteristics of a product?	8 Marks	L2	CO1
	b)	What is mean by product line? List out the different product line of any MNC company.	8 Marks	L3	CO1
		(OR)			
3.	a)	Define roles and responsibilities of a product manager.	8 Marks	L2	CO1
	b)	How do you classify consumer products and industrial products? Give example.	8 Marks	L3	CO1

MODULE-II

4.	a)	Breif about New product development process in detail.	8 Marks	L2	CO2
	b)	Explain importance of Packaging in product management.	8 Marks	L3	CO2
		(OR)			
5.	a)	Describe about the different types of growth strategies in detail.	8 Marks	L3	CO2
	b)	Explain importance of Packaging in product management.	8 Marks	L2	CO2

MODULE-III

6.	a)	What is the need of brand identity? Discuss different sources of brand identity.	8 Marks	L3	CO3
	b)	Describe brand valuation methods?	8 Marks	L2	CO3
		(OR)			
7.	a)	Brand is built in the minds of people. Do you agree? Explain this in context to “Asian Paints”.	8 Marks	L2	CO3
	b)	Define brand extension? Explain about the advantages and disadvantages of brand extension?	8 Marks	L2	CO3

MODULE-IV

8.	a)	What are the types of Brand Extensions? Discuss the advantages and disadvantages of Brand Extension.	8 Marks	L3	CO4
	b)	What do you understand by Brand Equity? Explain various methods of calculating Brand Equity.	8 Marks	L2	CO4
		(OR)			
9.	a)	Explain the factors for new brand failures? Example.	8 Marks	L2	CO4
	b)	Discuss the Aaker's brand personality framework with examples.	8 Marks	L3	CO4

MODULE-V

10.	a)	What is service sector? Explain some brands in service sector.	8 Marks	L2	CO5
	b)	Explain branding in retail sector with examples.	8 Marks	L3	CO5
		(OR)			
11.	a)	'Brand image is very imporatnt to customers' Apply this statement to retail sector and justify.	8 Marks	L3	CO5
	b)	Develop innovative methods for branding in service sector?	8 Marks	L2	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations, May – 2025

DATA MINING

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write major issues in Data Mining.	2 Marks	L1	CO1
	b)	Why data preprocessing is necessary in data mining?	2 Marks	L1	CO1
	c)	Define full cube and aggregate cells.	2 Marks	L1	CO2
	d)	How association rules generated from frequent item sets?	2 Marks	L2	CO2
	e)	What short notes on sensitivity and specificity.	2 Marks	L1	CO3
	f)	Define Support vector machine.	2 Marks	L2	CO3
	g)	Define posterior probability.	2 Marks	L1	CO4
	h)	What is the use of CLARNS?	2 Marks	L1	CO4
	i)	Define time series data.	2 Marks	L1	CO5
	j)	How does data mining benefit society?	2 Marks	L1	CO5

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Explain the concept of data reduction in detail.	8 Marks	L2	CO1
	b)	Explain the need of Preprocessing in data mining.	8 Marks	L2	CO1

(OR)

3.	a)	What is the primary goal of data mining with neat diagram?	8 Marks	L3	CO1
	b)	What types of applications that can be developed from data mining?	8 Marks	L2	CO1

MODULE-II

4.	a)	Explain Multidimensional Data Analysis in Cube Space.	8 Marks	L2	CO2
	b)	Apply apriori algorithm to find frequent item sets using candidate generation for the following data Assume the minimum support count is 2.	8 Marks	L2	CO2

TID	List os Item ID's
T100	I1,I2,I5
T200	I2,I4
T300	I2,I3
T400	I1,I2,I4
T500	I1,I3
T600	I2,I3
T700	I1,I3
T800	I1,I2,I3,I5

(OR)

5.	a)	Explain in detail about FP growth algorithm with an example.	8 Marks	L1	CO2
	b)	Describe Rule-based classification with an example.	8 Marks	L1	CO2

MODULE-III

6.	a)	Explain Decision Tree Classification with an example.	8 Marks	L1	CO3
	b)	Explain Navie Bayesian Classification with an example.	8 Marks	L2	CO3

(OR)

7.	a)	Describe Model Evaluation and Selection methods.	8 Marks	L1	CO3
	b)	Explain Support Vector Machines Classification.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the strengths and weaknesses of DBSCAN algorithm.	8 Marks	L2	CO4
	b)	Explain different types of Data in Cluster Analysis	8 Marks	L2	CO4

(OR)

9.	a)	Explain the k-means method in partitioning methods.	8 Marks	L2	CO4
	b)	Describe the process of evaluating the quality of a clustering algorithm.	8 Marks	L2	CO4

MODULE-V

10.	a)	Explain do you evaluate a time series model's accuracy.	8 Marks	L3	CO5
	b)	How does data mining influence societal issues?	8 Marks	L2	CO5

(OR)

11.	a)	Describe the applications and trends in data mining in detail.	8 Marks	L3	CO5
	b)	What are some common challenges in forecasting time series data?	8 Marks	L2	CO5

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations, May - 2025

COMPUTER NETWORKS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 X 2 = 20 Marks

1.	a)	Mention the key components in an optical transmission system.	2 Marks	L1	CO1
	b)	Identify the key advantages of microwave transmission over fiber.	2 Marks	L1	CO1
	c)	Find concept of 'bit stuffing' in the Data Link layer.	2 Marks	L1	CO2
	d)	How does the Simplex protocol differ from a Half-Duplex protocol?	2 Marks	L1	CO2
	e)	Recall the concept of Flooding.	2 Marks	L1	CO3
	f)	Recite the concept of routing and its importance in network layer design.	2 Marks	L1	CO3
	g)	How does UDP ensure reliability?	2 Marks	L1	CO4
	h)	What is the primary function of Real-time Transport Protocols (RTP), and in what types of applications are they commonly used?	2 Marks	L1	CO4
	i)	Identify the types of HTTP messages.	2 Marks	L1	CO5
	j)	Define the two types of user agents in the electronic mail system.	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 how to build network with OSI and TCP/IP reference model.	8 Marks	L2	CO1
	b)	Demonstrate the Shielded twisted pair (STP) and Unshielded twisted pair (UTP).	8 Marks	L2	CO1
		(OR)			
3.	a)	Provide an overview of guided transmission media used in networking, including their characteristics and advantages. Give examples of commonly used guided media.	8 Marks	L1	CO1
	b)	Analyze the advantages of optical fiber over twisted pair and coaxial cable.	8 Marks	L4	CO1

MODULE-II

4.	a)	Summarize the various responsibilities of Data Link Layer.	8 Marks	L2	CO2
	b)	Describe the process of error detection and correction in the Data Link layer. Compare and contrast different error detection techniques.	8 Marks	L2	CO2
		(OR)			
5.	a)	Discuss the differences between the Unrestricted Simplex Protocol and the Simplex Stop-and-Wait Protocol with relevant diagrams.	8 Marks	L2	CO2
	b)	Examine Selective repeat sliding window Protocol with an example.	8 Marks	L3	CO2

MODULE-III

6.	a)	Provide an overview of the IP version 4 (IPv4) protocol, including its structure, addressing scheme, and its role in internet communication.	8 Marks	L1	CO3
	b)	Inspect in detail about unicast, broadcast, multicast, and anycast routing, providing examples of when each is applicable.	8 Marks	L4	CO3
		(OR)			
7.	a)	Explain the concept of IP addresses and their significance in identifying devices on the internet. How are IP addresses allocated and managed?	8 Marks	L2	CO3
	b)	Illustrate the Distance Vector routing algorithm and Analyze its limitations comparing with other routing algorithms.	8 Marks	L3	CO3
		MODULE-IV			
8.	a)	Discuss the various timers used by TCP to perform its various operations.	8 Marks	L1	CO4
	b)	Describe about: i) TCP connection Establishment. ii) TCP Connection Release	8 Marks	L1	CO4
		(OR)			
9.	a)	Analyze how reliable and ordered delivery is achieved through TCP.	8 Marks	L4	CO4
	b)	Examine why does TCP uses an adaptive transmission and describe its mechanism.	8 Marks	L4	CO4
		MODULE-V			
10.	a)	How DNS service maps domain names to IP addresses?	8 Marks	L1	CO5
	b)	Interpret the significance of hyperlinks in web documents and their impact on information navigation and exploration.	8 Marks	L2	CO5
		(OR)			
11.	a)	Discuss briefly about the various agents in E-Mail.	8 Marks	L2	CO5
	b)	Illustrate the hierarchical structure of the DNS name space. How do top-level domains, second-level domains, and subdomains relate to each other?	8 Marks	L3	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations, May – 2025

CLOUD PRACTITIONER

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Write a short note on the PAAS.	2 Marks	L1	CO1
	b)	Define cloud computing.	2 Marks	L1	CO1
	c)	What is the functionality of AWS Command Line Interface (CLI)?	2 Marks	L1	CO2
	d)	Define Cloud Watch.	2 Marks	L1	CO2
	e)	Illustrate the Elastic Block Store in AWS.	2 Marks	L2	CO3
	f)	Describe the purpose of an instance.	2 Marks	L1	CO3
	g)	What are the characteristics of Simple Storage Services.	2 Marks	L1	CO3
	h)	Describe Archives.	2 Marks	L1	CO3
	i)	Define Amazon Cloud Front.	2 Marks	L1	CO4
	j)	Write about Infrastructure as Code(IaC).	2 Marks	L1	CO4

PART - B

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

5 x 16 = 80 Marks

MODULE-I

2.	a)	Define cloud computing and explain its key characteristics.	8 Marks	L1	CO1
	b)	What are the key considerations for designing highly available architectures in the cloud?	8 Marks	L1	CO1
		(OR)			
3.	a)	Describe the concept of AWS Regions and how they are used to deploy resources.	8 Marks	L2	CO1
	b)	How does the AWS Shared Responsibility Model apply to different AWS services?	8 Marks	L3	CO1

MODULE-II

4.	a)	Describe the AWS Management Console and its primary functions.	8 Marks	L1	CO2
	b)	What factors should users consider when selecting an AWS region for their resources?	8 Marks	L1	CO2
		(OR)			
5.	a)	Discuss the integration of CloudWatch Logs with other AWS services for advanced log management.	8 Marks	L4	CO2
	b)	How are Trails and Event History used for auditing and compliance purposes in AWS?	8 Marks	L3	CO2

MODULE-III

6.	a)	Explain the different pricing models for EC2 instances.	8 Marks	L2	CO3
	b)	Discuss the benefits of simplified deployments through managed services.	8 Marks	L3	CO3
		(OR)			
7.	a)	Demonstrate the steps used to create and deploy Lambda functions in AWS.	8 Marks	L4	CO3
	b)	Explain the storage services available in AWS.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Explain the concept of objects and buckets in Amazon S3.	8 Marks	L2	CO3
	b)	Describe the hardware specifications of AWS Snowball.	8 Marks	L1	CO3
		(OR)			
9.	a)	Differentiate relational and non-relational (NoSQL) databases.	8 Marks	L2	CO3
	b)	Discuss the instance classes available in Amazon RDS and their characteristics.	8 Marks	L1	CO3

MODULE-V

10.	a)	Demonstrate the procedure to enable communication between VPCs in different AWS accounts or regions.	8 Marks	L4	CO4
	b)	How does AWS CodePipeline facilitate continuous integration and continuous delivery (CI/CD) pipelines for automating software release processes?	8 Marks	L2	CO4
		(OR)			
11.	a)	Describe the components of AWS Developer Tools.	8 Marks	L1	CO4
	b)	Discuss how Route 53 supports traffic flow and traffic policies for efficient routing of traffic.	8 Marks	L1	CO4



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations, May - 2025

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Define encapsulation in Java with an example.	2 Marks	L1	CO1
	b)	What are the data types available in Java?	2 Marks	L1	CO1
	c)	What does the final keyword signify in Java inheritance?	2 Marks	L1	CO2
	d)	How can a class access members of a package in Java?	2 Marks	L1	CO2
	e)	What is a user-defined exception in Java? Provide an example.	2 Marks	L1	CO3
	f)	How do you create a thread using the Thread class in Java?	2 Marks	L1	CO3
	g)	What is the difference between an ArrayList and a Vector in Java?	2 Marks	L1	CO4
	h)	What is the purpose of the Comparator interface in Java?	2 Marks	L1	CO4
	i)	What is the purpose of the JTextField in Java Swing?	2 Marks	L1	CO5
	j)	How are keyboard events handled in Java GUI 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)	Write a Java program to explain the difference between == and .equals() method.	8 Marks	L2	CO1
	b)	Implement a program that demonstrates the role of static in Java with methods and data.	8 Marks	L1	CO1

(OR)

3.	a)	Create a program to compare instance variables and local variables in Java.	8 Marks	L1	CO1
	b)	Write a program to demonstrate method overloading in Java	8 Marks	L1	CO1

MODULE-II

4.	a)	Create a program that demonstrates the rules for implementing an interface in Java.	8 Marks	L3	CO2
	b)	Write a Java program to compare and contrast abstract classes and interfaces.	8 Marks	L1	CO2

(OR)

5.	a)	Implement a program to demonstrate how a class can extend multiple classes in Java.	8 Marks	L2	CO2
	b)	Create a program that explains the significance of access control in packages in Java.	8 Marks	L2	CO2

MODULE-III

6.	a)	Write a program to demonstrate the different exception handling keywords in Java.	8 Marks	L2	CO3
	b)	Create a program to demonstrate the throw keyword in Java.	8 Marks	L2	CO3
		(OR)			
7.	a)	Implement a program that demonstrates synchronization in Java.	8 Marks	L2	CO3
	b)	Write a program to explain the thread lifecycle with appropriate states in Java.	8 Marks	L2	CO3

MODULE-IV

8.	a)	Create a program to compare LinkedList and ArrayList in Java.	8 Marks	L1	CO4
	b)	Implement a program to iterate over a Map collection in Java.	8 Marks	L1	CO4
		(OR)			
9.	a)	Write a program to demonstrate the differences between HashMap and Hashtable.	8 Marks	L2	CO4
	b)	Create a program to demonstrate how TreeSet maintains its elements in a sorted order.	8 Marks	L2	CO4

MODULE-V

10.	a)	Implement a program using JTabbedPane in Java to show its significance in GUI.	8 Marks	L1	CO5
	b)	Write a program to handle different types of events in Java and how they are handled.	8 Marks	L2	CO5
		(OR)			
11.	a)	Create a program to design a simple GUI using JFrame in Java Swing.	8 Marks	L1	CO5
	b)	Implement various user interaction controls in a Java Swing program, including buttons and text fields.	8 Marks	L1	CO5



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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations, May – 2025

TECHNICAL REPORT WRITING

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	List the essential elements of a technical report.	2 Marks	L2	CO1
	b)	List any two key components of a technical report.	2 Marks	L2	CO1
	c)	Why is it important to present findings and results clearly in a technical report?	2 Marks	L1	CO2
	d)	What are the main objectives of writing an introduction in a scientific report?	2 Marks	L1	CO2
	e)	Write the meaning of in-text citation in technical report writing.	2 Marks	L1	CO3
	f)	What are the challenges for writing publication in a scientific journal?	2 Marks	L1	CO3
	g)	What is the purpose of copyright laws in the context of technical report writing?	2 Marks	L1	CO4
	h)	What role do word processing and desktop publishing (DTP) systems play in technical report creation?	2 Marks	L1	CO4
	i)	What are the key elements to consider when reviewing and analyzing a technical presentation?	2 Marks	L1	CO5
	j)	Name one rhetorical strategy that can enhance the effectiveness of a presentation.	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)	Design a framework for planning a technical report. What steps should be followed from research to final draft?	8 Marks	L3	CO1
	b)	What steps should be followed from conducting research to finalizing a technical report draft?	8 Marks	L1	CO1

(OR)

3.	a)	Evaluate the importance of precise and clear language in technical report writing.	8 Marks	L4	CO1
	b)	How does the title affect the report's accessibility and relevance to its target audience?	8 Marks	L1	CO1

MODULE-II

4.	a)	What are the best practices to ensure that tables are clear, concise, and effective in conveying data?	8 Marks	L1	CO2
	b)	How do the variations in the structure of the materials and methods section reflect the nature of the research and the field of study?	8 Marks	L1	CO2

(OR)

5.	a)	How does the presentation of data influence the interpretation and reliability of the report's conclusions?	8 Marks	L1	CO2
	b)	Synthesize the relationship between the results and discussion sections of a technical report.	8 Marks	L3	CO2

MODULE-III

6.	a)	Compare various citation styles (APA, MLA, Chicago, etc.) and explain how they impact the way references are cited and arranged in scientific writing.	8 Marks	L3	CO3
	b)	Explain the key differences between citation styles like APA, MLA, and Chicago?	8 Marks	L3	CO3

(OR)

7.	a)	Compare the different types of citations (in-text citations, footnotes, endnotes) used in technical report writing.	8 Marks	L3	CO3
	b)	How can writers ensure they comply with copyright regulations when using third-party content such as figures, images, or direct quotes?	8 Marks	L2	CO3

MODULE-IV

8.	a)	How can a poorly designed graph mislead the reader or distort the data's true meaning?	8 Marks	L1	CO4
	b)	What are the specific consequences of using misleading graphs in technical reports or scientific papers?	8 Marks	L1	CO4

(OR)

9.	a)	Analyze the various reasons for including literature citations in a technical report.	8 Marks	L3	CO4
	b)	How can writers ensure they comply with copyright regulations when using third-party content such as figures, images, or direct quotes?	8 Marks	L1	CO4

MODULE-V

10.	a)	Explain Rhetoric tips from A to Z.	8 Marks	L3	CO5
	b)	How do literature citations contribute to the credibility and scholarly value of the report?	8 Marks	L1	CO5

(OR)

11.	a)	What criteria would you use to assess the strengths and weaknesses of the presentation's structure, delivery, and content?	8 Marks	L1	CO5
	b)	Create a strategy for effectively dealing with difficult questions from the audience during a presentation.	8 Marks	L3	CO5

CODE No.: 22MM201404 MBU-22

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

MCA II Semester (MBU-22) Regular Examinations, May – 2025

MATHEMATICAL FOUNDATIONS FOR COMPUTER APPLICATIONS

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

PART - A

Answer All Questions.
All Questions Carry Equal Marks

10 x 2 = 20 Marks

1.	a)	Explain the Logical Connectives with their Truth Tables.	2 Marks	L1	CO1
	b)	Write examples of Principle Disjunctive and Conjunctive Normal Forms.	2 Marks	L1	CO1
	c)	Define Lattice.	2 Marks	L1	CO1
	d)	Explain Partially Ordering.	2 Marks	L1	CO2
	e)	Define Boolean algebra.	2 Marks	L1	CO2
	f)	Explain Monoid and Semi Group.	2 Marks	L1	CO2
	g)	Write the properties to be satisfied by Abelian group.	2 Marks	L1	CO3
	h)	Define Equivalence Relation.	2 Marks	L1	CO3
	i)	Explain Complete Graph and give one example.	2 Marks	L1	CO5
	j)	Recall Planar Graphs with 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

1.	a)	Construct the truth table of the statement : $(P \wedge Q) \vee (\neg P \wedge Q) \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$.	8 Marks	L3	CO1
	b)	Obtain the principal conjunctive normal form of the formula S given by $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$.	8 Marks	L2	CO1
		(OR)			
2.	a)	Show that R $\rightarrow$ S can be derived from the premises: $P \rightarrow (Q \rightarrow S)$, $\neg R \vee P$ and Q.	8 Marks	L3	CO1
	b)	Prove that the following premises are inconsistent. i) If Jack misses many classes through illness, then he fails high ii) school iii) If Jack fails high school, then he is uneducated. iv) If Jack reads a lot of books, then he is not educated. v) Jack misses many classes through illness and reads a lot of vi) books.	8 Marks	L2	CO1

MODULE-II

3.	a)	Define an equivalence relation? If R be a relation in the set of integers Z defined by them. Prove that R is an poset.	8 Marks	L4	CO2
	b)	Consider the partial order of divisibility on the set A:{1,2,3,5,6,10,15,30}. Draw the Hasse diagram for the poset and determine whether the poset is totally ordered or not.	8 Marks	L3	CO2

(OR)

4.	a)	Minimize the following Boolean functions: i) Simplify $\overline{A}\,\overline{B}\,C\,\overline{D} + A\,\overline{B}\,C\,D + A\,B\,C\,\overline{D} + A\,B\,C\,D$. ii) Simplify $\overline{XYZ} + \overline{X}\,Y\overline{Z} + X\,\overline{Y}\,\overline{Z} + X\,Y\overline{Z}$.	8 Marks	L4	CO2
	b)	Simplify the following Boolean Functions using K-Map: F(A,B,C) = πm (2,4,6,7).	8 Marks	L4	CO2

MODULE-III

5.	a)	Examine the relation $a * b = a + b + 1$ for all $a, b \in G$ is a group or not.	8 Marks	L3	CO3
	b)	Show that the set $G = \{0,1,2,3,4,5\}$ is a finite abelian group with respective to addition modulo 6.	8 Marks	L3	CO3

(OR)

6.	a)	State and prove Division algorithm.	8 Marks	L1	CO3
	b)	Find GCD of 615 and 1080 and find u and v such that GCD (615, 1080) = 615u+ 1084v.	8 Marks	L4	CO3

MODULE-IV

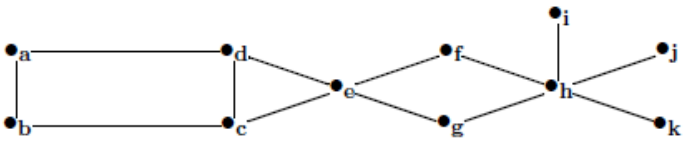
7.	a)	Find the Coefficient of x^{20} in $\left(x^2 + x^3 + x^4 + x^5 + x^6\right)^5$.	8 Marks	L1	CO4
	b)	Solve the recurrence relation: $a_n = 6a_{n-1} - 12a_{n-2} + 8a_{n-3}$ given that $a_0 = 1, a_1 = 4 \text{ and } a_2 = 28$.	8 Marks	L4	CO4

(OR)

8.	a)	Solve the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 0$ for $n \geq 2$.	8 Marks	L3	CO4
	b)	Find a generating function for the recurrence relation : $a_{n+2} - 3a_{n+1} + 2a_n = 0, n \geq 0 \text{ and } a_0 = 1, a_1 = 6$. Hence solve it.	8 Marks	L4	CO4

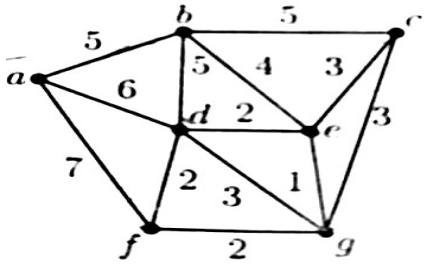
MODULE-V

9.	a)	Write the difference between Hamiltonian graphs and Euler graphs.	6 Marks	L2	CO5
	b)	Draw the DFS and BFS for the following graph and explain DFS & BFS.	10 Marks	L3	CO5



(OR)

10.	a)	Show that in every graph the number of vertices of odd degrees is even.	4 Marks	L4	CO5
	b)	Apply Kruskal's algorithm to obtain the minimal spanning tree for the weighted graph given below:	12 Marks	L4	CO5



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CODE No.: 23PP201009

SOP-PHARM.D-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

II Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, May – 2025

CLINICAL RESEARCH

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Give a short note on drug development process.	5 Marks	L2	CO1
	b)	Explain the process of drug characterization.	5 Marks	L2	CO1
	c)	Simplify the key principles that form the foundation of ethical research.	5 Marks	L4	CO2
	d)	What is the process for submitting a research proposal to an IRB/IEC.	5 Marks	L1	CO2
	e)	Discuss the phase I clinical trials.	5 Marks	L3	CO3
	f)	List out the requirements for an ANDA submission.	5 Marks	L4	CO3
	g)	Prioritize the responsibilities of a contract research coordinator (CRC).	5 Marks	L6	CO4
	h)	Briefly discuss the regulatory authorities of India and USA.	5 Marks	L3	CO5
	i)	Explain the role of Safety Monitoring Committee (SMC) in clinical trial.	5 Marks	L2	CO6
	j)	Highlight the common safety monitoring activities in clinical trials.	5 Marks	L5	CO6

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.	a)	Discuss the challenges and risks associated with drug development.	8 Marks	L3	CO1
	b)	Justify the drug characterization in drug discovery.	7 Marks	L1	CO1
3.	a)	Exemplify the potential outcomes of an IRB/IEC review, including approval, conditional approval, or disapproval.	7 Marks	L6	CO2
	b)	Discuss the ethical considerations involved in conducting research with vulnerable populations.	8 Marks	L3	CO2
4.	a)	Compare and contrast the requirements for a New Drug Application (NDA) and an Abbreviated New Drug Application (ANDA).	8 Marks	L4	CO3
	b)	What are the potential consequences of ineffective safety monitoring in clinical trials and how to overcome it.	7 Marks	L2	CO3
5.		Discuss the role of the Central Drugs Standard Control Organization (CDSCO) in regulating pharmaceuticals in India. What are the key functions of the CDSCO, and how has it contributed to ensuring drug safety and efficacy.	15 Marks	L3	CO5

CODE No.: 23PP201010 SOP-PHARM.D-23

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

II Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, May – 2025

PHARMACOEPIDIMOLOGY AND PHARMACOECONOMICS

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 X 5 = 40 Marks

1.	a)	Write a short note on monetory units.	5 Marks	L6	CO1
	b)	Write about medication adherence measurement.	5 Marks	L6	CO8
	c)	Write a note on measurement of risk.	5 Marks	L6	CO6
	d)	Write about bias in pharmacoepidemiology.	5 Marks	L6	CO5
	e)	Write a note on realtive risk.	5 Marks	L6	CO2
	f)	Explain about odds ratio.	5 Marks	L6	CO3
	g)	Write anote on drug utilization review & its categories.	5 Marks	L6	CO4
	h)	Write a short note on record linkage sysytem.	5 Marks	L6	CO3
	i)	Explain the need of pharmaeconomics.	5 Marks	L1	CO1
	j)	Write about softwares in pharmacoeconomics.	5 Marks	L6	CO7

PART - B

Answer any TWO of the following Questions.

2 X 15 = 30 Marks

2.		Define Pharmacoepidimology and note on its needs, aim, applications.	15 Marks	L6	CO1
3.	a)	Discuss the type of pharmacoeconomics evaluation.	7 Marks	L2	CO3
	b)	Write about cost utility analysis & explain with the help of case studies.	8 Marks	L6	CO3
4.		Write the concept of odds ratio and time risk relationship.	15 Marks	L6	CO2
5.	a)	Write about qualitative pharmacoepidemiological methods.	9 Marks	L1	CO8
	b)	Write about prescreption event monitoring.	6 Marks	L6	CO8

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MOHAN BABU UNIVERSITY

SREE SAINATH NAGAR, TIRUPATI - 517 102, ANDHRA PRADESH

II Year Pharm D (PB) (SOP-PHARM.D-23) Regular Examinations, May – 2025

CLINICAL PHARMACOKINETICS AND PHARMACOTHERAPEUTIC DRUG MONITORING

Time: 3 hours **Max. Marks: 70**

PART - A

Answer the ANY EIGHT of the following Questions

8 x 5 = 40 Marks

1.	a)	Describe the mechanisms by which drug-drug interactions can alter pharmacokinetics. Provide examples of common interactions and their clinical implications?	5 Marks	L5	CO1
	b)	Describe the process of drug metabolism induction. Discuss how inducers affect the pharmacokinetics of other drugs, including potential clinical consequences and examples of common inducers?	5 Marks	L6	CO3
	c)	Describe the methods used to measure glomerular filtration rate (GFR) and creatinine clearance (CrCl). Explain the significance of these measurements in determining appropriate drug dosing?	5 Marks	L4	CO4
	d)	Describe the difference between prior and posterior distributions in Bayesian analysis	5 Marks	L6	CO5
	e)	List and explain the indications for Therapeutic Drug Monitoring (TDM).	5 Marks	L6	CO6
	f)	Discuss the clinical applications of pharmacogenetic testing in optimizing drug therapy.	5 Marks	L1	CO6
	g)	Discuss the challenges and considerations in dosing medications for obese patients. How does altered body composition affect pharmacokinetics?	5 Marks	L1	CO1
	h)	Explain the different mechanisms by which drugs can interact to alter pharmacokinetics**.** Discuss how absorption, distribution, metabolism, and excretion can be influenced by these interactions, and provide specific examples for each mechanism?	5 Marks	L1	CO2
	i)	Analyze how hepatic disease affects drug metabolism and pharmacokinetics**.** Discuss the implications for drug dosing and the methods used to assess liver function in the context of pharmacotherapy?	5 Marks	L 4	CO3
	j)	Discuss the importance of covariate analysis in population pharmacokinetics.	5 Marks	L 4	CO5

PART - B

Answer any TWO of the following Questions.

2 x 15 = 30 Marks

2.	Discuss the role of therapeutic drug monitoring (TDM) in clinical practice. Explain what TDM is, why it is important, and identify specific drugs that require monitoring. Include potential consequences of subtherapeutic or toxic levels.	15 Marks	L6	CO1
3.	Describe the process of drug metabolism induction. Discuss how inducers influence the clearance of other medications, including examples of significant inducers and the potential effects on drug efficacy.	15 Marks	L1	CO2

4.	Evaluate the effects of hepatic disease on drug metabolism and pharmacokinetics. Discuss how liver dysfunction can alter drug clearance, the implications for dosing, and the tools used to assess liver function in the context of pharmacotherapy.	15 Marks	L6	CO3
5.	Develop a pharmacokinetic-pharmacodynamic (PK-PD) model integrating population pharmacokinetic data, discussing model structure, parameter estimation, and clinical implications.	15 Marks	L1	CO4



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech I Semester (SVEC16) Regular Examinations, May - 2025

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 $\frac{dy}{dx} + \frac{y}{x} = y^2 x \sin x$. 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) Applying the technique of finding particular integral, establish a general solution of $(D^3 + 2D^2 + D)y = e^{2x} + x^2 + x + \sin 2x$. 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 initial value problem $y'' - y' - 2y = 3e^{2x}, y(0) = 0, y'(0) = -2$. 7 Marks

   b) The charge $q(t)$ on the capacitor is given by the differential equation $\frac{d^2q}{dt^2} + 12\frac{dq}{dt} + 100q = 24\sin 10t$. If the charge q=0 and current i=0 at t=0, then determine the charge at time t > 0. 7 Marks

UNIT-III

5. a) If $x = u(1 - v), y = uv$ prove that $JJ' = 1$. 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. a) Investigate the continuity at (0 , 0) of the function 7 Marks

$$f(x,y)=\begin{cases}\dfrac{x^2-y^2}{x^2+y^2}, & (x,y)\neq(0,0)\\ 0 & (x,y)=(0,0)\end{cases}$$

b) If $u = f(r,s,t)$ where $r=\dfrac{x}{y}$, $s=\dfrac{y}{z}$, $t=\dfrac{z}{x}$, then show that 7 Marks

$$x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}+z\frac{\partial u}{\partial z}=0$$

UNIT-IV

7. a) Evaluate $\int_0^\infty\int_0^\infty e^{-\left(x^2+y^2\right)}dxdy$ by changing into polar co-ordinates. 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 $\oint_S F.ds$ 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, Anantapur)

I B.Tech I Semester (SVEC16) Supplementary Examinations, May - 2025

MULTI-VARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit

All questions carry equal marks

UNIT-I

1. a) Determine the orthogonal trajectories of the family of cardioids $r = a(1 - \cos\theta)$, where 'a' is the parameter. 7 Marks

   b) Obtain the orthogonal trajectories of circles $r = a\cos\theta$. 7 Marks

(OR)

2. a) Design a mathematical equation for the orthogonal trajectories of the family of curves $r = 2a(\cos\theta + \sin\theta)$ 7 Marks

   b) Determine the solution of $2xydy - (x^2 + y^2 + 1)dx = 0$. 7 Marks

UNIT-II

3. a) Determine the solution of $(D^3 - 5D^2 + 8D - 4)y = e^{2x}$. 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) Applying the method of variation of parameters, solve the differential equation $(D^2 - 2D)y = e^x \sin x$. 7 Marks

   b) Determine the solution of initial value problem $y'' - y' - 2y = 3e^{2x}, y(0) = 0, y'(0) = -2$. 7 Marks

UNIT-III

5. a) Estimate the extreme values of the function $f(x,y) = x^3 + 3xy^2 - 3x^2 - 3y^2 + 4$. 7 Marks

   b) If $u = f(r,s,t)$ where $r = \frac{x}{y}$, $s = \frac{y}{z}$, $t = \frac{z}{x}$, then show that 7 Marks

   $$x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + z\frac{\partial u}{\partial z} = 0$$

(OR)

6. a) If $x = u(1 - v), y = uv$ prove that $JJ' = 1$. 7 Marks

   b) If $u = \frac{yz}{x}, v = \frac{zx}{y}, w = \frac{xy}{z}$ show that $\frac{\partial(u,v,w)}{\partial(x,y,z)} = 4$. 7 Marks

UNIT-IV

7. a) Find the perimeter of the cardioid $r = a(1 - \cos\theta)$ 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. Evaluate $\int_0^1 \int_{x^2}^{2-x} xy\,dxdy$ by the change of order technique. 14 Marks

UNIT-V

9. a) If, $f = \left(x^2 + y^2 + z^2\right)^{-n}$ then evaluate div (grad f) and further determine n if div (grad f) = 0. 7 Marks

b) Prove the vector identity $\nabla^2(r^n) = n(n+1)\, r^{n-2}$. 7 Marks

(OR)

10. 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) Find the angle between the normal to the surface $\mathbf{x^2 = yz}$ at the points (1,1,1) and (2,4,1) 7 Marks



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-19) Supplementary Examinations, May - 2025

DIFFERENTIAL EQUATIONS AND MULTIVARAIBLE CALCULUS

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

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	1. Obtain the complete solution of the following differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = xe^x \sin x$.	6 Marks	L3	CO1	PO1 PO2
	b)	Solve the differential equation $(D^3 - 7D^2 + 14D - 8)y = e^x Cos2x$	6 Marks	L3	CO1	PO1 PO2
		(OR)				
2.	a)	2. Apply method of variation of parameters and solve $\frac{d^2y}{dx^2} + y = \sec x$.	6 Marks	L3	CO1	PO1 PO2
	b)	Change the differential equation $(x+1)^2\frac{d^2y}{dx^2} - 3(x+1)\frac{dy}{dx} + 4y = x^2 + x + 1$ into linear equation with constant coefficients and find the general solution.	6 Marks	L2	CO1	PO1 PO2

UNIT-II

3.	a)	Construct the partial differential equation by eliminating the arbitrary function from $Z = f(x^2 + y^2) + x + y$.	6 Marks	L3	CO1	PO1 PO2
	b)	Form the partial differential equation from the relation $f(x + y + z, x^2 + y^2 + z^2) = 0$.	6 Marks	L2	CO1	PO1 PO2
		(OR)				
4.	a)	1. Obtain the solution of partial differential equation r-6s+9t=e^{2x+y} 2. Here r, s and t are usual notations.	6 Marks	L2	CO1	PO1
	b)	Using the method of separation of variables solve $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ where $u(x,0) = 6e^{-3x}$.	6 Marks	L3	CO1	PO1

UNIT-III

5.	a)	Find $\frac{du}{dt}$; *if* $u = x^2y^3$, *where* $x = \log t$ *and* $y = e^t$.	6 Marks	L1	CO2	PO1
	b)	If $u = x^2 - y^2, v = 2xy$ where $x = r\cos\theta, y = r\,Sin\theta$, verify $\frac{\partial(u,v)}{\partial(r,\theta)} = 4r^3$ s.	6 Marks	L5	CO2	PO1 PO2
		(OR)				
6.	a)	3. Find the minimum value of $x^2+y^2+z^2$, given that $xyz=a^3$.	6 Marks	L2	CO2	PO1
	b)	A rectangular box open at the top is to have volume 32 cubic ft. Find the dimensions of the box requiring least material for its	6 Marks	L3	CO2	PO1

construction.

UNIT-IV

7.	a)	b) Evaluate $\iint (x^2 + y^2)dxdy$ in the positive quadrant for which c) $x+y \leq 1$.	6 Marks	L3	CO2	PO1
	b)	3. Evaluate $\iint_R xy\,dxdy$ where R is the region by x-axis, the line x=2a and the parabola $x^2=4ay$.	6 Marks	L3	CO2	PO1
		(OR)				
8.	a)	Evaluate $\int_1^e \int_1^{\log y} \int_1^{e^x} (\log z)\,dzdxdy$.	6 Marks	L5	CO2	PO1
	b)	By changing into polar coordinates, Evaluate $\int_0^a \int_0^{\sqrt{a^2-y^2}} (x^2 + y^2)\,dxdy$.	6 Marks	L3	CO2	PO1 PO2

UNIT-V

9.	a)	Find the directional derivative of $f(x,y,z) = xy^3 + yz^3$ at the point (2,-1,1) in the direction of the vector $\vec{i} + 2\vec{j} + 2\vec{k}$.	6 Marks	L1	CO3	PO1
	b)	The temperature of points in space is given by $T(x,y,z) = x^2 + y^2 - z$. A mosquito located at (1,1,2) desires to fly in such a direction that it will get warm as soon as possible. In what direction should it move?	6 Marks	L2	CO3	PO1
		(OR)				
10.		Using Green's theorem, evaluate $\int_C [(y - \sin x)dx + \cos x dy]$ where C is the plane triangle enclosed by the lines $y = 0, x = \pi/2$ and $y = \frac{2}{\pi}x$.	12 Marks	L2	CO3	PO1 PO2

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

DIFFERENTIAL EQUATIONS AND MULTIVARIABLE CALCULUS

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Business Systems, Computer Science and Design, Computer Science and Engineering (Artificial Intelligence and Machine Learning),Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Solve the differential equation $(D^2 + 2D + 1)y = e^x x^3$.	7 Marks	L3	CO1	PO1
	b)	Solve the differential equation $\frac{d^3y}{dx^3} + y = e^{2x} \sin(2x - 1)$.	7 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Using the method of variation of parameters, solve $y'' - 2y' = e^x \cos x$.	7 Marks	L3	CO1	PO2
	b)	Find the general solution of the differential equation $y'' - y = \cosh x \sin x$.	7 Marks	L1	CO1	PO1

UNIT-II

3.	a)	Construct the partial differential equation by eliminating the arbitrary function ϕ *from* $\phi(xy + z^2, x + y + z) = 0$.	7 Marks	L3	CO2	PO1
	b)	Find the general solution of the linear partial differential equation $(mz - ny)p + (nx - lz)q = ly - mx$.	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Solve the partial differential equation $(D^2 - 2DD')z = \sin x \cos 2y$.	7 Marks	L3	CO2	PO1
	b)	Solve the partial differential equation $(2D^2 - 5DD' + 2D'^2)z = 5\sin(2x + 3y)$.	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	Determine $\frac{\partial(x,y,z)}{\partial(u,v,w)}$, *when* $u = \frac{2yz}{x}$, $v = \frac{3zx}{y}$, $w = \frac{4xy}{z}$.	7 Marks	L3	CO3	PO1
	b)	Show that the functions $u = \frac{x}{y}$, $v = \frac{x+y}{x-y}$, are functionally dependent and hence obtain the relation between them.	7 Marks	L3	CO1	PO2
		(OR)				

6.	a)	Examine the maxima and minima of the function $f(x,y) = x^3 + y^3 - 3axy$.	7 Marks	L3	CO3	PO2
	b)	Using Lagrange's method of undetermined multipliers, calculate the maximum value of $x^2 + y^2 + z^2$ *when* $xyz = a^3$.	7 Marks	L3	CO3	PO1

UNIT-IV

7.	a)	Evaluate $\iint_R (x+y)\,dx\,dy$, where R is the region bounded by the planes $x=0,\ x=2,\ y=x,\ y=x+2$.	7 Marks	L5	CO4	PO1
	b)	Applying the change of order of integration, evaluate $\int_0^a \int_y^a \frac{x}{x^2+y^2}\,dx\,dy$.	7 Marks	L3	CO4	PO2

(OR)

8.	a)	Evaluate $\int_{-1}^{1} \int_{0}^{z} \int_{x-z}^{x+z} (x-y+z)\,dx\,dy\,dz$.	7 Marks	L5	CO4	PO1
	b)	By changing to polar coordinates, evaluate the double integral $\int_0^a \int_y^a \frac{x}{(x^2+y^2)}\,dx\,dy$.	7 Marks	L3	CO4	PO2

UNIT-V

9.	a)	Determine the directional derivative of the field $\phi\ x^2y^4 + z^2y^4 + x^2z^4$ at the point (2,0,3) in the direction of the normal to the surface $x^2 + y^2 + z^2 = 14$ at the point (3,2,1).	7 Marks	L3	CO5	PO1
	b)	Evaluate the line integral $\int_C \vec{F}.d\vec{r}$ *where* $\vec{F} = x2\,\vec{i} + xy\,\vec{j}$ and C is the boundary of the square in the plane $z=0$ and bounded by the lines $x=0,\ y=0,\ x=a$, and $y=a$.	7 Marks	L5	CO5	PO1

(OR)

10.		Verify Green's theorem for $\oint_C (3x^2 - 8y^2)\,dx + (4y - 6xy)\,dy$ where C is the boundary of the region bounded by $x \geq 0,\ y \leq 0$ *and* $2x - 3y = 6$.	14 Marks	L5	CO5	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May-2025

ENGINEERING PHYSICS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the formation of Newton's rings with a neat diagram. Derive the expression for diameters of dark and bright rings.	10 Marks	L2	CO1	PO2
	b)	A soap film of refractive index 1.33 and thickness 5000 Å is exposed to white light. What wavelength in the visible region is reflected?	4 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Describe the construction and working of Nicol's prism.	7 Marks	L2	CO1	PO1
	b)	Explain the theory of fraunhofer diffraction at single slit.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Write Maxwell equations and discuss the significance of Maxwell equations.	7 Marks	L2	CO2	PO1
	b)	Draw block diagram of fiber optic communication system and explain each block.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Define the acceptance angle and numerical aperture. Derive an expression for the numerical aperture of an optical fiber.	8 Marks	L3	CO2	PO2
	b)	Calculate the acceptance angle, numerical aperture and fractional change in refractive index of given optical fiber, if the refractive indices of the core and the cladding are 1.563 and 1.498 respectively.	6 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Distinguish between intrinsic and extrinsic semiconductors.	6 Marks	L4	CO3	PO1
	b)	Derive an expression for the electron concentration in an intrinsic semiconductor.	8 Marks	L3	CO3	PO2
		(OR)				
6.	a)	State and explain the Hall effect and obtain the expression for the Hall coefficient.	11 Marks	L2	CO3	PO1
	b)	The Hall coefficient of a specimen is 3.66×10^{-4} m^3C^{-1}. Its resistivity is 8.93×10^{-3} Ω-m, find carrier density?	3 Marks	L1	CO3	PO2
		UNIT-IV				
7.	a)	Describe the frequency dependence of polarization.	5 Marks	L2	CO4	PO1
	b)	Develop an expression for the internal field in a dielectric material.	9 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Summarize the ferromagnetic hysteresis loop with a neat sketch.	6 Marks	L2	CO4	PO1
	b)	Distinguish between soft and hard magnetic material?	8 Marks	L4	CO4	PO1

UNIT-V

9.	a)	Illustrate the AC and DC Josephson effect.	6 Marks	L2	CO5	PO1
	b)	Describe the BCS theory of Super conductivity.	8 Marks	L2	CO5	PO1
		(OR)				
10.	a)	List out any four applications of nanomaterials and Discuss the principles of nanomaterials.	8 Marks	L1	CO5	PO1
	b)	Explain any one of the synthesis method to prepare nanomaterials.	6 Marks	L2	CO5	PO1

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CODE No.: 20BT10101 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	State and prove Lami's theorem.	7 Marks	L4	CO1	PO1
	b)	Determine the reactions at the supports of the given loaded beam shown in the Fig..	7 Marks	L4	CO1	PO1 PO2 PO4 PO10

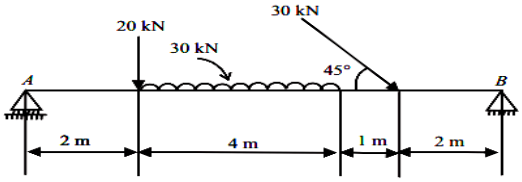


Fig.

(OR)

2.		What is perfect frame and imperfect frame? Write the advantage of method of sections as compared to method of joints.	14 Marks	L4	CO1	PO1 PO2

UNIT-II

3.		The coefficient of friction between a copper block A and an aluminum block B is 0.3, and between the block B and the floor is 0.2. The weight of block A is 30 N and of block B is 20 N as shown in given Fig.. What force P will cause the motion of block A to impend?	14 Marks	L4	CO2	PO1 PO2 PO4 PO6 PO10

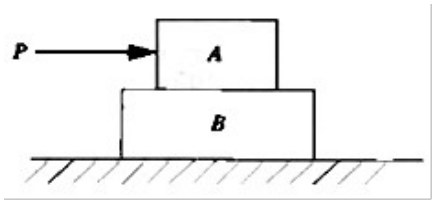


Fig.

(OR)

4.	a)	What is friction? Explain how friction is both desirable and undesirable in engineering applications and also state the laws of static and dynamic friction.	7 Marks	L2	CO2	PO1
	b)	A body of weight 50 N is placed on a rough horizontal plane. To just move the body on the horizontal plane, a push of 15 N inclined at 30° to the horizontal plane is required. Find the coefficient of friction between the body and the plane?.	7 Marks	L4	CO2	PO1 PO2 PO6 PO10

UNIT-III

5.		Define the following: i) Centroid ii) Centre of gravity iii) Moment of inertia	14 Marks	L1	CO3	PO1

(OR)

6.	a)	State and prove theorems of Pappus–Guldinus.	7 Marks	L4	CO3	PO1 PO2 PO10
	b)	Calculate the centroid of T-section shown in the Fig..	7 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO10

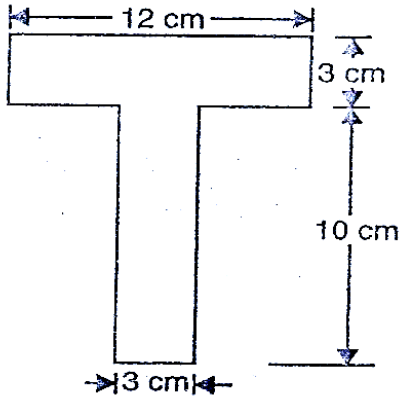


Fig.

UNIT-IV

7.	The following data refer to a mild steel specimen tested in a laboratory. Diameter of the specimen= 20 mm Length of the specimen= 250 mm Extension under a load of 10 kN= 0.035 mm Load at yield point= 120.15 kN Maximum load= 195.50 kN Length of the specimen under failure= 300 mm The neck diameter = 15.25 mm Determine Young's Modulus, Yield point, Ultimate stress, percentage of elongation and percentage reduction in area and safe stress adopting factor of safety of 2.	14 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO10
	(OR)				
8.	Derive the relationship between Young's modulus and bulk modulus.	14 Marks	L4	CO4	PO1

UNIT-V

9.	a)	Derive the circumferential stress and longitudinal stress of a thin cylinder with neat sketch.	7 Marks	L4	CO5	PO1 PO2 PO10
	b)	Calculate the thickness of the metal required for a cast iron main 800 mm in diameter for water at a pressure head of 100 m if the maximum permissible tensile stress is 20 MN/m^2 and weight of water is 10 kN/m^3.	7 Marks	L6	CO5	PO1 PO2 PO3
		(OR)				
10.		Mention the assumptions in Lame's theory. Derive Lame's equation for radial and circumferential stress of thick cylinder.	14 Marks	L4	CO5	PO1 PO2

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CODE No.: 20BT10201 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May– 2025

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

[Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and 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 operation of single loop generator with the help of necessary diagrams.	14 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Derive the RMS and Average value of the output wave form of a half wave rectifier for sinusoidal input.	7 Marks	L2	CO1	PO1
	b)	Show that the current in a pure inductor lags voltage by 90^0.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.		Explain the significance of power factor and enumerate the methods of improving the power factor.	14 Marks	L2	CO2	PO1
		(OR)				
4.	a)	With neat sketch explain the operation of sustainable power generation using thermal power plant.	7 Marks	L2	CO2	PO7
	b)	Explain briefly about various types of circuit breakers.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Explain the construction and working of Permanent magnet DC motor.	7 Marks	L2	CO3	PO1
	b)	Derive the EMF equation of transformer.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Explain the principle of operation of three phase induction motor.	7 Marks	L2	CO3	PO1
	b)	Explain the constructional details and working of single phase resistor start induction motor.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.		Explain the operation of a zener diode in forward biased and reverse biased condition. Draw its V-I characteristics.	14 Marks	L1	CO4	PO1
		(OR)				
8.	a)	Sketch the VI characteristics of PN junction diode.	7 Marks	L2	CO4	PO1
	b)	Explain the operation of full wave rectifier with the help of necessary diagrams.	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Explain the block diagram of operational amplifier.	7 Marks	L2	CO5	PO1
	b)	Construct a circuit to realize $V_{out} = 10V_1 + 20V_2 - 5V_3$ using Op-Amp.	7 Marks	L3	CO4	PO2
		(OR)				
10.	a)	Explain the DC characteristics of operational amplifier.	7 Marks	L2	CO5	PO1
	b)	Draw the equivalent circuit of an OPAMP and explain in detail.	7 Marks	L2	CO5	PO1

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CODE No.: 20BT10301 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

MATERIAL SCIENCE AND ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Classify crystal defects. Explain line defects in detail.	7 Marks	L2	CO1	PO1 PO2
	b)	Define solid solution. Differentiate between Substitutional and Interstitial solid solutions with neat sketches.	7 Marks	L2	CO1	PO1 PO2
		(OR)				
2.		Explain the expression for the Gibb's Phase rule and recall the Hume-Rothery rule.	14 Marks	L2	CO1	PO1 PO2
		UNIT-II				
3.	a)	List the objectives of heat treatment of metals.	5 Marks	L2	CO2	PO4
	b)	Define Hardenability. Explain hardening and tempering in detail.	9 Marks	L2	CO2	PO1
		(OR)				
4.		Define carburizing and describe the types of carburizing in detail.	14 Marks	L1	CO1	PO1
		UNIT-III				
5.	a)	Classify the types of carbon steels with their specific features and applications.	7 Marks	L2	CO2	PO1
	b)	Write a short note on White and Malleable cast iron.	7 Marks	L1	CO2	PO1 PO2
		(OR)				
6.		Give the structure and properties of the following: i) Nodular cast iron ii) Grey cast iron iii) Malleable iron iv) White cast iron	14 Marks	L1	CO3	PO1 PO2 PO3
		UNIT-IV				
7.	a)	What are copper alloys? Mention the properties and applications of brass metal.	7 Marks	L2	CO4	PO1
	b)	List the properties and applications of Nickel.	7 Marks	L1	CO2	PO1
		(OR)				
8.		Explain the types, properties and uses of magnesium and its alloys in detail.	14 Marks	L1	CO2	PO1 PO2
		UNIT-V				
9.	a)	Define composite materials. What unique properties have they, over the conventional materials?	7 Marks	L1	CO2	PO1
	b)	What are polymers? Give the classifications of polymers along with their properties and applications.	7 Marks	L2	CO5	PO1 PO2 PO3
		(OR)				
10.		Write short notes on Metal Matrix composites and Ceramic-matrix composites.	14 Marks	L1	CO2	PO1



CODE No.: 16BT31501 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Supplementary Examinations, May - 2025

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)	List out various functions of operating systems.	CO1	7 Marks
	b)	Analyze the role of schedulers in the process selection.	CO2	7 Marks
		(OR)		
2	a)	Illustrate about IPC.	CO1	7 Marks
	b)	Explain direct and indirect communication with respect to message passing systems.	CO1	7 Marks

UNIT-II

3		Describe resource allocation graph. i) With deadlock. ii) With a cycle but no deadlock.	CO3	14 Marks
		(OR)		
4	a)	How deadlock can be avoided? Explain Banker's algorithm with an example.	CO3	7 Marks
	b)	Compare the various deadlock recovery methods.	CO3	7 Marks

UNIT-III

5	a)	Explain dynamic storage allocation strategies in contiguous memory allocation scheme.	CO2	7 Marks
	b)	Which page replacement algorithm may produce the minimum page faults? Justify it with an appropriate example.	CO2	7 Marks
		(OR)		
6	a)	Compare Segmentation and Thrashing.	CO3	7 Marks
	b)	Describe any one page replacement algorithms.	CO3	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? Explain.	CO1	7 Marks
		(OR)		
8	a)	Compare the performance of SCAN and C-SCAN disk scheduling algorithms with an example.	CO1	7 Marks
	b)	Write about inodes and file descriptors.	CO1	7 Marks

UNIT-V

9	a)	Explain about DMA and Memory-mapped I/O.	CO5	7 Marks
	b)	Why is revocation of access rights easy with an access list scheme?	CO5	7 Marks
		(OR)		
10	a)	What are the various kinds of performance overheads associated with servicing an interrupt?	CO1	7 Marks
	b)	Explain the life cycle of I/O request.	CO1	7 Marks

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CODE No.: 20BT3BS01 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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, Computer Science and Engineering (IoT), Computer Science and Engineering (Cyber Security), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Using method of false position, estimate an approximate root correct to three decimal places for the equation $x^3 - 2x - 5 = 0$. — 7 Marks L3 CO1 PO2

   b) Derive a recurrence formula for evaluating $\sqrt{N}$ by Newton-Raphson method and hence estimate $\sqrt{10}$ correct to three decimal places. — 7 Marks L3 CO1 PO1

(OR)

2. a) Construct an interpolating polynomial for the following data using Newton's forward interpolation formula — 7 Marks L3 CO1 PO1

x	0	1	2	3	4
y	3	6	11	18	27

   b) Estimate the value of y(2) from the following data using Lagrange's interpolation formula — 7 Marks L5 CO1 PO1

x	0	1	3	4
y	5	6	50	105

UNIT-II

3. a) Choose the appropriate interpolation formula and estimate $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at $x = 1.2$ from the following table — 7 Marks L1 CO1 PO5

x	1.0	1.2	1.4	1.6	1.8	2.0	2.2
y	2.7183	3.3201	4.0552	4.9530	6.0496	7.3891	9.0256

   b) State Simpson's $\frac{3}{8}$ rule and applying it to evaluate $\int_0^1 \sqrt{1+x^4}\,dx$ for $n = 6$. — 7 Marks L3 CO1 PO1

(OR)

4. a) Solve $y' = x - y^2, y(0) = 1$ using Taylor's series method and compute $y(0.1), y(0.2)$. — 7 Marks L3 CO1 PO1

   b) Apply the fourth order Runge-Kutta method to find $y(0.1)$ and $y(0.2)$, given $y' = x + y, y(0) = 1$. — 7 Marks L3 CO1 PO1

UNIT-III

5.	a)	If X and Y are discrete random variables and K is a constant, show that i) $E(X+K)=E(X)+K$ ii) $E(X+Y)=E(X)+E(Y)$.	7 Marks	L1	CO2	PO1
	b)	A continuous variable X has the distribution function $F(x)=\begin{cases}0, & if\ x\le 1\\ K(x-1)^4, & if\ 1<x\le 3\\ 1, & if\ x>3\end{cases}$ Determine i) The probability density function of X ii) $K.ss$	7 Marks	L3	CO2	PO1

(OR)

6.	a)	A random variable X has the following probability distribution function	7 Marks	L1	CO2	PO1

X = x	-2	-1	0	1	2	3
P(X=x)	0.1	k	0.2	2k	0.3	k

Find: i) k ii) mean iii) variance.

	b)	For the continuous probability function $f(x)=\begin{cases}cx(2-x), & if\ 0\le x\le 2\\ 0, & otherwise\end{cases}$ Calculate the value of c and also obtain the mean and variance of X.	7 Marks	L3	CO2	PO1

UNIT-IV

7.	a)	Average number of accidents on any day on a national highway is 1.8. Determine the probability that the number of accidents is i) at least one ii) at most one.	7 Marks	L3	CO3	PO2
	b)	Find mean and variance of the exponential distribution $f(x)=\frac{1}{b}e^{-(x-a)/b},\quad x>a$.	7 Marks	L1	CO3	PO1

(OR)

8.	a)	Construct a binomial distribution to the following data and find the expected frequencies	7 Marks	L1	CO3	PO1

x	0	1	2	3	4	5
f(x)	2	14	20	34	22	8

	b)	The marks obtained in statistics in a certain examination found to be normally distributed. If 15% of students got greater than or equal to 60 marks, 40 % of students got less than 30 marks, Estimate the mean and standard deviation.	7 Marks	L5	CO3	PO2

UNIT-V

9.	a)	Explain about: i) Null hypothesis ii) Type-I and type-II errors.	7 Marks	L2	CO4	PO1
	b)	A random sample of 6 steel beams has a mean compressive strength of 58,392 *p.s.i* (pounds per square inch) with a standard deviation of 648 *p.s.i.* Use this information and the level of significance $\alpha = 0.05$ to test whether the true average compressive strength of the steel from which this sample came is 58,000 *p.s.i*. Assume normality.	7 Marks	L4	CO4	PO4

(OR)

10. a) In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of the men in this city are smokers? Analyze the given information and conclude. 7 Marks L4 CO4 PO4

b) Given the following contingency table for hair colour and eye colour. 7 Marks L4 CO4 PO4

	Hair colour			
		Fair	Brown	Black
Eye colour	Blue	15	5	20
	Grey	20	10	20
	Brown	25	15	20

Test whether there is any good association between two colours at 0.05 level.

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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 Beta function and applying it show that $\beta(m+1,n)+\beta(m,n+1)=\beta(m,n)$.	7 Marks	L1	CO1	PO1
	b)	Evaluate the integral $\int_0^{\pi/2} \sin^{7/2}\theta \cos^{3/2}\theta \, d\theta$ making use of Beta and Gamma functions.	7 Marks	L5	CO1	PO1
		(OR)				
2.	a)	Show that $\int_{-1}^{1}(1+x)^{m-1}(1-x)^{n-1}\,dx = 2^{m+n-1}B(m,n)$.	7 Marks	L2	CO1	PO1
	b)	Evaluate $\int_0^{\infty} e^{-x^2} x^{7/2}\,dx$ using Gamma function.	7 Marks	L5	CO1	PO1
		UNIT-II				
3.	a)	Demonstrate $J_4(x)$ in terms of $J_0(x)$ and $J_1(x)$.	7 Marks	L2	CO2	PO2
	b)	Show that $5x^3 = 2P_3(x)+3P_1(x)$.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Show that $\frac{d}{dx}[xJ_1(x)] = xJ_0(x)$.	7 Marks	L2	CO2	PO1
	b)	Prove the recurrence relation $(2n+1)x\,P_n(x) = (n+1)\,P_{n+1}(x)+n\,P_{n-1}(x)$.	7 Marks	L5	CO2	PO2
		UNIT-III				
5.	a)	Make use of Mile-Thomson method to construct an analytic function $f(z)=u+iv$ if $v=\frac{2\sin x\sin y}{\cos 2x+\cosh 2y}$.	7 Marks	L3	CO3	PO2
	b)	Find the image of the ring shaped region $1<\|z\|<2$ under the transformation $w=2iz+1$.	7 Marks	L1	CO4	PO2
		(OR)				
6.	a)	Define an analytic function and construct an analytic function $f(z)=u+iv$ whose real part is $u=e^{2x}(x\cos 2y - y\sin 2y)$.	7 Marks	L1	CO3	PO2
	b)	Construct the bilinear the transformation which maps the points $(-1,0,1)$ of the $z-$ plane onto $(0,i,3i)$ $w-$ plane respectively.	7 Marks	L3	CO4	PO2

UNIT-IV

7.		State Cauchy's theorem and verify it for $f(z) = 3z^2 + iz - 4$ over the boundary of the square with vertices at 1± i and -1± i.	14 Marks	L1	CO5	PO2
		(OR)				
8.	a)	Evaluate contour integral $\int_c \frac{\log z}{(z-1)^3} dz$ where $c: \lvert z-1 \rvert = 1/2$ using Cauchy's Integral formula.	7 Marks	L5	CO5	PO2
	b)	Construct a Taylor's series for $f(z) = \frac{e^z}{z(z+1)}$ about the point z = 2.	7 Marks	L3	CO5	PO1

UNIT-V

9.	a)	Define simple pole and reside at the simple pole. Find the poles and corresponding residues of $f(z) = \frac{z+1}{z^2(z-2)}$.	7 Marks	L1	CO5	PO1
	b)	Evaluate $\oint_c \frac{2e^z}{z(z-3)} dz$ where C: $\lvert z \rvert = 2$ by applying theory of residues.	7 Marks	L5	CO5	PO2
		(OR)				
10.		Show that $\int_0^{2\pi} \frac{\cos 2\theta}{1-2a\cos\theta + a^2} d\theta = \frac{2\pi a^2}{1-a^2} (a^2 < 1)$ by complex variable technique.	14 Marks	L2	CO5	PO5



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Regular Examinations, May – 2025

DISCRETE MATHEMATICAL STRUCTURES

**[Computer Science and Engineering, Information Technology,
Computer Science and Engineering (IoT),
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.		What is PCNF? Illustrate with an example.	14 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Explain in-detail whether the given premises $P \rightarrow \sim R, \sim Q \rightarrow R, \sim(P \vee Q) \rightarrow$ R are consistent or not.	7 Marks	L2	CO1	PO1
	b)	Write the following statement in the symbolic form "Elon is lazy but smart" "Elon is active or stupid" "Elon is neither active nor stupid" "Elon is lazy or he is both active and stupid"	7 Marks	L3	CO1	PO1

UNIT-II

3.	a)	Assume that X = {a,b,c} Y= {1, 2} and Z= {y, z} Also: $f: X \rightarrow Y$ *be* $f = \{(a,1), (b,1), (c,2)\}$ $g: Y \rightarrow Z$ *be* $g = \{(1,z), (2,y)\}$ *Find* $f \circ g$, f *of* , g *o* g *of o* f *o* g, if exists.	7 Marks	L2	CO2	PO1
	b)	Generate Hasse diagram for the set S= {1,2,3,5,6,10,15,30} and the relation ≥ be such that x≥ y is y divides x.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Show that the relation "Greater than or equal to" is a partial ordering on the set of integers.	7 Marks	L3	CO2	PO2
	b)	Define symmetric, antisymmetric, transitive and compatibilityrelations with an example.	7 Marks	L1	CO2	PO1

UNIT-III

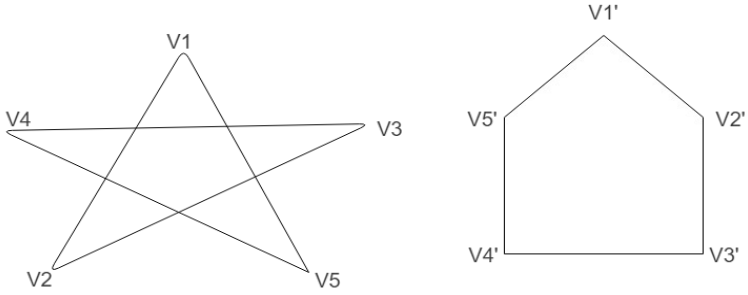
5.	a)	Let f be a homomorphism from a group G_1 to the group G_2 then show that if e_1 is the identity in G_1 and e_2 is the identity in G_2 then $f(e_1) = e_2$.	7 Marks	L3	CO3	PO3
	b)	In a monoid show that the set of all left invertible element form a sub monoid.	7 Marks	L3	CO3	PO4
		(OR)				
6.	a)	(G,*) is a group and (a, b)$\in$ G then show that $(a * b)^{-1} = b^{-1} * a^{-1}$.	7 Marks	L3	CO3	PO4
	b)	Let Z be the set of integers and addition, multiplication are binary operations on set (+, *). i) Verifywhether (Z,+) is monoid or not. ii) Verify whether (Z,+) is group or not.	7 Marks	L3	CO3	PO4

UNIT-IV

7.	a)	Compute the number of sixletter combinations of the letter of English alphabet. If no letter is to appear in the combination more than 3 times.	7 Marks	L3	CO4	PO3
	b)	Find the coefficient of X^{25} in $(X^2 + X^3 + X^4 + X^5 + X^6)^7$.	7 Marks	L3	CO4	PO3
		(OR)				
8.	a)	How many ways are there for 10 keypad phones, 8 smart phones and 6 tablets to be in a mobile showroom such that at least 2 devices of same types be placed side by side?	7 Marks	L3	CO4	PO3
	b)	Find out whether $x+y$ is a factor of the polynomial x^n+y^n where $n \geq 0$ using Mathematical induction.	7 Marks	L3	CO4	PO4

UNIT-V

9.	a)	Explain in-detail whether the MST obtained by Kruskal's and Prim's algorithm is same for every graph or not.	7 Marks	L2	CO5	PO1
	b)	Check whether the below graphs are isomorphic or not	7 Marks	L3	CO5	PO4



G G'

(OR)

10.	a)	Obtain MST using prim's and Kruskal's algorithm. Consider any graph which has atleast 7 nodes, atleast 12 edges and atleast3 edges having same weight.	7 Marks	L3	CO5	PO3
	b)	Apply DFS for the any of the obtained MST in the question10 a) without considering weight of edges.	7 Marks	L3	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

FLUID MECHANICS AND HYDRAULIC MACHINERY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	State Newton's low of viscosity and explain the terms i) dynamic viscosity and ii) kinematic viscosity. state their units of measurements.	7 Marks	L2	CO1	PO1
	b)	Two horizontal plates are placed 1.25 cm apart, the space between them being filled with oil of viscosity 14 poise. Determine the shear stress in oil if upper plate is moved with a velocity of 2.5 m/s.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		(OR)				
2.	a)	A rectangular plane surface is 2m wide and 3 m deep. It lies in vertical plane in water. Determine the total pressure and the position of center of pressure on the plane surface when its upper edge is horizontal and i) coincides with water surface, ii) 2.5m below the water surface.	7 Marks	L4	CO1	PO1 PO2 PO4
	b)	Explain the phenomenon of capillarity. Obtain an expression for capillary rise of a liquid.	7 Marks	L4	CO1	PO1

UNIT-II

3.	a)	In a fluid, the velocity field is given byV = (3x + 2y) i + (2z + 3x2) j + (2t – 3z) k Determine: i) The velocity components u, v, w at any point in the flow field; ii) The speed at point (1, 1, 1); iii) The speed at time t = 2s at point (0, 0, 2). Also classify the velocity field as steady, or unsteady, uniform or non-uniform and one, two orthree dimensional.	7 Marks	L4	CO2	PO1 PO2 PO4
	b)	The diameters of a tapering pipe at the sections1-1 and 2-2 are 100 mm and 150 mm respectively.If the velocity of water flowing through the pipe at section 1-1 is 5 m/s, find: i) Discharge through the pipe, and ii) Velocity of water at section 2-2.	7 Marks	L4	CO2	PO1 PO2 PO4 PO10
		(OR)				
4.	a)	A discharge through a 24 cm diameter horizontal pipe increases linearly from 30to 120 liters/sec of water in 4 seconds. i) What pressure gradient must exist to produce this acceleration? ii) What is the difference in pressure intensity that exists between two sections that lie 9 m apart?	7 Marks	L4	CO2	PO1 PO2 PO10
	b)	A pipe (1) 400 mm in diameter, conveying water, branches into two pipes (2) and 3 of diameters300 mm and 200 mm respectively. (i) Find the discharge in pipe (1) if the average velocity of water in this pipe is 3 m/s. (ii) Determine the velocity of water in 200mm pipe if the average velocity in 300mm diameter pipe is 2 m/s.	7 Marks	L4	CO2	PO1 PO2 PO4 PO10

UNIT-III

5.	a)	Three pipes of lengths 900 m, 600 m and 450 m and of diameters 600 mm, 450mm and 350 mm respectively are connected in series. These pipes are to be replaced by a single pipe of length 1500 m. Design the dimeter of the single pipe.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4
	b)	The velocity of water flowing through a 12 cm diameter pipe was found to be 3.5 m/s. The flow path in pipe is destructed by an iron plate of 8 cm diameter. Calculate, the loss of head due to obstruction if co-efficient of contraction Cc = 0.75.	7 Marks	L4	CO4	PO1 PO2 PO4
		(OR)				
6.	a)	Describe the procedure to determine the relationship between dependent and independent variable using Rayleigh's method.	7 Marks	L4	CO4	PO1 PO2
	b)	A 7.2 m high and 15 m long spillway discharges 94 m3/s discharge under a head of 2.03. If 1: 9 scale model of this spillway is to be constructed, determine model dimensions, head over spillway model and the model discharge. If model experiences a force of 7500 N, determine force on the prototype.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5

UNIT-IV

7.	a)	Define open channel flow and compare with flow in closed conduit flow.	7 Marks	L4	CO5	PO1
	b)	A trapezoidal channel having the side slope equal to 60° with the horizontal and laid on a slope of 1 in 750, carries a discharge of 10 m3/s. Find the width at the base and depth of flow for most economical section. Take the value of Chezy's resistance co-efficient C = 66.	7 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO10
		(OR)				
8.	a)	Discuss on open channel flow for non-uniform flow.	7 Marks	L2	CO5	PO1
	b)	A trapezoidal channel has side slopes of 1 horizontal to 2 vertical and the slope of its bed is 1 in 2500. Determine the optimum dimensions of the channel if it is to carry water at 0.5 m3/s. Take Chezy's constant as 70.	7 Marks	L6	CO5	PO1 PO2 PO3

UNIT-V

9.	a)	A Pelton wheel is to be designed for: Shaft Power = 11572 kW; Head = 350 M; Speed = 700 rpm; Overall efficiency = 88 %; Jet diameter is not to exceed one-sixth of the wheel diameter. Determine: i) the wheel diameter, ii) The no of jets required, iii) Diameter of the jet.	7 Marks	L6	CO6	PO1 PO2 PO3 PO4 PO5
	b)	A centrifugal pump delivers water against a net head of 14.5 meters and a design speed of 1000 rpm. The vanes are curved at the back to an angle of 30^0 with the periphery. The impeller diameter is 300 mm and the outlet width is 50 mm. determine the discharge of the pump if the manometric efficiency is 95%.	7 Marks	L4	CO6	PO1 PO2 PO5
		(OR)				
10.		A Francis turbine with an overall efficiency of 75% is required to produce 148.25 kW power. It is working under a head of 7.62 m. the peripheral velocity = $0.26\sqrt{(2gH)}$ and the radial velocity of flow at inlet is = $0.96\sqrt{(2gH)}$. The wheel runs at 150 rpm and the hydraulic losses in the turbine are 22% of the available energy. Assuming the radial discharge, determine: i) the guide blade angle, ii) the wheel vane angle at inlet, iii) diameter of the wheel at the inlet and iv) width of the wheel at inlet.	14 Marks	L6	CO6	PO1 PO2 PO3 PO4 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Derive the maximum shear force and bending moment for a cantilever beam subjected to point load at the free end. Also draw SFD and BMD.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
	b)	A cantilever beam of span 4 m is subjected to a uniformly distributed load of 3 kN/m for the entire span. Determine the shear force and bending moment at the salient points. Draw SFD and BMD.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		(OR)				
2.		Determine the maximum shear force and bending moment of a Simply Supported beam shown in the Fig. 1 and draw SFD and BMD.	14 Marks	L4	CO1	PO1 PO2 PO4 PO10

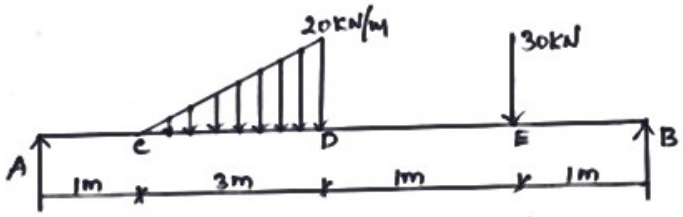


Fig. 1

UNIT-II

3.	a)	Determine the dimensions of joist of a timber of span 8 m to carry a brick wall 200 mm thick and 5 m high, if the density of brick work is 1850 kg/m^3 and the maximum permissible stress is limited to 7.5 MN/m^2. Given that the depth of the joist is twice the width.	7 Marks	L6	CO2	PO1 PO2 PO3
	b)	A vertical post 2.5 m high, support a lateral load, P = 12 kN at its upper end. i) If the allowable stress for wood = 15 MPa, determine the diameter d_1. ii) If the allowable stress for aluminum tube = 50 MPa and $t = d_2/8$ determine the outer diameter d_2.	7 Marks	L6	CO2	PO1 PO2 PO3 PO4
		(OR)				
4.		A masonry chimney having a shape of the frustum of a cone is 25 m high. The external diameter at the top and the internal diameter at the bottom is 2 m. The chimney is 0.5 m thick at the base. If the weight of the chimney is 1800 kN, find the uniform horizontal wind pressure that may act per unit projected area of the chimney in order tension at the base may be just avoided.	14 Marks	L4	CO3	PO1 PO2 PO6

UNIT-III

5.	a)	A steel shaft transmits 100 kW at 160 rpm. If the diameter of shaft is 100 mm, find the torque of the shaft and the maximum shearing stress induced. Find also the twist of the shaft in a length of 6 m. Take $C=8x10^4$ N/mm^2.	7 Marks	L4	CO4	PO1 PO2
	b)	A solid circular shaft transmits 75 kW at 200 rpm. Calculate the shaft diameter if the twist in the shaft is not to exceed 1° in 2 m of shaft and the shearing stress in limited to 50 N/mm^2. Take $C=1x10^5$ N/mm^2.	7 Marks	L6	CO4	PO1 PO2 PO3 PO4
		(OR)				
6.	a)	Mention some of the functions of the springs. Derive the shear stress and deflection of a close coiled helical spring with axial load for a circular section.	7 Marks	L4	CO4	PO1 PO2
	b)	A hollow shaft of diameter ratio 3/8 is required to transmit 800 kW at 130 rpm, the maximum torque being 20 % greater than the mean. The shear stress is not to exceed 73 MN/m^2 and the twist in a length of 3.5 m not to exceed 1.4 degrees. Calculate the maximum external diameter satisfying these conditions.	7 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO6

UNIT-IV

7.	a)	Derive the expression for the stresses acting in an inclined plane due to two perpendicular stresses.	7 Marks	L4	CO5	PO1 PO2 PO10
	b)	A tie bar is 10 m long and 60 mm by 40 mm in section. It is subjected to an axial pull of 400 kN and increase in length is found to be 7 mm. Determine the intensity of stress on a right cross section, normal and tangential and shear stresses on a plane inclined at 60° to the longitudinal axis, and also the modulus of elasticity of the material.	7 Marks	L4	CO5	PO1 PO2 PO6 PO10
		(OR)				
8.		In a steel member at a point the major principal stress is 180 MN/m^2 and the minor principal stress is compressive. If the tensile yield point of the steel is 225 MN/m^2, find the value of the major principal stress at which yielding will commence, according to each of the following criteria of failure. i) Maximum Shearing Stress ii) Maximum Total Strain Energy iii) Maximum Shear Strain Energy Take Poisson's ratio=0.26.	14 Marks	L4	CO5	PO1 PO2 PO6 PO10

UNIT-V

9.	a)	Define slenderness ratio. Derive the Euler's formula when both ends of the column are fixed.	8 Marks	L4	CO6	PO1 PO2
	b)	Calculate the critical load of a strut which is made of a bar circular in section and 5 m long and which is pin-jointed at both ends. The same bar when freely supported gives mid-span deflection of 10 mm with a load of 80 N at the centre.	6 Marks	L4	CO6	PO1 PO2 PO5 PO6
		(OR)				
10.		Compare the crippling loads given by Rankine's and Euler's formulae for tubular strut 2.25 m long having outer and inner diameters of 37.5 mm and 32.5 mm loaded through pin-joint at both ends. Take yield stress as 315 MN/m^2; a = 1/7500; and E = 200 GN/m^2. If elastic limit for the material is taken as 200MN/m^2, then for what length of the strut does the Euler formula cease to apply?	14 Marks	L4	CO6	PO1 PO2 PO5 PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

SURVEYING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	How do surveying influence on environment and sustainability?	4 Marks	L4	CO1	PO1 PO2 PO7
	b)	What are offsets? What are the types of offsets and method of taking offsets?	4 Marks	L2	CO1	PO1 PO10
	c)	The length of a Survey line was measured with a 20 m chain and was found to be equal to 1200 m. As a check the length was again measured with a 25 m chain and was found to be 1212 m. On comparing the 20 m chain with the test gauge, it was found to be 1 decimeter too long. Find the actual length of the 25 m chain used.	6 Marks	L4	CO1	PO1 PO2 PO5 PO8

(OR)

2.	a)	Write a note on the whole circle bearing system, quadrantal bearing system and adjustments of a prismatic compass.	6 Marks	L3	CO1	PO1 PO5
	b)	Given below are the bearings observed in a traverse survey conducted with a prismatic compass.	8 Marks	L4	CO1	PO1 PO2 PO4 PO5 PO8 PO10

Side	F.B	B.B
AB	S $37^0$30’ E	N $37^0$30’ W
BC	S $43^0$15’ W	N $44^0$15’ E
CD	N $73^0$00’ W	S $72^0$15’ E
DE	N $12^0$45’ E	S $13^0$15’ W
EA	N $60^0$00’ E	S $59^0$00’W

Calculate the interior angles and correct them for observational errors.

UNIT-II

3.	a)	State the advantages and disadvantages of plane table survey.	5 Marks	L2	CO1	PO1
	b)	The following staff readings were observed successively with a level. The instrument having been moved after second, fifth and eighth readings. 0.675, 1.230, 0.750, 2.565, 2.225, 1.935, 1.835, 3.220, 3.115, 2.875. The first staff reading was taken with a staff held on a bench mark of reduced level +100.00. Collect and enter the readings in the level book form and identify the reduced levels of all the points.	9 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO8

(OR)

4.	a)	What are “curvature and refraction corrections” in levelling? Derive an expression for the combined effect. Why are these effects ignored in ordinary leveling?	8 Marks	L4	CO2	PO1 PO2 PO10
	b)	Define contouring. Describe the characteristics of contours.	6 Marks	L2	CO2	PO1 PO10

UNIT-III

5. A closed traverse ABCDEA was run in the counter clockwise direction, and the following data were obtained. — 14 Marks — L4 — CO3 — PO1, PO2, PO4, PO5, PO8, PO10

Line	Length (m)	Included angle
AB	186	Angle A = $118^0\ 20'$
BC	164	Angle B = $82^0\ 10'$
CD	303	Angle C = $130^0\ 00'$
DE	162	Angle D = $73^0\ 44'$
EA	240	Angle E = $128^0\ 36'$

The bearing of AB was $24^0\ 30'$. Determine the closing error, adjust it, and give the corrected consecutive coordinates.

(OR)

6. a) Explain the principle of stadia method of tacheometric surveying. — 6 Marks — L2 — CO3 — PO1, PO8

b) Following observations were taken with a tacheometer fitted with an analectic lens having value of constant as 100. — 8 Marks — L4 — CO3 — PO1, PO2, PO4, PO5, PO10

Instrument station	Staff station	Reduced bearing	Vertical angle	Staff reading
O	P	N 37^0 W	$4^012'$	0.910, 1.510, 2.110
O	Q	N 23^0 E	$5^042'$	1.855, 2.705, 3.555

Calculate the horizontal distance between P and Q.

UNIT-IV

7. a) The following perpendicular offset were taken at 10 m intervals from an survey line to an irregular boundary line 3.15, 2.50, 3.50, 5.00, 8.20, 7.60, 3.20, 4.30 m. Calculate the area enclosed between survey lines, the irregular boundary line and first and last offsets by i) Trapezoidal rule and ii) Simpson's rule — 7 Marks — L4 — CO4 — PO1, PO2, PO4, PO5

b) Two straights of a road intersect at a chainage of 2550.5 m having an angle of intersection of 110°. Find the various elements of a simple circular curve of 4° to be introduced between the straights. — 7 Marks — L6 — CO5 — PO1, PO2, PO3, PO10

(OR)

8. a) The following are the areas of contour surveyed in a valley of reservoir. Calculate the capacity between the contour R.L. 130 and R.L. 154 by i) Trapezoidal Rule ii) Prismoidal rule — 6 Marks — L4 — CO4 — PO1, PO2, PO4, PO5

Contour (m)	130	134	138	142	146	150	154
Area (m^2)	12600	68400	223020	456050	669060	829100	999500

b) Explain the procedure to set out simple circular curve by Rankine's method. — 8 Marks — L2 — CO5 — PO1, PO10

UNIT-V

9. a) List out the various modern electronic equipment used in surveying? Discuss them in detail. — 8 Marks — L4 — CO6 — PO1, PO5, PO12

b) Differentiate between Infrared wave instruments and Microwave instruments? — 6 Marks — L4 — CO6 — PO1, PO2, PO5

(OR)

10. a) What is the working principle of drone surveying? Write down the applications of drone surveying. — 7 Marks — L2 — CO6 — PO1, PO8, PO12

b) Compare and contrast interior drone surveying and exterior drone surveying. — 7 Marks — L4 — CO6 — PO1, PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ELECTROMAGNETIC FIELDS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	State and explain Coulomb's law in vector form.	7 Marks	L2	CO1	PO1
	b)	Find the total charge in a volume defined by the six planes for which $1 \le x \le 2$, $2 \le y \le 3$ and $3 \le z \le 4$, if $\overline{D} = 3x\overline{a}_x + 2y^2\overline{a}_y + z^3\overline{a}_z\ C/m^2$.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Using Gauss's law, obtain the expression for electric field intensity due to an infinite line charge.	7 Marks	L3	CO1	PO5
	b)	Let Potential, $V=2xy^2z^3$ and $\varepsilon = \varepsilon_0$, given the point P(1,2,-1) then, find: i) Potential at P ii) Electric field intensity at P.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Derive the expressions for potential and electric field intensity due to a dipole.	7 Marks	L3	CO2	PO1
	b)	An electric dipole located at the origin in free space has a moment $\overline{p} = (4\overline{a}_x + 3\overline{a}_y + 2\overline{a}_z)\,nCm$. Determine i) Potential, V at point Q(1,2,3). ii) Electric field intensity at Q(4, 20°,0°).	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Derive an expression for current continuity equation.	7 Marks	L2	CO2	PO1
	b)	In a dielectric material, E_x = 5 V/m and $P = \frac{1}{10\pi}(3\overline{a}_x + \overline{a}_y + 4\overline{a}_z)\,nC/m^2$. Calculate: i) Susceptibility of the material. ii) Electric field intensity and electric flux density.	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	State and prove Ampere's circuital law in point form.	7 Marks	L2	CO3	PO1
	b)	Given magnetic field strength, $\vec{H} = \frac{y^2z}{x}\vec{a}_x + \frac{0.5y^2z^2}{x^2}\vec{a}_z\ A/m$, find the current crossing the square surface at y=2 bounded by x = z = 1 and x = z = 2.	7 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Obtain an expression for magnetic field intensity for infinite line current using Ampere's Circuital Law.	7 Marks	L3	CO3	PO5
	b)	A steady current of 1 mA is flowing through a conductor made to form a circular coil of radius 2cm. Find the magnetic flux density at the centre of the circular coil.	7 Marks	L3	CO3	PO2

UNIT-IV

7.	a)	Derive an expression for force per meter length between two straight long parallel current carrying conductors situated in space, separated by a distance *'d'* m carrying a steady current of *I* amperes in the opposite direction. Comment on the nature of force existed in between them.	7 Marks	L3	CO3	PO1
	b)	Determine the force per metre length between two parallel wires A and B separated by 10 cm in air and carrying currents of 20A . i) In the same direction and ii) In the opposite direction.	7 Marks	L3	CO3	PO2
		(OR)				
8.	a)	Derive an expression for self-inductance of a solenoid.	7 Marks	L2	CO3	PO1
	b)	A solenoid of 500 turns has a length of 50 cm and the radius of 10 cm. A steel rod of circular cross-section is fitted in the solenoid coaxially. Relative permeability of steel is 3000. A DC current of 10 A is passed through solenoid. Compute inductance of the system, energy stored in the system and mean flux density inside the solenoid.	7 Marks	L3	CO3	PO2

UNIT-V

9.	a)	Write down Maxwell's equations in their integral form. Derive the corresponding equations for fields varying harmonically with time.	7 Marks	L2	CO4	PO1
	b)	Does the fields $\vec{E} = E_m \sin x \sin t \, \vec{a}_y$ *and* $\vec{H} = \left(\frac{E_m}{\mu_0}\right) \cos x \cos t \, \vec{a}_z$ satisfy Maxwell's equation?	7 Marks	L3	CO4	PO2
		(OR)				
10.	a)	Differentiate between transformer EMF and Generator EMF.	7 Marks	L2	CO4	PO1
	b)	A lossy dielectric has $\mu_r = 1.5$, $\varepsilon_r = 1$, $\sigma = 2 \times 10^{-8}$ S/m and $\overline{E} = 100 \sin \omega t \, \overline{a}_z \, V/m$. i) Determine at what frequency the conduction and displacement currents are equal. ii) Calculate instantaneous displacement current density at that frequency.	7 Marks	L3	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	List the different parts of DC generator and explain it with neat diagrams.	7 Marks	L2	CO1	PO1
	b)	A shunt generator delivers 196 A at a terminal potential difference of 245 V. The armature resistance and shunt field resistance are 0.03 Ω and 50 Ω respectively. The iron and friction losses equal to 950 W. Find i) EMF generated ii) Copper losses.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Mention the different technique of excitation for DC generators and explain it with neat diagrams and necessary equations.	7 Marks	L2	CO1	PO5
	b)	A shunt generator has a full load current of 198 A at 220 V. The stray losses are 720 W and the shunt field coil resistance is 55 Ω. If it has a full load efficiency of 88%, find the armature resistance. Also, find the load current corresponding to maximum efficiency.	7 Marks	L3	CO1	PO7

UNIT-II

3.	a)	With the help of neat diagram, explain the concept of commutation.	7 Marks	L2	CO2	PO1
	b)	A 4-pole wave-wound motor armature has 880 conductors and delivers 120 A. The brushes have been displaced through 3 angular degrees from the geometrical axis. Calculate i) demagnetizing amp-turns/pole ii) cross – magnetizing amp-turns/pole iii) the additional field current for neutralizing the demagnetization of the field winding has 1100 turns/pole.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Explain the concepts armature reaction with neat and relevant diagrams.	7 Marks	L2	CO2	PO1
	b)	A shunt generator gave the following open-circuit characteristic:	7 Marks	L3	CO2	PO4

Field current (A)	0.5	1.0	1.5	2.0	2.5	3.0	3.5
O.C. EMF (V)	54	106	151	185	210	230	245

The armature and field resistances are 0.1 Ω and 80 Ω respectively. Calculate i) the voltage to which the machine will excite when run as a shunt generator at same speed. ii) The volts lost due to armature reaction when 100 A are passing in the armature at a terminal voltage at 175 V.

UNIT-III

5.	a)	List out the applications of shunt, series and compound DC motor for industrial and domestic applications.	7 Marks	L1	CO3	PO6
	b)	A 4-pole, 240 V, wave connected shunt motor gives 1200 kW when running at 1000 RPM and drawing armature and field currents of 50 A and 1.0 A respectively. It has 540 conductors. Its resistance is 0.11 Ω. Assuming a drop of 1 volt per brush, find i) total torque ii) efficiency.	7 Marks	L3	CO3	PO2
		(OR)				
6.	a)	With a neat diagram, explain the working of four point starter.	7 Marks	L2	CO3	PO1
	b)	A 220 V shunt motor has an armature resistance of 0.5 Ω. The armature current at starting must not exceed 40 A. If the number of sections is 6, design the values of the resistor steps to be used in this starter.	7 Marks	L3	CO3	PO3

UNIT-IV

7.	a)	Classify the transformers based on their constructional features and explain it with relevant diagrams.	7 Marks	L2	CO4	PO1
	b)	A 25 kVA, single-phase transformer has 255 turns on the primary and 45 turns on the secondary winding. The primary is connected to 1500 V, 50 Hz mains. Calculate i) primary and secondary currents on full-load, ii) secondary EMF, iii) maximum flux in the core.	7 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Discuss the concept of auto transformer and the conversion process of 2 winding transformer into auto transformer with neat pictorial representation.	7 Marks	L2	CO4	PO5
	b)	A 5 kVA, 110/110 V, single phase, 50 Hz transformer has a full load efficiency of 95% and an iron loss of 55 W. The transformer is now connected as an auto transformer to a 220 V supply. If it delivers a 5 kW load at unity power factor to a 110 V circuit, calculate the efficiency of the operation and the current drawn by the high voltage side.	7 Marks	L3	CO4	PO4

UNIT-V

9.	a)	Describe the construction and star-star connection of three phase transformer with required diagrams.	7 Marks	L2	CO4	PO1
	b)	A 120 kVA, 6000/400 V, Y/Y, 3-phase, 50 Hz transformer has an iron loss of 1600W. The maximum efficiency occurs at ¾ full load. Find the efficiencies of the transformer at i) full load and 0.8 power factor ii) half-load and unity power factor.	7 Marks	L3	CO4	PO2
		(OR)				
10.	a)	Describe the process of converting the three phase transformer to two phase transformer with suitable diagrams.	7 Marks	L2	CO4	PO5
	b)	Two T-connected transformers are used to supply a 440 V, 33 kVA balanced load from a balanced 3 phase supply of 3300 V. calculate i) voltage and current rating of each coil ii) kVA rating of the main and teaser transformer.	7 Marks	L3	CO4	PO2

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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

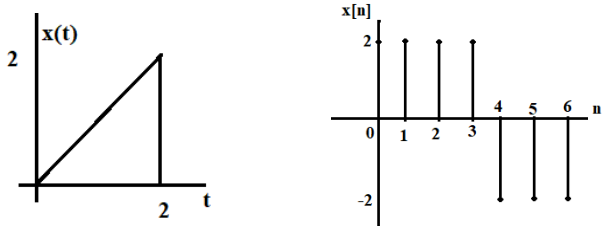
SIGNALS AND NETWORKS

[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)	State the properties of impulse signal and compute the following integrals: i) $\int_{-\alpha}^{\alpha} e^{-at2}\,\delta(t-5)\,dt$ ii) $\sum_{n=0}^{\alpha} \delta[n+1]4^n$.	7 Marks	L3	CO1	PO2
	b)	Sketch the odd and even components of the following signals shown in figure: 	7 Marks	L3	CO1	PO2

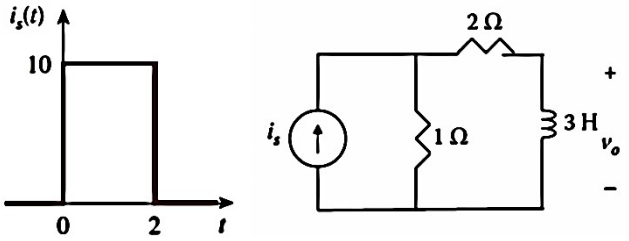
(OR)

2.	a)	Investigate whether the signal $x(t) = Ae^{-at}u(t)$ is energy signal or power signal.	7 Marks	L3	CO1	PO2
	b)	Determine whether the system $y[n] = 2^n u[n+3]$ is i) Memoryless ii) Stable iii) Causal s iv) Time variant.	7 Marks	L3	CO1	PO2

UNIT-II

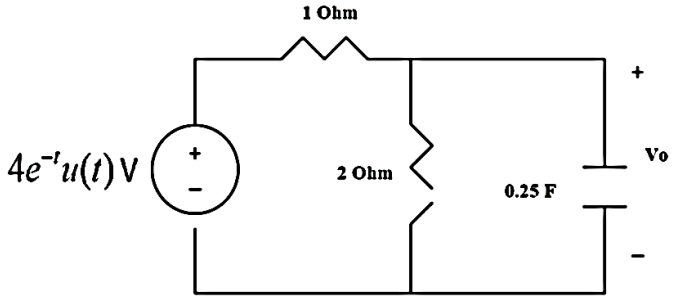
3.	a)	Obtain $f(t)$ for the following transform $F(w) = \frac{(jw+3)}{(jw+1)(jw+2)}$.	7 Marks	L3	CO2	PO5
	b)	Find the energy dissipated by 1 Ohm resistor with $i(t) = 10e^{-2\|t\|}\ A$ in the time and frequency domains.	7 Marks	L3	CO2	PO2

(OR)

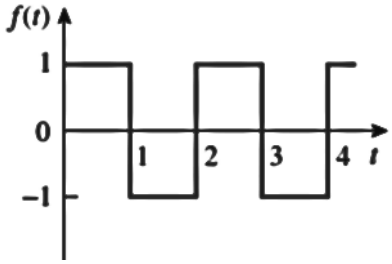
4.	a)	Find the inverse Fourier transforms of the following function: $F(w) = \frac{100}{jw(jw+10)}$.	6 Marks	L3	CO2	PO5
	b)	If the periodic current waveform in figure is applied to the circuit shown in figure, find $v_o(t)$ using Fourier transform. 	8 Marks	L4	CO2	PO5

UNIT-III

5.	a)	Using Laplace transformation, find $v_o(t)$ in the circuit in figure.	7 Marks	L3	CO2	PO5



	b)	Determine the Laplace transforms of the periodic function.	7 Marks	L3	CO2	PO5



(OR)

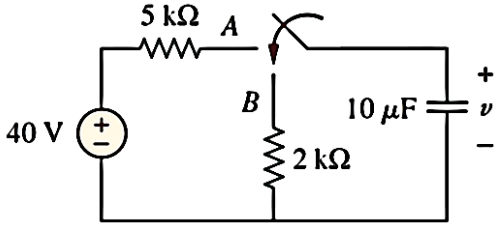
6.	a)	The transfer function of an LTI system is $H(z) = \frac{z-1}{(z-2)(z+3)}$ determine the impulse response.	7 Marks	L3	CO2	PO5
	b)	Determine the response of a LTI system governed by the difference equation $y[n]-0.5y[n-1]=x[n]$, for an input $x[n]=5^n u[n]$ and with initial condition $y[-1]=2$.	7 Marks	L3	CO2	PO5

UNIT-IV

7.	a)	What is the significance of time constant of R-C circuit? What are the different ways of defining time constant?	6 Marks	L2	CO3	PO1
	b)	A resistance R and 2 microfarad capacitor are connected in series across a 200V direct supply. Across the capacitor is a neon lamp that strikes at 120V. Calculate R to make the lamp strike, 5 Sec. after the switch has been closed. If R = 5 Meg Ohm, how long will it take the lamp to strike?	8 Marks	L4	CO3	PO2

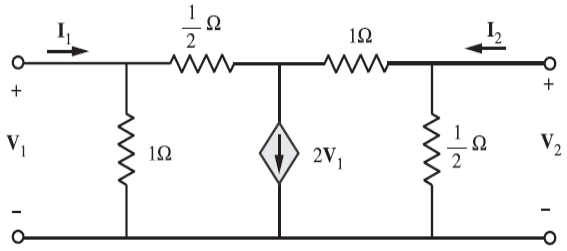
(OR)

8.	a)	Explain the transient properties of an inductor for DC and AC excitations.	6 Marks	L2	CO3	PO1
	b)	The switch in figure has been in position A for a long time. Assume the switch moves instantaneously from A to B at t=0. Find the voltage V for $t > 0$.	8 Marks	L3	CO3	PO2



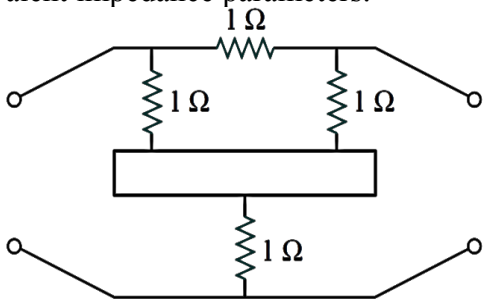
UNIT-V

9.	a)	The Z parameters of a two port network are $Z_{11}=6\Omega$, $Z_{22}=4\Omega$, $Z_{12}=Z_{21}=3\Omega$; Compute hybrid Parameters and write the describing equations.	7 Marks	L3	CO4	PO2
	b)	Find the y parameters for the two-port network shown in Figure and invistigate whether the netwok is symmetrical and reciprocal.	7 Marks	L4	CO4	PO4



(OR)

10.	a)	Express ABCD parameters in terms of hybrid parameters for a generalized network.	6 Marks	L2	CO4	PO1
	b)	The circuit shows two two-ports networks connected in series. Find the equivalent impedance parameters.	8 Marks	L4	CO4	PO4



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II B.Tech I Semester (SVEC-20) Regular Examinations, May – 2025

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)	Define Path function and point function.	7 Marks	L1	CO1	PO1
	b)	Define the following: i) Equilibrium and its types. ii) Property, state, path and process of a system. iii) Zeroth law of thermodynamics. iv) Various thermodynamic processes.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Define first law of thermodynamics and its limitations.	7 Marks	L2	CO1	PO1
	b)	To a closed system 150 kJ of work is supplied. If the initial volume is 0.6 m^3 and pressure of the system changes as p=8–4V, where p is in bar and V is in m^3, determine the final volume and pressure of the system.	7 Marks	L3	CO1	PO1 PO2

UNIT-II

3.	a)	Define COP and Prove that COP of heat pump is 1+COP of refrigeration based on second law of thermodynamics.	7 Marks	L1	CO1	PO1 PO2
	b)	A reversible heat engine operating between reservoirs at 900K and 300K drives a reversible refrigerator operating between reservoirs at 300K and 250K. The heat engine receives 1800Kj heat from 900K reservoir. The net output from the combined engine refrigerator is 360Kj. Find the heat transferred to the refrigerator and the net heat rejected to the reservoir at 300K.	7 Marks	L3	CO1	PO1 PO2 PO3
		(OR)				
4.	a)	Discuss the concept of principle of entropy increases.	7 Marks	L2	CO1	PO1
	b)	Air expands through a turbine from 50 kPa, 520^{O}C to 10 kPa,. 30^{O}C. During expansion 10KJ of heat is lost to the surroundings which is at 98 kPa, 20^{O}C. neglecting KE and PE changes determine per kg of air i) the decrease in availability ii) the maximum work iii) the irreversibility.	7 Marks	L3	CO1	PO1 PO2

UNIT-III

5.	a)	Explain the P-V and T-S diagram with neat sketch for pure substance and define dryness fraction.	6 Marks	L2	CO2	PO1
	b)	Steam at 0.8 MPa, 250^{0}C and flowing at a rate of 1 kg/s passes into a pipe carrying wet steam at 0.8 MPa, 0.95 dry. After adiabatic mixing the flow is 2.3 kg/s. Determine the condition of steam after mixing. The mixture is now expanded in a frictionless nozzle isentropically to a pressure of 0.4 MPa. Determine the velocity of the steam leaving the nozzle. Neglect the velocity of steam in the pipeling.	8 Marks	L3	CO2	PO1 PO2

(OR)

6.	a)	For a perfect gas, show that the difference in specific heats is cp– cv = R/ T.	7 Marks	L2	CO2	PO1
	b)	Explain the Vander waals equation of state.	7 Marks	L2	CO2	PO1

UNIT-IV

7.		A cylindrical tank containing 4.0 kg of carbon monoxide gas at -50^{0}C has an inner diameter of 0.2 m and a length of 1 m. Determine the pressure, in bar, exerted by the gas using i) the generalized compressibility chart, ii) the ideal gas equation of state, iii) the van der Waals equation of state.	14 Marks	L2	CO3	PO1 PO2 PO10

(OR)

8.	a)	Write the following: i) Mole fraction and Mass fraction. ii) Gravimetric Analysis and Volumetric Analysis.	7 Marks	L2	CO3	PO1
	b)	A vessel having a volume of 0.6 m^3 contains 3.0 kg of liquid water and water vapour mixture in equilibrium at a pressure of 0.5 Mpa. Calculate : i) Mass and volume of liquid ; ii) Mass and volume of vapour.	7 Marks	L3	CO3	PO1 PO2

UNIT-V

9.		An engine with 200 mm cylinder diameter and 300 mm stroke works on theoretical Diesel cycle. The initial pressure and temperature of air used are 1 bar and 27°C. The cut-off is 8% of the stroke. Determine : i) Pressures and temperatures at all salient points. ii) Theoretical air standard efficiency. iii) Mean effective pressure. iv) Power of the engine if the working cycles per minute are 380. Assume that compression ratio is 15 and working fluid is air. Consider all conditions to be ideal.	14 Marks	L3	CO4	PO1 PO2 PO6

(OR)

10.		An SI engine operating on Otto cycle has its inlet parameters as 323 K and 1 bar, while it develops a maximum pressure of 25 bar. Assuming Bore as 250 mm, Stroke as 375 mm and clearance volume as 0.00263 m^3 , determine i) air standard efficiency and ii) mean effective pressure of the cycle.	14 Marks	L3	CO4	PO1 PO2 PO10



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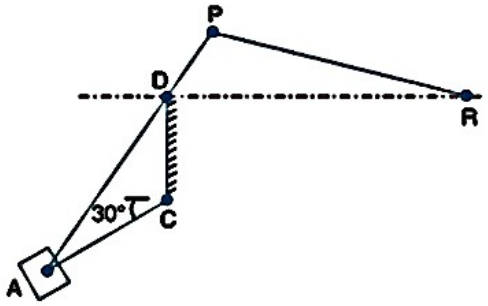
KINEMATICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	What is known as kinematic inversion? Sketch and explain the elliptical trammel and scotch yoke inversions.	14 Marks	L2	CO1	PO1 PO2
	(OR)				
2.	In a Whitworth quick return motion mechanism, as shown in figure below, the distance between the fixed centers is 50 mm and the length of the driving crank is 75 mm. The length of the slotted lever is150 mm and the length of the connecting rod is 135 mm. Find the ratio of the time of cutting stroke to the time of return stroke and also the effective stroke. 	14 Marks	L3	CO1	PO1 PO2 PO3

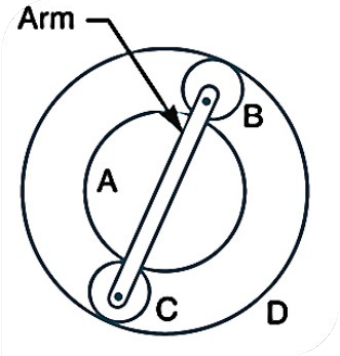
UNIT-II

3.	Give a neat sketch of the Modified Scott-Russel mechanism and Grasshopper mechanism.	14 Marks	L3	CO2	PO1 PO2
	(OR)				
4.	The driving shaft of a Hooke's joint runs at a uniform speed of 240 r.p.m and the angle α between the shafts is 20°. The driven shaft with attached masses has a mass of 55 kg at a radius of gyration of150 mm. i) If a steady torque of 200 N-m resists rotation of the driven shaft, find the torque required at the driving shaft, when $\theta = 45°$. ii) At what value of 'α' will the total fluctuation of speed of the driven shaft be limited to 24 r.p.m?	14 Marks	L3	CO3	PO1 PO2 PO3

UNIT-III

5.	An epicyclic train of gears is arranged as shown in Fig. How many revolutions does the arm, to which the pinions B and C are attached, make : i) When A makes one revolution clockwise and D makes half are revolution anticlockwise, and.	14 Marks	L4	CO4	PO1 PO2 PO3

ii) When A makes one revolution clockwise and D is stationary? The number of teeth on the gears A and D are 40 and 90respectively.



(OR)

6.	Two parallel shafts are connected with the help of two gears one gear on each shaft. The number of teeth on one gear is 40 and speed of the shaft is 500 r.p.m. if the speed ratio is 2.5 and circular pitch of the gears is 24 mm, and then find: i) Number of teeth and speed of other shaft. ii) Centre distance between the two shafts.	14 Marks	L4	CO4	PO1 PO2 PO3

UNIT-IV

7.	From the following data, draw the profile of a cam in which the follower moves with simple harmonic motion during ascent while it moves with uniformly accelerated and decelerated motion during descent: Least radius of cam = 60 mm; angle of ascent =72º; angle of dwell between ascent and descent = 42º; angle of descent = 900; the lift of the follower = 60 mm; diameter of roller = 40 mm; distance between line of action of follower and axis of cam = 30 mm. If the cam rotates at 540 r.p.m. anti-clockwise, find the maximum velocity and acceleration of the follower during ascent.	14 Marks	L4	CO5	PO1 PO2 PO3 PO10

(OR)

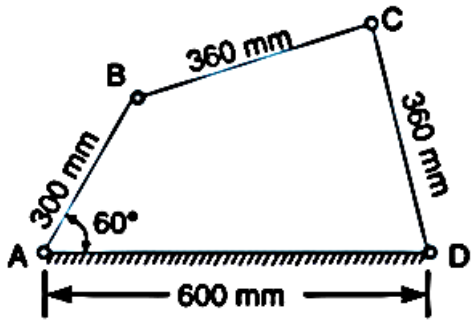
8.	A cam rotating clockwise at a uniform speed of 200 r.p.m. is required to move an offset roller follower with a uniform and equal acceleration and retardation on both the outward and return strokes. The angle of ascent, the angle of dwell (between ascent and descent) and the angle of descent is 120°, 60° and 90° respectively. The follower dwells for the rest of cam rotation. The least radius of the cam is 50 mm, the lift of the follower is 25 mm and the diameter of the roller is 10mm. The line of stroke of the follower is offset by 20 mm from the axis of the cam. Draw the cam profile and find the maximum velocity and acceleration of the follower during the outstroke.	14 Marks	L3	CO5	PO1 PO2 PO3 PO10

UNIT-V

9.	In a pin jointed four bar mechanism ABCD, the lengths of various links are as follows: AB=25mm, BC=87.5mm, CD=50 mm and AD = 80 mm. The link AD is fixed and the angle BAD = 135°. If the velocity of B is 1.8 m/s in the clock wise direction, find 1. Velocity and acceleration of the midpoint of BC, and 2. Angular velocity and angular acceleration of link CB and CD.	14 Marks	L4	CO6	PO1 PO2 PO3 PO10

(OR)

10.	In a pin jointed four bar mechanism, as shown in figure below, AB = 300 mm, BC = CD = 360 mm and AD = 600 mm. The angle BAD = 60°. The crank AB rotates uniformly at 100 r.p.m. Locate all the instantaneous centers and find the angular velocity of the link BC.	14 Marks	L4	CO6	PO1 PO2 PO3 PO10



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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Illuminate various desirable properties of moulding sand for casting. Explain briefly each one.	7 Marks	L2	CO1	PO1
	b)	Explain different elements in a typical gating system.	7 Marks	L2	CO1	PO1 PO2 PO3
		(OR)				
2.	a)	Explain in detail the various types of pattern materials. Also mention their advantages and disadvantages.	7 Marks	L2	CO1	PO1
	b)	Elucidate any two types of patterns in detail with neat sketches.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Write the merits, demerits and applications of the following castings. i) Investment casting. ii) Full mould casting. iii) Continuous casting.	7 Marks	L1	CO2	PO1
	b)	With the help of suitable diagrams explain the shell moulding casting process.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Briefly explain any three methods to test the castings.	7 Marks	L2	CO2	PO1
	b)	Name any three metal-mould castings. Briefly explain the advantages, disadvantages and applications of any one with neat sketch.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Draw and explain various types of rolling mills.	7 Marks	L2	CO3	PO1
	b)	Explain the principle of operation of drop forging and press forging processes.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Compare the main characteristics of the hot working and cold working.	7 Marks	L2	CO3	PO1
	b)	Draw and explain the construction and working of magnetic pulse forming.	7 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	What are the qualities of flame is used for welding? How can you distinguish three types of welding flames and for what applications these are used?	7 Marks	L2	CO4	PO1
	b)	Briefly explain the principle of operation, advantages, limitations and applications of Laser beam welding.	7 Marks	L2	CO4	PO1

(OR)

8.	a)	Explain the process of thermit welding. Where would you recommend it?	7 Marks	L2	CO4	PO1
	b)	Briefly explain the common welding defects; causes and remedies for them.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Compare the construction and working principle of injection molding process and blow moulding	7 Marks	L2	CO5	PO1
	b)	Compare the thermo and thermosetting plastics.	7 Marks	L2	CO5	PO1

(OR)

10.	a)	With a neat sketch explain the compression moulding process by its merits and demerits.	7 Marks	L2	CO5	PO1
	b)	Write short notes on the following: i) Calendaring ii) Casting of plastics	7 Marks	L2	CO5	PO1



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II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Define the term factor of safety and its importance.	7 Marks	L1	CO1	PO1
	b)	An axial pull of 40 kN is applied on a steel bar of diameter 12 mm and length 2.5 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 x 10^5 N/mm^2.	7 Marks	L3	CO1	PO1 PO2
		(OR)				
2.		A rigid block of mass M is supported by three symmetrically spaced rods as shown in Fig 1. Each copper rod has an area of 900 mm^2; length of 160 mm; E = 120 GPa; and the allowable stress is 70 MPa. The steel rod has an area of 1200 mm^2; length of 240 mm; E = 200 GPa; and the allowable stress is 140 MPa. Determine the largest mass M which can be supported.	14 Marks	L3	CO1	PO1 PO2 PO3 PO4

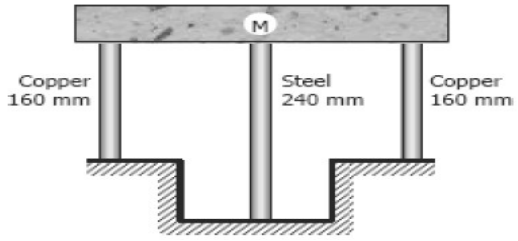


Fig. 1

UNIT-II

3.		Draw the shear force and bending moment diagram for the beam shown in Fig 2. Locate the points of contraflexure, if any. Also find the point of maximum bending moment.	14 Marks	L3	CO2	PO1 PO2 PO3

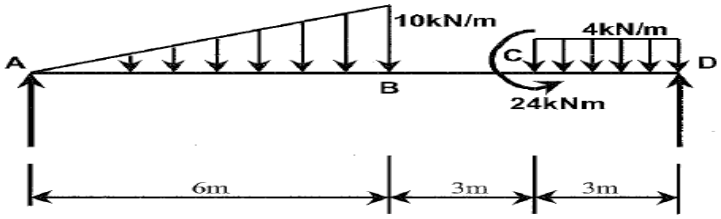


Fig.2

(OR)

4.	a)	Is the point of contra flexure and point of inflexion same? Justify.	7 Marks	L1	CO2	PO1
	b)	A beam ABC of 10 meters length is simply supported at A and B and has overhanging portion BC such that AB = 8 m and BC = 2 m. The beam carries uniformly distributed load of 2 kN/m over a length of 4 m from A, two concentrated loads of 4 kN and 2 kN at a distance of 6 m from A and at the free end C respectively. Draw bending moment and shear force diagrams for the beam mentioning all the salient points. Also locate its point of contra flexure.	7 Marks	L3	CO2	PO1 PO2 PO3

UNIT-III

5.	A solid shaft of mild steel 200 mm in diameter is to be replaced by hollow shaft of alloy steel for which the allowable shear stress is 22% greater. If the power to be transmitted is to be increased by 20% and the speed of rotation increased by 6%, determine the maximum internal diameter of the hollow shaft. The external diameter of the hollow shaft is to be 200 mm.	14 Marks	L3	CO2	PO1 PO2 PO3 PO4

(OR)

6.	Sketch the shear stress distribution for a homogeneous beam of i) Rectangular cross section ii) Symmetrical I-Section.	14 Marks	L2	CO2	PO1

UNIT-IV

7.	A shaft composed of segments AC, CD, and DB is fastened to rigid supports and loaded as shown in Fig. 7. For bronze, G = 35 GPa; aluminum, G = 28 GPa, and for steel, G = 83 GPa. Determine the maximum shearing stress developed in each segment.	14 Marks	L3	CO3	PO1 PO2 PO3

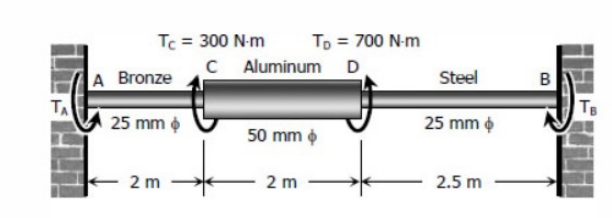


Fig. 7

(OR)

8.	Draw the Mohr's Circle of the stress element shown below Fig. 8. Determine the principle stresses and the maximum shear stresses.	14 Marks	L3	CO3	PO1 PO2 PO3

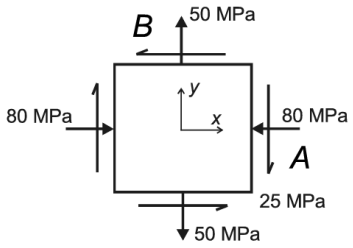


Fig. 8

UNIT-V

9.	Derive the relations for slope and deflection of a simply supported beam of span 'L' subjected to the following loads. i) When a concentrated load 'W' acts at mid of span. ii) When a UDL of intensity w per unit run act over entire span	14 Marks	L2	CO4	PO1 PO2

(OR)

10.	a)	Write a short note on: i) Slope ii) Deflection	7 Marks	L2	CO4	PO1
	b)	Derive the expression for cantilever beam subjected to point load at the free end.	7 Marks	L2	CO4	PO1

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Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ELECTRONIC DEVICES AND CIRCUITS

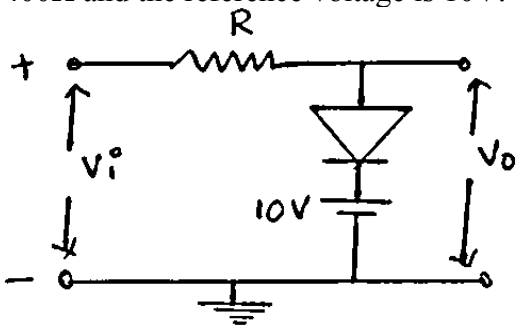
[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Summarize various clipper circuits with neat sketches.	7 Marks	L2	CO1	PO1
	b)	Sketch the output waveform for the circuit shown below with following specifications: A.C input Vi= 20 sinωt, Assume the ideal Si diode, Series resistance is 400Ω and the reference voltage is 10V.	7 Marks	L3	CO1	PO2



(OR)

2.	a)	Determine the operating Point of potential divider Biasing circuit with $R_2 = R_c = 5k\Omega$, $R_E = 1\Omega$ and $R_1 = 40k\Omega$	7 Marks	L2	CO1	PO2
	b)	Distinguish ***dc*** and ***ac*** load lines with suitable diagrams.	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	Define biasing. Draw the fixed bias circuit and obtain the expression for the stability factor.	7 Marks	L1	CO2	PO2
	b)	Draw the emitter feedback bias circuit and obtain the expression for the stability factor.	7 Marks	L2	CO2	PO1

(OR)

4.	a)	Design a base bias circuit with n-p-n transistor when the operating point is at I_C=1mA, V_{CE}=24V, β=60, $V_{CE(Sat)}$=0V, $I_{C(cut\ off)}$=0mA and V_{CC}=36V.	7 Marks	L4	CO2	PO3
	b)	The base current in a transistor is 20μA when the emitter current is 6.4mA, what are the values of α_{dc} and β_{dc} .Also determine the collector current.	7 Marks	L2	CO2	PO2

UNIT-III

5.		Develop small signal equivalent of CB amplifier using accurate h-parameter model. Derive expressions for A_V, A_I, R_i and R_o	14 Marks	L4	CO3	PO3

(OR)

6.	a)	Analyze CB amplifier with exact and approximate analysis.	7 Marks	L2	CO3	PO2
	b)	The h-parameters of a transistor used in a CE circuit are h_{ie} = 1.0 K h_{re}= 10×10−4, h_{fe} = 50, h_{oe} = 100 K. The load resistance for the transistor is 1 K in the collector circuit. Determine R_i, R_o, A_V & A_i in the amplifier stage (Assume Rs = 1000).	7 Marks	L3	CO3	PO4

UNIT-IV

7.		Explain the construction & operation of a JFET and mark the regions of operation on the characteristics with the help of neat sketches.	14 Marks	L1	CO4	PO1

(OR)

8.	a)	Determine I_D , g_m and G_{m0} of P-channel FET with $\|I_{DS}\|$=-12mA, | Vp|=5V, V_{GS} is 1.6 V.	7 Marks	L2	CO4	PO2
	b)	Explain the significance of threshold voltage of a MOSFET. Discuss the methods to reduce threshold voltage, V_T.	7 Marks	L2	CO4	PO4

UNIT-V

9.	a)	Explain the characteristics of tunnel diode with the help of necessary energy band diagrams?	7 Marks	L1	CO5	PO1
	b)	Sketch the static characteristics and firing characteristics of SCR.	7 Marks	L2	CO5	PO2

(OR)

10	a)	Explain the various modes of operation of a TRIAC.	7 Marks	L1	CO5	PO1
.	b)	Explain the operation of the SCR using two transistor analogy. List out its applications.	7 Marks	L2	CO5	PO6



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

COMPUTER ORGANIZATION

[Computer Science and Engineering, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	The 8-bit registers AR, BR, CR and DR initially have the following values: AR=11110010 BR=11111111 CR=10111001 DR=11101010 Determine the 8-bit values in each register after the execution of the following sequence of micro operations. AR ← AR + BR CR ← CR ^ DR, BR ← BR + 1 AR ← AR – CR	7 Marks	L3	CO1	PO2
	b)	Design a 4-bit binary decrementer circuit using Half-Adders.	7 Marks	L4	CO3	PO3
		(OR)				
2.	a)	Design a combinational circuit for performing 4-bit shift operations on binary numbers.	7 Marks	L4	CO3	PO3
	b)	Perform the following number base conversions. i) $(27)_{10}$ = (_____)$_2$ ii) $(12)_3$ = (_____)$_{10}$ iii) $(17)_8$ = (_____)$_{10}$	7 Marks	L3	CO1	PO2

UNIT-II

3.	a)	What is the purpose of timing and control in a digital computer? Explain with an example timing signals diagram.	7 Marks	L3	CO2	PO1
	b)	Explain about the direct and indirect addressing modes with examples.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	A computer uses a memory unit with 256K words of 32 bits each. A binary instruction code is stored in one word of memory. The instruction has four fields: opcode field, register address field, memory address field, addressing mode field. There are 64 registers and 4 addressing modes. Draw the instruction word format and indicate the number of bits in each field.	7 Marks	L3	CO2	PO2
	b)	Draw and describe the Input–Output configuration.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Write about hardwired control unit in detail.	7 Marks	L3	CO2	PO1
	b)	Explain the operation of a DMA controller with a neat block diagram.	7 Marks	L3	CO2	PO1
		(OR)				

6.	a)	Explain Daisy-chaining priority Interrupt with the help of a neat diagram.	7 Marks	L3	CO2	PO1
	b)	Discuss with the help of a neat diagram, the physical and logical architecture of PCI express (PCIe).	7 Marks	L3	CO4	PO1

UNIT-IV

7.	a)	Design a 2M x 2 memory system using 1M x 1 RAM chips.	7 Marks	L4	CO3	PO3
	b)	Explain associative cache mapping technique with a neat sketch.	7 Marks	L3	CO2	PO1
		(OR)				
8.	a)	Distinguish between synchronous and asynchronous DRAM.	7 Marks	L3	CO2	PO2
	b)	Consider a machine with a byte addressable main memory of 216 bytes and block size of 8 bytes. Assume that a direct mapped cache consisting of 32 lines is used with this machine. How is a 16-bit memory address divided into tag, line number, and byte number?	7 Marks	L3	CO2	PO2

UNIT-V

9.	a)	Compare the multiprocessor interconnection structures - Multiport Memory and Crossbar Switch.	7 Marks	L3	CO2	PO2
	b)	Compare serial and parallel bus arbitration procedures.	7 Marks	L3	CO2	PO1
		(OR)				
10.	a)	Discuss in detail some of the applications that benefit from the multicore organization.	7 Marks	L2	CO4	PO1
	b)	Draw and analyze 2 X 8 binary tree switching network using 2 X 2 switches.	7 Marks	L3	CO2	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

DATA STRUCTURES

[Computer Science and Engineering, Information Technology, 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 an overview and importance of Algorithms.	7 Marks	L1	CO1	PO1
	b)	List the importance of data structures with various types. What are the real time applications of data structures?	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Define sorted linked list and write a program for deleting an element from sorted linked list.	7 Marks	L3	CO1	PO2
	b)	In what situation a double ended linked list can be used instead of single ended list. Justify your answer.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Define a Stack. Explain how stack is applied for evaluating an arithmetic expression.	7 Marks	L3	CO1	PO2
	b)	List the Applications and efficiency of Queues**.** Brief on Deque.	7 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Write the steps in detail to convert infix to postfix using stack for the following expression: p*q+ (r-s/t).	7 Marks	L3	CO1	PO2
	b)	Briefly describe about Circular Queue with routines.	7 Marks	L3	CO1	PO1
		UNIT-III				
5.	a)	If the depth of the binary tree is k, the maximum number of nodes in the binary tree is 2k-1.Prove.	7 Marks	L4	CO2	PO2
	b)	Recommend the result of inserting 3, 1, 4, 6, 9, 2, 5, 7 into an initially empty binary search tree.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Consider the following list of numbers14, 15, 4, 9, 7, 18, 3, 5, 16, 4, 20, 17, 9,1 4, 5. Using these numbers construct an AVL Tree.	7 Marks	L3	CO2	PO2
	b)	Explain the following operations on a Red Black Tree with suitable method. i) Insert a Node ii) Delete a Node.	7 Marks	L2	CO2	PO1
		UNIT-IV				
7.	a)	Compare working of binary search and linear search technique with example.	7 Marks	L2	CO3	PO2
	b)	Interpret a routine to sort a set of 'N' numbers using bubble sort and demonstrate the sorting steps for the following set of numbers: 88, 11, 22, 44, 66, 99, 32, 67, 54, 10.	7 Marks	L3	CO3	PO2
		(OR)				
8.	a)	Give a procedure for Quick sort and analyze its efficiency.	7 Marks	L4	CO3	PO2
	b)	Mention two different Sorting methods and Explain about each method in a detailed Manner.	7 Marks	L2	CO3	PO2

UNIT-V

9.	a)	Show the algorithm for finding connected components of an undirected graph using DFS, and analyze the efficiency of an algorithm.	7 Marks	L4	CO2	PO3
	b)	What data structure used in telecommunication network routing and optimization, workload assignment, matching, supply chain optimization and public transport planning?. Explain it in detail.	7 Marks	L4	CO4	PO2
		(OR)				
10.	a)	Define Hash function. Write routines to find and insert an element in separate chaining.	7 Marks	L3	CO2	PO1
	b)	Analyze Hashing efficiency. Discuss in brief: Random and Non-random keys.	7 Marks	L2	CO2	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Sketch the electromagnetic spectrum for Wireless Transmission.	7 Marks	L1	CO1	PO1
	b)	Distinguish between Radio Wave Transmission and Microwave Transmission.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Illustrate some of the factors that determine whether a communication system is a LAN or WAN?	7 Marks	L1	CO1	PO1
	b)	Explain how are OSI and ISO related to each other?	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Suppose we want to transmit the "message 1011 0010 0111 and protect it from errors using the CRC polynomial $x^4 + x^2 + 1$. Use polynomial long division to determine the message that should be transmitted. Suppose the leftmost bit of the message is inverted due to noise on the transmission link. What is the result of the 'receiver's CRC calculation? How does the receiver know that an error has occurred?	7 Marks	L2	CO3	PO2
	b)	Differentiate classical ALOHA and slotted ALOHA.	7 Marks	L2	CO1	PO2
		(OR)				
4.	a)	Briefly describe the differences between store-and-forward and cut-through switches.	7 Marks	L2	CO1	PO1
	b)	Discuss the principle of stop and wait flow control algorithm. Draw time line diagrams and explain how loss of a frame and loss of an ACK are handled. What is the effect of delay-bandwidth product on link utilization?	7 Marks	L3	CO3	PO2
		UNIT-III				
5.	a)	Apply distance vector routing algorithm to compute shortest path routing.	7 Marks	L3	CO2	PO2
	b)	Write short notes on OSPF and BGP protocols.	7 Marks	L1	CO1	PO1
		(OR)				
6.	a)	Suppose all of the interfaces in each of three subnets are required to have the prefix 223.1.17/24. Also suppose that Subnet 1 is required to support at least 60 interfaces, Subnet 2 is to support at least 90 interfaces, and Subnet 3 is to support at least 12 interfaces. Provide three network addresses that satisfy these constraints.	7 Marks	L3	CO2	PO2
	b)	Compare IPV4 and IPV6 protocols.	7 Marks	L3	CO5	PO8
		UNIT-IV				
7.	a)	Elaborate TCP Congestion Control mechanisms. Differentiate these mechanisms.	7 Marks	L2	CO3	PO2
	b)	Explain why the client issues an active open for the control connection and a passive open for the data connection.	7 Marks	L2	CO3	PO2

(OR)

8.	a)	Sketch the state transition diagram of TCP connection establishment, data transfer and termination and explain it.	7 Marks	L2	CO3	PO2
	b)	Summarize the functions of Real-time Transport control protocol.	7 Marks	L1	CO1	PO1

UNIT-V

9.	a)	Briefly explain the Domain Name Service protocol with an example.	7 Marks	L4	CO4	PO6
	b)	When user clicks a hyperlink, what are the steps that occur between the user's click and the page being displayed?	7 Marks	L1	CO1	PO2

(OR)

10.	a)	Tabulate the various HTTP request operations.	7 Marks	L2	CO4	PO6
	b)	Discuss the working of email in detail with an example.	7 Marks	L1	CO4	PO6



CODE No.: 20BT4HS17 SVEC-20

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

LIFE SKILLS

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	What are the features of attitude. Explain the important features in detail.	14 Marks	L1	CO1	PO1 PO2
	(OR)				
2.	What are the methods/factors which plays important role in formulation of attitude, explain with examples.	14 Marks	L2	CO1	PO1 PO2
	UNIT-II				
3.	Explain the grid structure of SWOT analysis in detail? Give one example.	14 Marks	L1	CO2	PO1 PO2
	(OR)				
4.	Explain the methods to deal with different types of interpersonal relationship skills	14 Marks	L2	CO2	PO1 PO2
	UNIT-III				
5.	State and explain top Successful effective cross-cultural communication.	14 Marks	L2	CO3	PO1 PO2
	(OR)				
6.	What is the significance of communication? How it is help full in organizational and personal growth.	14 Marks	L2	CO3	PO1 PO2
	UNIT-IV				
7.	What is decision making? What are the significance and importance of the decision making, explain with details.	14 Marks	L2	CO4	PO1 PO2
	(OR)				
8.	List different methods involved in problem solving? Explain all methods with suitable examples.	14 Marks	L2	CO4	PO1 PO2
	UNIT-V				
9.	What are the differences between business presentation and speeches? Elaborate major points.	14 Marks	L1	CO5	PO1
	(OR)				
10.	How do you structure a business presentation? Prepare a sample business presentation with suitable structure.	14 Marks	L2	CO5	PO1

CODE No.: 20BT5HS01 SVEC-20

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ORGANIZATIONAL BEHAVIOR

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

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	Define organizational behavior. Explain the significance of organization behavior.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Explain the different levels and contributing displines of OB	14 Marks	L2	CO1	PO2
	UNIT-II				
3.	Experiment the reasons for individual differences.	14 Marks	L4	CO2	PO9
	(OR)				
4.	Define personality. Sketch the personality traits.	14 Marks	L3	CO2	PO1
	UNIT-III				
5.	Examine the process of perception.	14 Marks	L4	CO3	PO9
	(OR)				
6.	Describe the different styles of leadership.	14 Marks	L2	CO3	PO9
	UNIT-IV				
7.	Organize the qualities of a Successful Leader.	14 Marks	L4	CO4	PO2
	(OR)				
8.	Sketch out the different types of modern theories of leadership.	14 Marks	L3	CO4	PO12
	UNIT-V				
9.	Test the different types of organizational change.	14 Marks	L4	CO5	PO2
	(OR)				
10.	Interpret the organizational development techniques.	14 Marks	L3	CO5	PO1



CODE No.: 20BT5HS02 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Computer Science and Engineering (IoT), Computer Science and Engineering (Cyber Security), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	"Demand for diamonds is exceptional and violates the law of demand," Execute.	14 Marks	L3	CO1	PO1
	(OR)				
2.	Examine and suggest a suitable demand forecasting technique for a new and highly technical product being launched by a company.	14 Marks	L4	CO1	PO2

UNIT-II

3.	Explain the isoquants and isocosts.	14 Marks	L2	CO2	PO2
	(OR)				
4.	Demonstrate the following: i) opportunity costs ii) outlay costs iii) separable costs vs joint costs	14 Marks	L3	CO2	PO2

UNIT-III

5.	What is the pricing method? Explain the different types of pricing methods.	14 Marks	L2	CO2	PO2
	(OR)				
6.	Define monopoly. Explain the types of monopolies.	14 Marks	L2	CO3	PO10

UNIT-IV

7.	From the following transactions pass the necessary journal entries in the books of Meghana. 2021 Jan.1 Meghana commenced a business with Rs.5, 00, 000. Jan. 6 Goods sold to Varma for cash Rs. 98,500/-. Jan. 17 Bought goods by Suresh Rs. 85,700/-. Jan. 21 Commission receivedfromRamu Rs. 2,700/-. Jan. 31 Salaries paid through cheque Rs. 21, 800.	14 Marks	L4	CO4	PO11
	(OR)				
8.	Sketch a trial balance with neat proforma.	14 Marks	L2	CO4	PO2

UNIT-V

9. From the following Trail Balance of Shukla prepare trading and profit and loss a/c for the year ending 31st March, 2021 and The balance sheet on the date. 14 Marks L4 CO5 PO11

Particulars	Debit(Rs)	Credit(Rs)
Buildings	10,000	
Capital a/c		50,000
Purchases & Sales	10,000	30,000
Stock on 1-04-2001	5,000	
Debtors & Creditors	10,000	5,000
Drawings	4,000	
Sales returns & purchase Returns	2,000	500
Freight	2,500	
Office Salaries	8,000	
Wages	1,500	
Postage and Telegrams	1,000	
Machinery	15,000	
bills Receivable, Bills Payable	7,000	1,000
Advertisement	2,000	
Cash in hand	3,500	
Loose Tools	4,000	
Total	**86,500**	**86,500**

Adjustments:

i) Closing Stock was valued at Rs 5,000/-

ii) Depreciation Buildings by 10% and Loose Tools are revalued at Rs 3,500/-

iii) Interest on Capital at 10% and on Drawings at 5%

(OR)

10. The trial balance of a firm on 31.12.2019 is as follows. Prepare final accounts of this firm. 14 Marks L4 CO5 PO11

Particulars	Debit (Rs)	Credit (Rs)
Capital		1,00,000
Plant and Machinery	1,60,000	
Sales		304,000
Returns	2,000	1,500
Opening Stock	700	
Bank charges	150	
Sundry Debtors	80,000	
Sundry Creditors		41,600
Furniture	60,000	
Wages	20,000	
Salaries	13,600	
Carriage inwards	1,500	
Carriage outwards	2,400	
bad debts provision		1,050
rent, rates, taxes	20,000	
Advertisements	4,000	
cash in hand	1,800	
cash at bank	12,000	
Purchases	70,000	

Adjustments:

i) Closing stock Rs.20,000/-

ii) Depreciate plant 6% p.a

iii) Interest on capital to be allowed @ 5% p.a.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

CONTROL SYSTEMS

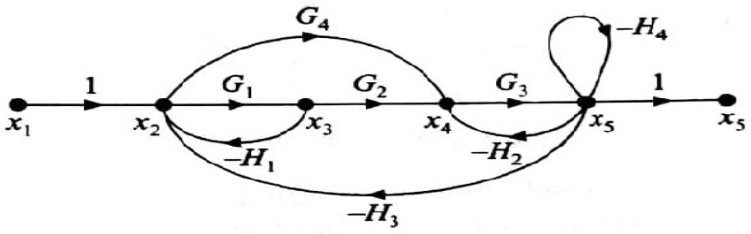
[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

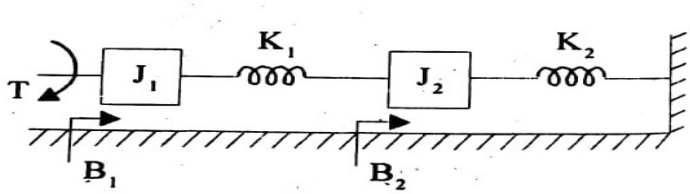
UNIT-I

1.	a)	Compare open loop and closed loop control systems.	6 Marks	L2	CO1	PO1
	b)	Determine the overall gain of the system whose signal flow graph is shown below by applying Mason's gain formula.	8 Marks	L3	CO1	PO5



(OR)

2.		For the given mechanical system, Obtain the differential equations governing the system and find Torque-voltage Torque-Current Analogy.	14 Marks	L3	CO1	PO2



UNIT-II

3.	a)	Derive the expression for the time response of a 2nd order over damped system with unit step as input.	7 Marks	L2	CO2	PO1
	b)	The open loop transfer function of a unity feedback control system is given by $G(S)=\frac{A}{S(1+TS)}$. By what factor the amplifier gain A should be multiplied so that the damping ratio is increased from 0.2 to 0.6.	7 Marks	L4	CO2	PO4

(OR)

4.	a)	Explain the effect of PID controller in improving the dynamic response of a second order system.	6 Marks	L2	CO2	PO7
	b)	A unity feedback system is characterized by an open loop transfer function $G(S)=\frac{K}{S(S+10)}$. Determine the gain k, so that the system will have a damping ratio of 0.5. For this value of K determine peak time, percentage peak over shoot and settling time.	8 Marks	L3	CO2	PO4

UNIT-III

5.	a)	Sketch the root locus of a unity feedback system whose open loop transfer function is $G(S)=\frac{K}{S(S+2)(S+4)}$.	8 Marks	L3	CO3	PO2
	b)	By means of Routh-Hurwitz stability criterion, determine the range of value of K for the system to be stable, whose characteristic equation is given by $S^3+3KS^2+(K+2)S+4=0$.	6 Marks	L3	CO3	PO5

(OR)

6.		Design a Lead compensator for the unity feedback system given $G(S)=\frac{K}{S(S+8)}$. to meet the following specifications: i) Percentage peak overshoot=9.5%, ii) Natural frequency of oscillation, ω_n=12 rad/sec iii) Velocity error constant $K_v \geq 10$	14 Marks	L4	CO4	PO3

UNIT-IV

7.	a)	What is a lag compensator? Obtain the transfer function of lag compensator and draw the pole-zero plot.	7 Marks	L4	CO4	PO1
	b)	Explain the procedure to design a lead compensator in frequency domain.	7 Marks	L4	CO4	PO3

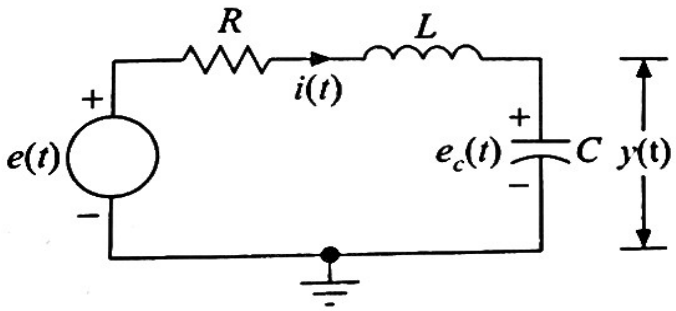
(OR)

8.		Draw the Bode plot for the system, whose open loop transfer function is $G(S)H(S)=\frac{10}{S(1+0.4S)(1+0.1S)}$ and obtain phase margin, gain margin, phase cross over frequency and gain cross over frequency.	14 Marks	L4	CO3	PO4

UNIT-V

9.	a)	Apply Kalman's test to assess the controllability and observability of the system described by: $\begin{bmatrix}\dot{x}_1\\ \dot{x}_2\end{bmatrix}=\begin{bmatrix}1 & 1\\ -3 & -2\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix}+\begin{bmatrix}0\\ 1\end{bmatrix}u \text{ and } y=[1\ 0]\begin{bmatrix}x_1\\ x_2\end{bmatrix}$	7 Marks	L3	CO5	PO5
	b)	Obtain the state model of the system described by the transfer function $\frac{Y(S)}{U(S)}=\frac{1}{S^3+6S^2+10S+5}$.	7 Marks	L3	CO5	PO2

(OR)

10.	a)	Obtain the state model of the given electrical network.  	8 Marks	L3	CO5	PO2
	b)	Compare the transfer function and state variable approach for analysis of control system.	6 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Draw the functional schematic of 555 timer for Monostable multivibrator and describe in detail.	7 Marks	L1	CO1	PO1
	b)	Analyze the principle of operation of IC 565 with the help of block diagram.	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Develop an instrumentation amplifier with the help of differential amplifer and derive the expression for a voltage gain.	9 Marks	L3	CO1	PO6
	b)	Analyze log amplifier how it produces an output that is proportional to the logarithm of the applied input using an op-amp and derive the expression for output voltage.	5 Marks	L3	CO1	PO8

UNIT-II

3.	a)	Derive the expressions for gain magnitude and phase angle and draw the frequency response for the First- order low pass Butterworth filter.	9 Marks	L2	CO2	PO2
	b)	Design a low pass filter at a cutoff frequency of 1KHz with a passband gain of 4.	5 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Suggest a DAC to overcome the deficiencies of weighted resistor type DAC. Explain the conversion procedure in R-2R ladder type DAC.	7 Marks	L2	CO3	PO1
	b)	A 12-bit D to A converter has a full-scale range of 15 volts. Its maximum differential linearity error is ± 1/2 LSB. i) What is the percentage resolution? ii) What are the minimum and maximum possible values of the increment in its output voltage?	7 Marks	L4	CO3	PO4

UNIT-III

5.	a)	Identify and summarize the types of delays that can be specified in a Procedural assignment statement using an example.	7 Marks	L1	CO4	PO1
	b)	Develop Verilog HDL code for a full adder design containing two half adders and one OR gate.	7 Marks	L3	CO4	PO2
		(OR)				
6.	a)	Assess the performance of case and if statements in Verilog HDL program.	7 Marks	L2	CO4	PO2
	b)	List out differences between Tasks and Functions in Verilog HDL.	7 Marks	L1	CO4	PO1

UNIT-IV

7.	a)	Draw the IC diagram of the 74x999 adder and explain its operation.	7 Marks	L1	CO5	PO1
	b)	Analyze the concept of a simple floating-point encoder and its Verilog code in any modelling style.	7 Marks	L2	CO5	PO2

(OR)

8.	a)	Explain about Comparator and analyze a 16-bit comparator using 74×85 IC's and Write its Verilog HDL program.	7 Marks	L3	CO5	PO2
	b)	Write a Verilog code for full subtractor using gate-level modelling.	7 Marks	L1	CO5	PO6

UNIT-V

9.	a)	Examine the process to convert a D- flip-flop to J-K flip-flop. Write dataflow style Verilog HDL program.	7 Marks	L3	CO5	PO2
	b)	Design a 4-bit binary synchronous counter using IC 74×74. Write Verilog HDL program for this logic. Using data flow style.	7 Marks	L3	CO5	PO3

(OR)

10.	a)	What is the difference between ring counter and Johnson counter.	7 Marks	L1	CO5	PO1
	b)	Analyze a self-correcting 4 bit, 4 state ring counter with a single circulating 0 using 74x194 IC.	7 Marks	L3	CO5	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

THEORY OF COMPUTATION

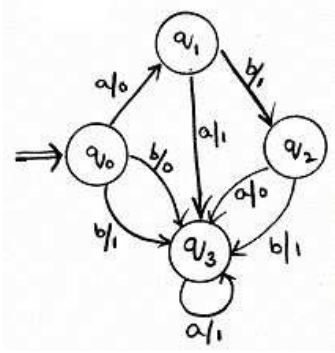
[Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

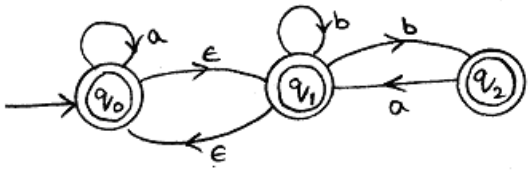
UNIT-I

1.	a)	Write short notes on Strings, Alphabets and Languages.	7 Marks	L2	CO1	PO1
	b)	Construct Moore machine for the following Melay machine.	7 Marks	L4	CO1	PO3



(OR)

2.	a)	Construct DFA equivalent to the following Finite automation.	7 Marks	L4	CO1	PO3



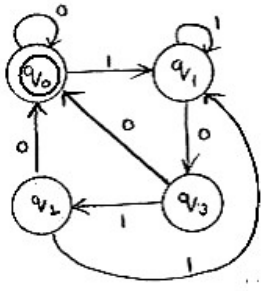
	b)	Draw the NFA accepting the set of all strings whose second symbol from last is 1.	7 Marks	L3	CO1	PO3

UNIT-II

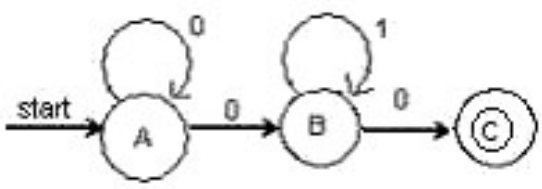
3.	a)	Construct a Finite Automata equivalence to the regular expression (0+1)*(00+11)(0+1)*.	7 Marks	L4	CO2	PO3
	b)	Write a regular expression to denote a language L which accepts all the strings which begin or end with either 00 or 11.	7 Marks	L3	CO6	PO4

(OR)

4.	a)	Write a regular expression for the language over the set Σ={a,b} in which total number of a's are divisible by 3.	7 Marks	L3	CO6	PO4
	b)	Consider the given FA and construct a regular expression that is accepted by it.	7 Marks	L3	CO1	PO3



UNIT-III

5.	a)	For the following Finite State automata construct an equivalent grammar. 	7 Marks	L4	CO4	PO5
	b)	Define the following with an example: i) Derivation ii) Parse tree	7 Marks	L2	CO4	PO1
		(OR)				
6.	a)	Simplify the following grammar S->aAa | bBb | BB A->C B->S | A C ->S | €	7 Marks	L3	CO3	PO2
	b)	Discuss in detail about ambiguous grammar and removing ambiguity from grammar.	7 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Check whether the language L=(0^n 1^n/ n>=1) is regular or not? Justify your answer.	7 Marks	L4	CO1	PO2
	b)	If L is a context free language then prove that there exists a PDA M such that L = N(M).	7 Marks	L4	CO4	PO2
		(OR)				
8.	a)	Obtain a PDA to accept the language $\{L = a^n b^{2n} \mid n \geq 1\}$.	7 Marks	L3	CO2	PO3
	b)	Prove that acceptance by empty stack and by final state is equivalent.	7 Marks	L4	CO3	PO2

UNIT-V

9.	a)	Design a Turing machine which recognizes palindrome over alphabet {0,1}.	7 Marks	L4	CO5	PO3
	b)	Write a short notes on any two techniques used in construction of Turing Machine.	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Explain Turing Machine as a computer of Integer functions with an example.	7 Marks	L2	CO5	PO1
	b)	Illustrate Turing machine model with an example.	7 Marks	L2	CO5	PO4

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CODE No.: 20BT43102 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ARTIFICIAL INTELLIGENCE

[Computer Science and Engineering, Computer Science and Design
Computer Science and Engineering (Data Science),
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)	Elaborate in detail about the findings of AI Index report.	7 Marks	L2	CO1	PO1
	b)	Discuss in detail about the risks encountered through AI in terms of Lethal Autonomous weapons and Surveillance.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Define a rational agent? Formulate a percept sequence for a house cleaning robot and explain in detail	7Marks	L1	CO1	PO2
	b)	Explain the purpose of PEAS concept in AI	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Explain in detail about how a search problem can be defined.	7 Marks	L1	CO2	PO1
	b)	Discuss as to how to solve standardized problems.	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	What is a search algorithm? Explain the working of BEST-FIRST-SEARCH algorithm.	7Marks	L2	CO2	PO2
	b)	Analyze the mechanism for Measuring problem-solving performance in AI.	7Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	Explain in detail about Hill-Climbing Search and Simulated Annealing.	7 Marks	L2	CO2	PO1
	b)	Examine the importance of Evolutionary Search algorithms.	7 Marks	L2	CO2	PO3
		(OR)				
6.	a)	Illustrate the purpose of minimax search in Optimal Decisions in Games	7 Marks	L2	CO2	PO1
	b)	Discuss in detail about Alpha-Beta Pruning.	7 Marks	L1	CO2	PO2
		UNIT-IV				
7.	a)	Elaborate in detail about the representation of knowledge in Uncertain domain.	7 Marks	L2	CO3	PO1
	b)	Examine the importance Conditional independence relations in Bayesian networks.	7 Marks	L2	CO3	PO3
		(OR)				
8.	a)	Explain in detail about Transition and sensor models.	7 Marks	L2	CO3	PO1
	b)	Discuss the working of hidden Markov model.	7 Marks	L1	CO3	PO1
		UNIT-V				
9.	a)	Elaborate on topic of Robotic Perception.	7 Marks	L2	CO4	PO1
	b)	Discuss in detail about Trust and transparency in AI.	7 Marks	L1	CO5	PO8
		(OR)				
10.	a)	Explain in detail about Planning and Control in Robots.	7 Marks	L2	CO4	PO1
	b)	"Almost any technology has the potential to cause harm in the wrong hands, but with AI and robotics, the hands might be	7 Marks	L2	CO5	PO7

operating on their own.” Explain the aspect involved in detail



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

REINFORCED CEMENT CONCRETE STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the various design methods used in reinforced concrete structures and also Describe briefly about under-reinforced, balanced and over-reinforced sections.	6 Marks	L2	CO1	PO1
	b)	A simply supported R.C. beam of rectangular cross section is required to resist a bending moment of 120 KN-m at Service State. Design and detail the suitable dimensions of the cross section and reinforcement for the balanced sections. Take the effective depth as twice the width. Assume M_{20} grade concrete and Fe 415 grade steel, adopt working stress method.	8 Marks	L6	CO1	PO1 PO2 PO3 PO4 PO5 PO6 PO8 P010
		(OR)				
2.	a)	State the assumptions made in limit state method of design.	4 Marks	L2	CO1	PO1
	b)	A R.C. beam of rectangular cross section is required to resist a bending moment of 1100 KN-m at Service State. Design and detail the suitable dimensions of the cross section and reinforcement for the balanced sections. Take width of beam is 230mm. Assume M_{20} grade concrete and Fe 415 grade steel, adopt working stress method.	10 Marks	L6	CO1	PO1 PO2 PO3 PO4 PO5 PO6 PO8 P010

UNIT-II

3.	Design a rectangular simply supported beam over a clear span of 6m, if the super imposed load is 12 kN/m and the support width is 230 mm. Use M_{20} grade concrete and Fe 415 steel. The beam is to have width of 300 mm. Design the shear reinforcement and check for deflection.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10
	(OR)				
4.	Design the reinforcements required for a rectangular beam section with following data Size of the beam = 300 x 600 mm Factored Shear force = 95 kN Factored bending moment = 115 kNm Factored twisting moment = 45 kNm M_{20} grade of concrete and Fe 415 grade of steel Sketch the reinforcements details.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

UNIT-III

5.	a)	Describe the difference in the design of one-way slab and two-way slabs.	7 Marks	L2	CO3	PO1
	b)	Design a reinforced concrete slab to carry a live load of 3 kN/m^2 on an effective span of 3.5 m. Use M_{20} grade concrete and Fe 415 steel reinforcement. Sketch the reinforcement details.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO8 P010
		(OR)				
6.		Design a two way slab for a room size 4 m x 5 m with discontinuous and simply supported edges on all four sides with corners prevented from lifting to supported a live load 4 kN/m^2. Adopt M_{20} grade concrete and Fe 415 HYSD bars.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

UNIT-IV

7.	a)	How the compression failures occur in RCC columns.	4 Marks	L2	CO4	PO1
	b)	Design a short axial column of effective length is 3 m to carry an axial load of 1600 kN. Use M_{25} concrete and Fe 415 grade of steel.	10 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10
		(OR)				
8.		A corner column 400 x 400 mm, is subjected to the factored loads P_u = 1300 kN, M_{ux} = 190 kN-m and M_{uy} = 110 kN-m. Design the reinforcement in the column, assuming M_{25} concrete and Fe 415 steel and effective cover of 60 mm. Assume it is a short column.	14 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

UNIT-V

9.		Design a suitable footing for a 500 mm x 500 mm square column transferring 100 kN axial load and a moment of 35 KN-m. The safe bearing capacity of soil is 190 kN/m^2. Use M20 concrete and Fe 415 steel. Adopt limit state design method.	14 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10
		(OR)				
10.		Design a dog-legged stair for a building in which the vertical distance between the floors is 3.6 m. The Stair Hall measures 2.4 m x 5 m (inner dimensions). The live load on the stair is 3000 N/m^2. Adopt M20 Grade concrete and Fe 415 grade of steel.	14 Marks	L6	CO5	PO1 PO2 PO3 PO4

PO5
PO6
PO8
PO10

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CODE No.: 20BT50103 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

TRANSPORTATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	As a highway engineer suggest and write the different engineering surveys conducted for selecting highway alignment.	7 Marks	L4	CO1	PO1 PO2
	b)	Design: i) Headlight sight distance and ii) Intermediate sight distance For a highway with a design speed of 80 KMPH. Assume suitable data required as per IRC recommendations.	7 Marks	L6	CO2	PO1 PO2 PO3 PO8
		(OR)				
2.	a)	Explain in detail about the salient features of Nagpur road plan and its classification of roads.	7 Marks	L4	CO1	PO1
	b)	Design the super elevation to be provided on a horizontal curve on a National Highway in plain terrain (given: Design speed =100 Kmph), if the curve has a radius of 310 m?	7 Marks	L6	CO2	PO1 PO2 PO3

UNIT-II

3.	a)	Design the total thickness of the flexible pavement for the following data using the design chart given in Fig.1: No. of CVPD when construction is completed = 2723 veh/day Annual growth rate of traffic = 5% Design life of the pavement = 10 years VDF = 2.4 LDF = 1.0 CBR value of the subgrade soil = 5%	7 Marks	L6	CO3	PO1 PO2 PO3 PO5 PO8

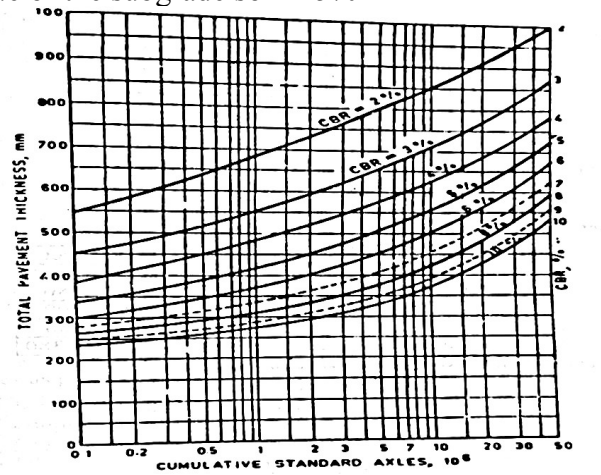
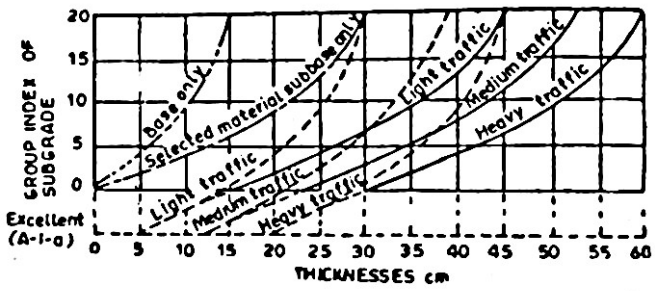


Fig.1

	b)	Write a short note on Aggregate impact test and its significance.	7 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Write a short note on Penetration test on bitumen and its significance.	7 Marks	L2	CO1	PO1 PO5
	b)	A soil subgrade soil sample has the following properties using the design chart provided in Fig.2 Soil passing through 0.075 mm sieve = 60%	7 Marks	L6	CO3	PO1 PO2 PO3

Liquid Limit = 55%
Plastic Limit = 45%
Design the pavement section by Group Index method for heavy traffic with over 450 CVPD.



(b)

— Combined thickness of surface, base and sub-base

--- Thickness of surface and base.

Fig.2

UNIT-III

5.	a)	What are the objects and scope of traffic engineering? List out latest trends in traffic engineering.	7 Marks	L4	CO4	PO1 PO2
	b)	Plot the relationship between speed, density and flow with neat sketches?	7 Marks	L4	CO4	PO1 PO2
		(OR)				
6.	a)	The average normal flow of traffic on cross roads A and B during design period are 400 PCU per hour and 250 PCU per hour respectively, the saturation flow values on these roads are estimated as 1250 PCU per hour and 1000 PCU per hour respectively. The all – red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with sketch by Webster's method.	7 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO10
	b)	Discuss briefly the various factors affecting the practical capacity of road.	7 Marks	L4	CO4	PO1 PO2

UNIT-IV

7.	a)	Compare different types of sleepers on various functional parameters.	7 Marks	L4	CO5	PO1 PO2
	b)	If an eight degree curve track diverges from a main curve of 5 degree in an opposite direction in the layout of a BG yard, calculate the super elevation and the speed on the branch line, if the maximum speed permitted on the main line is 45KMPH.	7 Marks	L4	CO5	PO1 PO2 PO4
		(OR)				
8.	a)	Discuss various types of rails joints.	7 Marks	L4	CO5	PO1
	b)	Find out the length of the curve for a BG curved track having 4deg curvature and a cant of 12cm. The maximum permissible speed on curve is 85 kmph.	7 Marks	L4	CO5	PO1 PO2 PO4

UNIT-V

9.	a)	Write a short note on Visual aids.	7 Marks	L2	CO6	PO1
	b)	Discuss runway orientation with neat sketches.	7 Marks	L4	CO6	PO1
		(OR)				
10.		Compare and contrast VASI and PAPI system with neat sketches.	14 Marks	L4	CO6	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Compare and contrast machines and manual labor.	4 Marks	L4	CO1	PO1
	b)	A Machine was purchased for Rs. 45,000/- on 1st November, 1970. The erection and installation works costs Rs. 7000/-, This was replaced by a new one on 31st December, 1995. If the scrap value was estimated as Rs. 15,000/-. What should be the rate of depreciation and depreciation fund on 15th June, 1985? Also find, if after 12years of running, some assemblies are replaced and replacement cost is Rs. 15,000/-, what will be the new rate of depreciation.	10 Marks	L4	CO1	PO1 PO2 PO5 PO10
		(OR)				
2.	a)	Enlist the considerable factors in selecting equipment.	7 Marks	L2	CO1	PO1
	b)	A machine was purchased for Rs.45000/- on 1st November, 1985, the erection and installation work costs Rs.7000/-. This was replaced by a new one on 31st December 2005. If the scrap value was estimated fund on 15th June, 1996.	7 Marks	L3	C01	PO1 PO2 PO5 PO10
		UNIT-II				
3.	a)	How would you calculate the output of rippers? How would you increase the ripping production from dozer?	7 Marks	L4	CO2	PO1 PO2 PO5 PO6
	b)	Discuss main components of a hydraulic excavator with neat sketch.	7 Marks	L2	CO2	PO1 PO5 PO10
		(OR)				
4.	a)	Enlist different soil compaction principles.	7 Marks	L2	CO2	PO1 PO5
	b)	What is dump truck? How will you calculate the number of dump trucks required for a project?	7 Marks	L4	CO2	PO1
		UNIT-III				
5.	a)	Explain the different equipments involved in concrete manufacturing plant with neat sketches.	7 Marks	L2	CO3	PO1
	b)	How would you evaluate the differences between bitumen and asphalt?	7 Marks	L4	CO3	PO1 PO2 PO5
		(OR)				
6.	a)	Give in detail about Pile driving equipment.	7 Marks	L2	CO3	PO1 PO5
	b)	Define Erection. Which sort of equipment is used for the process of erection?	7 Marks	L4	CO3	PO1 PO2

UNIT-IV

7.	a)	In which aspects the BIM is useful? Explain in detail.	7 Marks	L4	CO4	PO1 PO2 PO5 PO11 PO12
	b)	What is constriction life cycle? Explain it with a net sketch.	7 Marks	L2	CO4	PO1 PO5 PO10 PO11 PO12
		(OR)				
8.	a)	What sort of barriers would a engineer face while implementing BIM.	7 Marks	L4	CO4	PO1 PO2 PO5 PO6 PO11
	b)	Elucidate the design requirements while using BIM.	7 Marks	L2	CO4	PO1 PO5 PO11

UNIT-V

9.	a)	Write various possibilities that show evolution of autonomous machines.	7 Marks	L2	CO5	PO1 PO5 PO11
	b)	Compare and contrast autonomous robots and construction equipment.	7 Marks	L4	CO5	PO1 PO2 PO5 PO11
		(OR)				
10.	a)	Differentiate AGVs and AMVs.	7 Marks	L4	CO5	PO1 PO2 PO5 PO11 PO12
	b)	"The future of autonomous construction machines" you as a civil engineer, how would you evaluate this statement?	7 Marks	L4	CO5	PO1 PO2 PO5 PO6 PO11 PO12

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

TRANSMISSION AND DISTRIBUTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Derive an expression for the inductance per phase for a 3-phase overhead transmission line when i) conductors are symmetrically placed ii) conductors are un-symmetrically placed but the line is completely transposed.	14 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Show that in a three core belted cable the neutral capacitance to each conductor C_N is equal to Cs +3Cc where Cs and Cc are capacitance of each conductor to sheath and to each other respectively.	7 Marks	L3	CO1	PO2
	b)	Describe with the neat sketch, the constructional features of a 3 core belted type cable**.**	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	What is the effect of load power factor on regulation and efficiency of a transmission line?	7 Marks	L2	CO2	PO2
	b)	The constants of transmission line are $A = 0.9301 \angle 0.98^0$ *and* $B = 141.24 \angle 81.87^0$. The load at the receiving end is 220 kV, 60 MW, 50 Hz at 0.8 pf lagging. Determine the regulation and efficiency of the transmission line.	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	What is refraction and reflection of travelling waves and determine its coefficients when the transmission line is terminated with an inductor.	7 Marks	L2	CO2	PO1
	b)	A surge of 15 kV magnitude travels along a cable towards its junction with an overhead line. The inductance and capacitance of the cable and overhead line are respectively 0.3 mH, 0.4 μF and 1.5 mH, 0.012 μF per km. Find the voltage rise at the junction due to the surge.	7 Marks	L3	CO2	PO2
		UNIT-III				
5.	a)	Derive the expressions for sag and tension when the supports are at unequal heights.	7 Marks	L2	CO3	PO1
	b)	What is corona? What are the factors which affect corona?	7 Marks	L2	CO3	PO2
		(OR)				
6.	a)	Define string efficiency. What causes the efficiency to be less than 100%? Describe any one method for improving the string efficiency.	7 Marks	L3	CO3	PO5
	b)	A 110 kV, 3 Phase, 50 Hz transmission line, 175 km long consists of three 1 cm diameter stranded copper conductors spaced in 3 m delta arrangement. Temperature taken at 260C and barometric pressure as 74 cm. Assume surface irregularity factor m= 0.85 (Roughness factor) mv for local corona= 0.72 and mv	7 Marks	L2	CO3	PO2

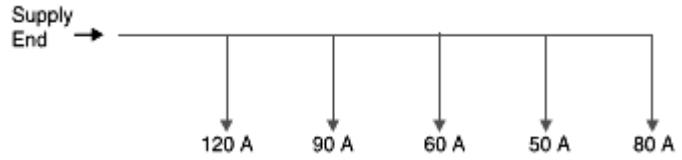
for general corona=0.82. Find:

i) Disruptive voltage
ii) Visual corona voltage for local corona
iii) Visual corona voltage for general corona and
iv) Power loss due to corona using Peek's formula under fair weather and wet conditions.

UNIT-IV

7.	a)	Explain the following systems of distribution : i) Radial system ii) Ring main system iii) Interconnected system	7 Marks	L2	CO4	PO1
	b)	A suburban distribution system 2-wire DC distributor AB is fed from both ends. At feeding point A, the voltage is maintained as at 230 V and at B 235 V. The total length of the distributor is 200 metres and loads are tapped off as under: 25 A at 50 metres from A ; 50 A at 75 metres from A 30 A at 100 metres from A; 40 A at 150 metres from A. The resistance per 2ilometer of one conductor is 0·3 Ω. Calculate : i) Currents in various sections of the distributor ii) Minimum voltage and the point at which it occurs	7 Marks	L3	CO4	PO6

(OR)

8.	a)	A 2-wire d.c. distributor is 250 m long. It is to be loaded as shown in Fig. at 50 m intervals. If the maximum voltage drop is not to exceed 10V and the resistivity of core material is 0·7 × 2·54 μΩ cm, determine the maximum cross-sectional area of each conductor 	7 Marks	L2	CO4	PO2
	b)	A single phase a.c. distributor AB 300 metres long is fed from end A and is loaded as under : i) 100 A at 0·707 p.f. lagging 200 m from point A ii) 200 A at 0·8 p.f. lagging 300 m from point A The load resistance and reactance of the distributor is 0·2 Ω and 0·1 Ω per km. Calculate the total voltage drop in the distributor. The load power factors refer to the voltage at the far end.	7 Marks	L3	CO4	PO2

UNIT-V

9.	a)	Explain the benefits derived through optimal location of substations.	7 Marks	L3	CO5	PO5
	b)	What are the features of large size substation used for feeding a large area? Briefly mention the different equipment along with layout.	7 Marks	L2	CO5	PO1

(OR)

10.	a)	What are the different types of bus-bar arrangements used in sub-stations? Illustrate your answer with suitable diagrams.	7 Marks	L2	CO5	PO1
	b)	Mention the various design features that are to be considered in selecting the ideal substations.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ENERGY AUDIT, CONSERVATION AND MANAGEMENT

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Define energy audit and explain the steps involved in energy audit.	7 Marks	L2	CO1	PO1
	b)	An Energy audit report is to be prepared for an Industry. Describe the role of pie-charts, sankey diagrams and load profits with suitable example while preparing a detailed energy audit report.	7 Marks	L3	CO1	PO6
		(OR)				
2.		Suggest and explain appropriate energy conservation schemes for a Thermal Power Plant.	14 Marks	L3	CO1	PO6
		UNIT-II				
3.	a)	What are the benefits of Energy Conservation? Explain in detail.	7 Marks	L2	CO1	PO1
	b)	Discuss various energy saving schemes.	7 Marks	L2	CO1	PO1
		(OR)				
4.		List the roles and responsibilities of energy manager in an industry.	14 Marks	L2	CO1	PO1
		UNIT-III				
5.	a)	Explain the constructional details of energy efficient motors.	7 Marks	L2	CO2	PO1
	b)	Analyze the factors that affect the efficiency of EEM.	7 Marks	L2	CO2	PO1
		(OR)				
6.		A commercial building is having three sections in the ground floor. Each section contains an area of 500sqft with a total area of 15000sqft. Develop a good lighting scheme for three sections.	14 Marks	L2	CO2	PO3
		UNIT-IV				
7.	a)	Explain the working of wattmeter & data logger with neat diagram.	7 Marks	L2	CO3	PO1
	b)	With neat diagram, explain the working principle of pyrometer.	7 Marks	L2	CO3	PO1
		(OR)				
8.	a)	Briefly explain simple payback period with a suitable example. List the merits and demerits.	7 Marks	L2	CO3	PO11
	b)	With a suitable example, discuss the significance of time value of money and rate of return.	7 Marks	L4	CO3	PO11
		UNIT-V				
9.		Discuss an appropriate technique to control unit price in demand side management.	14 Marks	L2	CO4	PO1
		(OR)				
10.		"Energy conservation awareness in an organization is very much essential". Discuss.	14 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ELECTRICAL MACHINE DESIGN

[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)	List out the Indian standard specifications number associate with three phase induction motors and various types copper conductors.	6 Marks	L2	CO1	PO8
	b)	Calculate the specific electric loading and specific magnetic loading of 100 HP, 300V, 3 Phase, 50 Hz , 8 pole , star connected , flame proof induction motor having stator core length=0.5m and stator bore=0.66m, Turns/Phase=286. Assume full load efficiency as 0.938 and pf as 0.86.	8 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Discuss the design factors effecting temperature rise in electrical machines during operation.	7 Marks	L2	CO1	PO1
	b)	A 350 kW, 500 V, 450 rpm, 6-pole DC generator is built with an armature diameter of 0.87 m and core length of 0.32 m. The lap wound armature has 660 conductors. Calculate the specific electric and magnetic loadings.	7 Marks	L3	CO1	PO2

UNIT-II

3.		Calculate the main dimensions and the number of poles of a 37 kW, 230V, and 1400 RPM shunt motor, so that a square pole face is obtained. The average gap density is 0.5T and the ampere conductors per meter are 22000. The ratio of pole arc to pole pitch is 0.7 and the full load efficiency is 90%.	14 Marks	L3	CO2	PO2
		(OR)				
4.	a)	A 5 kW, 250V, 4pole, 1500 RPM, shunt generator is designed to have a square pole face. The loading are: average flux density in the air gap=0.42T and ampere conductors per meter=1500. Determine the main dimensionsof the machine. Assume full load efficiency=0.87 and pole arc to pole pitch =0.66.	9 Marks	L3	CO2	PO4
	b)	Discuss the procedure to select the number of poles in a DC machine.	5 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Design the required specifications of windings and also estimate the main dimensions of a three phase, delta- star core type transformer rated at 300 kVA, 6600/440V, and 50Hz. A suitable core with 3 steps having a circumscribing circle 0f 0.25m diameter and a leg spacing of 0.4m is available. EMF per turn 8.5V, current density is 2.5A/mm^2, K is 0.28 and S_f=0.9.	8 Marks	L3	CO3	PO3
	b)	Discuss the different techniques adopted in cooling of transformers.	6 Marks	L2	CO3	PO5

(OR)

6.	The tank of 1250 kVA natural oil cooled transformer has the dimensions length, width and height as 0.65 x 1.55 x 1.85m respectively. The load loss=13.1kW, loss dissipation due to radiation 6W/m^2—^{0}C loss dissipation due to convection=6.5 W/m^2 —^{0}C, improvement in convection due to provision of tubes=40%., temperature rise is 40^{0}C, length of each tube is 1m, diameter of each tube is 50mm. Justify how the heat distribution is reduced by applying the cooling tubes design in transformer for society needs. Neglect the top and bottom surface of the tank as regards the cooling.	14 Marks	L3	CO3	PO6
	UNIT-IV				
7.	Determine the stator bore and core length of a 7 HP, 415V, three phase, and 50Hz star connected, 6pole induction motor for which the specific electric and magnetic loadings are 32000ampere conductors per meter and 0.51T respectively. Take the efficiency as 90% and power factor as 0.91. Assume the pole pitch = core length. Estimate the number of stator conductors required for a winding in which the conductors are connected in two parallel paths. Choose a suitable number of conductors per slots so that the slot loading does not exceed 750Ampere conductors.	14 Marks	L3	CO4	PO4
	(OR)				
8.	Determine the main dimensions, air gap length , stator slots, stator turns per phase and cross sectional area of stator and rotor conductor for a three phase, 15 HP, 400V, 6 pole, 50 Hz, 975 RPM, induction motor, the motor is suitable for star delta starting B_{av}=0.45T, ac= 20000Ampere conductor per meter. Pole arc to pole pitch ratio is 0.85, efficiency = 0.9 and power factor =0.85.	14 Marks	L3	CO4	PO4
	UNIT-V				
9.	Determine the main dimensions of 75000 kVA, 13.8 kV, 50Hz, 62.5 RPM, 3phase, star connected alternator, also find the number of stator slots, conductor per slot, conductor area, and work out details. The peripheral speed is about 40m/s. assume the average gap density= 0.65T, ampere conductor/meter=40000 and current density 4A/mm^2.	14 Marks	L3	CO4	PO2
	(OR)				
10.	Determine a suitable number of slots and conductors per slot, for the stator windings of a 3 phase 3300V, 50Hz, 300 RPM alternator. The diameter is 2.3m and the axial length of core is 0.35m. The maximum flux density in the air gap should be approximately 0.9T. Assume sinusoidal flux distribution. Use single layer winding and star connection for stator.	14 Marks	L3	CO4	PO4



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ENERGY SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Draw the layout of nuclear power plant and explain the function of each component.	7 Marks	L2	CO1	PO1
	b)	Describe in detail about the criteria for the selection of site for the hydro power plants.	7 Marks	L2	CO1	PO7
		(OR)				
2.	a)	Explain the operation of pumped storage hydro power plant with a neat sketch and justify how it is used as a peak load power plant?	7 Marks	L2	CO1	PO1
	b)	Determine the efficiency of thermal power plant for the effective utilization of resources.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Explain in detail about the greenhouse gas emission from various energy sources and its adverse effects on environment.	7 Marks	L2	CO2	PO7
	b)	Draw the layout of the diesel power plant and with a neat sketch explain the functions of each component.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Describe in detail about the impact of hydro-electric projects on environment and society.	7 Marks	L2	CO2	PO6
	b)	Draw the layout of the gas power plant and with a neat sketch explain the functions of each component.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Develop the mathematical modeling of a PV cell for conversion of solar energy into electrical energy.	7 Marks	L3	CO3	PO1
	b)	Explain the impacts of wind energy generation system on environment and society.	7 Marks	L2	CO3	PO7
		(OR)				
6.	a)	Describe the working of vapor dominated geothermal power plant with neat sketch.	7 Marks	L2	CO3	PO1
	b)	Explain in detail about the basic components of wind energy conversion system with relevant diagram.	7 Marks	L2	CO3	PO7
		UNIT-IV				
7.	a)	Draw the schematic diagram of tidal power plant and write the function of each component.	7 Marks	L2	CO4	PO1
	b)	Write a short note on biomass conversion technologies.	7 Marks	L2	CO4	PO5
		(OR)				
8.	a)	Describe in detail, how the biogas is generated from the biomass?	7 Marks	L2	CO4	PO1
	b)	Explain the working principle of fuel cell with a neat sketch.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	What is the importance of co-generation and describe in detail the economic and environmental benefits.	7 Marks	L2	CO5	PO11
	b)	Write short notes on applications of co-generation in an industry.	7 Marks	L2	CO5	PO6
		(OR)				
10.	a)	Describe in detail the Stand-alone PV-wind hybrid energy system.	7 Marks	L2	CO5	PO1
	b)	Write short notes on ultra-capacitors and SMES energy storage systems.	7 Marks	L2	CO5	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

INTELLECTUAL PROPERTY RIGHTS

[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.		What is patent information? Briefly explain the significance of using the patent information. How does a patent document help in R&D?	14 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Describe different types of Intellectual Property	7 Marks	L2	CO1	PO6
	b)	Discuss the benefits of geographical indications and list the examples of geographical indications.	7 Marks	L3	CO1	PO6
		UNIT-II				
3.	a)	Clarify the reasons for protecting the trademark in the system of acquisition.	8 Marks	L1	CO2	PO1
	b)	Discuss about the advantages of Trademark.	6 Marks	L2	CO2	PO6
		(OR)				
4.	a)	Discuss the registration processes of trademark in detail.	7 Marks	L2	CO2	PO6
	b)	Explain Infringement of Trademarks?	7 Marks	L1	CO2	PO1
		UNIT-III				
5.		Write in detail about copy right law. Explain ownership issues in transfer of copy rights and moral rights of the author.	14 Marks	L2	CO3	PO8
		(OR)				
6.		Illustrate the significances of copy right and its registration process in detail.	14 Marks	L2	CO3	PO1
		UNIT-IV				
7.		Explain the liability for misappropriations of trade secrets.	14 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Explain about unfair competition?	7 Marks	L1	CO4	PO1
	b)	Describe defenses to secret misappropriation?	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Discuss about intellectual property audit?	7 Marks	L3	CO4	PO1
	b)	Explain about patent law treaty with suitable examples?	7 Marks	L1	CO4	PO1
		(OR)				
10.	a)	Explain about patent law treaty with suitable examples?	7 Marks	L1	CO4	PO6
	b)	Discuss the new development in copyright law?	7 Marks	L3	CO4	PO1

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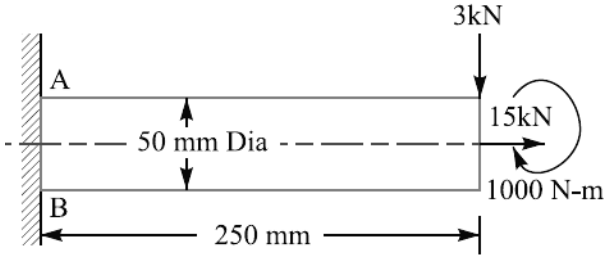
DESIGN OF MACHINE ELEMENTS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		A shaft, as shown in below fig. is subjected to a bending load of 3 kN, pure torque of 1000 N-m and an axial pulling force of 15 kN. Calculate the stresses at A and B. 	14 Marks	L3	CO1	PO1 PO2 PO3
		(OR)				
2.	a)	Draw and explain the soderberg and Goodman lines with neat sketches.	6 Marks	L2	CO1	PO1 PO2
	b)	The load on a bolt consists of an axial pull of 10kN together with a transverse shear force of 5kN.find the diameter of bolt required according to; i) Maximum principal stress theory. ii) Maximum shear stress theory. iii) Maximum strain energy theory. Take permissible tensile stress at elastic limit = 100 MPa and poisson's ratio = 0.3.	8 Marks	L3	CO1	PO1 PO2 PO3

UNIT-II

3.	Design a bushed-pin type of flexible coupling to connect a pump shaft to a motor shaft transmitting 32 kW at 960 r.p.m. The overall torque is 20 percent more than mean torque. The material properties are as follows: i) The allowable shear and crushing stress for shaft and key material is 40 MPa and 80 MPa respectively. ii) The allowable shear stress for cast iron is 15 MPa. iii) The allowable bearing pressure for rubber bush is 0.8N/mm2. iv) The material of the pin is same as that of shaft and key. Draw neat sketch of the coupling.	14 Marks	L3	CO2	PO1 PO2 PO3
	(OR)				
4.	Design a knuckle joint to withstand a tensile load of 70 kN using steel with the following permissible stresses σ_T = 60 MPa, σ_C = 72 MPa and = 48 MPa.	14 Marks	L3	CO2	PO1 PO2 PO3

UNIT-III

5.	a)	What are the assumptions made in the design of welded joint?	6 Marks	L1	CO3	PO1 PO2
	b)	A plate 100 mm wide and 10 mm thick is to be welded to another plate by means of double parallel fillets. The plates are subjected to a static load of 80 kN. Find the length of weld if the permissible shear stress in the weld does not exceed 55 MPa.	8 Marks	L3	CO3	PO1 PO2 PO3
		(OR)				
6.		Explain the method of determining the size of the bolt when the bracket carries an eccentric load perpendicular to the axis of the bolt.	14 Marks	L2	CO3	PO1 PO2

UNIT-IV

7.		A ball bearing subjected to a radial load of 5 kN is expected to have a life of 8000 hours at 1450 r.p.m. with a reliability of 99%. Calculate the dynamic load capacity of the bearing so that it can be selected from the manufacturer's catalogue based on a reliability of 90%.	14 Marks	L3	CO4	PO1 PO2 PO3
		(OR)				
8.		A shaft rotating at constant speed is subjected to variable load. The bearings supporting the shaft are subjected to stationary equivalent radial load of 3kN for 10% of time, 2kN for 20% of time, 1kN for 30 % of time and no load for remaining time of cycle. If the total life expected for the bearing is 20×10^6 revolutions at 95% reliability, calculate dynamic load rating of the ball bearing.	14 Marks	L3	CO4	PO1 PO2 PO3

UNIT-V

9.	a)	Write the classification of springs.	6 Marks	L1	CO5	PO1
	b)	A vertical spring loaded valve is required for a compressed air receiver. The valve is to start opening at a pressure of 1 N/mm^2 gauge and must be fully open with a lift of 4 mm at a pressure of 1.2 N/mm^2 gauge. The diameter of the port is 25 mm. Assume the allowable shear stress in steel as 480 MPa and shear modulus as $80kN/mm^2$. Design a suitable close coiled round section helical spring having squared ground ends. Also specify initial compression and free length of the spring.	8 Marks	L3	CO5	PO1 PO2 PO3
		(OR)				
10.		Discuss the design procedure for spur gears.	14 Marks	L2	CO5	PO1 PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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 company produces two types of leather belts types A and B. Belt A is of a superior quality and belt B is of a lower quality. Profits on the two types of belts are 40 and 30 paise per belt respectively. Each belt of type A requires twice as much time as required by a belt of type B. if all the belts were of type B the company could produce 1000 belts per day. The supply of leather however is sufficient only for 800 belts per day. Belt A requires a fancy buckle and only 400 fancy buckles are available per day. For belt of type B only 700 buckles are available per day. Formulate LP model and solve the problem.	14 Marks	L3	CO1	PO1 PO2 PO3

(OR)

2.	Solve the following problem by Big-M method. Maximize $Z = 2x_1+5x_2$ Subject to $x_1+4x_2 \geq 24$ $3x_4+x_2 = 21$ $x_1+x_2 \leq 9$ when $x_1 , x_2 \geq 0$	14 Marks	L3	CO1	PO1 PO2 PO3

UNIT-II

3.	A company has received a contract to supply gravel for three new construction projects located in towns A, B and C.	14 Marks	L3	CO1	PO1 PO2 PO3

Project Location	Weekly Requirement (truck loads)
A	72
B	102
C	41

The company has three gravel plants X, Y and Z located in three different towns.

Plant	Amount available/week (truck loads)
X	76
Y	62
Z	77

The company has computed the delivery cost from each plant to each project site. These costs (in rupees) are shown below:

	A	B	C
X	4	8	8
Y	16	24	16
Z	8	16	35

i) Schedule the shipment from each plant to each project location in such a manner so as to minimize the total transportation cost within the constraints imposed by plant capacities and project requirements.

ii) Find the minimum cost.

Is the solution unique? If it is not, find alternative schedule with the same minimum cost.

(OR)

4.		A 400m medley relay involves 4 different swimmers, who successively swim 100m of the backstroke, breaststroke, butterfly and freestyle. A coach has six very fast swimmers whose expected times (in seconds) in the individual events are given below:	14 Marks	L2	CO1	PO1 PO2 PO3

		Event			
		1	2	3	4
Swimmer	1	65	73	63	57
	2	67	70	65	58
	3	68	72	69	55
	4	67	75	70	57
	5	71	69	75	57
	6	69	71	66	59

How should the coach assign swimmers to the relay?

UNIT-III

5.	a)	Explain briefly the following: i) Dominance Mixed Strategy	4 Marks	L1	CO2	PO1
	b)	Consider the 5 x 2 game played by players C and D and solve it by graphical method.	10 Marks	L3	CO2	PO1 PO2 PO3

		Player D	
		I	II
Player C	I	1	2
	II	4	5
	III	9	-7
	IV	-3	-4
	V	2	1

(OR)

6.	a)	A manufacturing company purchases 9000 components for its annual requirement, ordering one month usage at a time. Each component costs Rs 20. The ordering cost per order is Rs 15 and the carrying charges are 15 % of the average inventory per year. You have been assigned to suggest a more economical purchasing policy for the company. What advice would you offer and how much would it save the company per year.	6 Marks	L2	CO3	PO1
	b)	A manufacturing company needs 2500 units of a particular component every year. The company buys it at the rate of Rs 30 per unit. The order processing cost for this component is estimated at Rs 15 and the cost of carrying a component in stock comes to about Rs 4/ year. The company can manufacture this component internally. In that case it saves 20% of the price of the product. However, it estimates a setup cost of Rs 250 per production run. The annual production rate would be 4800 units. The inventory holding cost remains unchanged. Determine EOQ and the optimal Number of orders placed in a year. Determine the optimum production lot size. Should the company manufacture the component internally or continue to purchase it from the supplier?	8 Marks	L3	CO3	PO1 PO2

UNIT-IV

7. The following table gives the activities and other relevant data for a project. — 14 Marks — L3 — CO4 — PO1 PO2 PO3

Activity	Immediate predecessor (s)	Normal time (days)	Crash time (days)	Normal cost (Rs.)	Crash cost (Rs.)
A	—	4	3	60	90
B	—	6	4	150	250
C	—	2	1	38	60
D	A	5	3	150	250
E	C	2	2	100	100
F	A	7	5	115	175
G	B, D, E	4	2	100	240

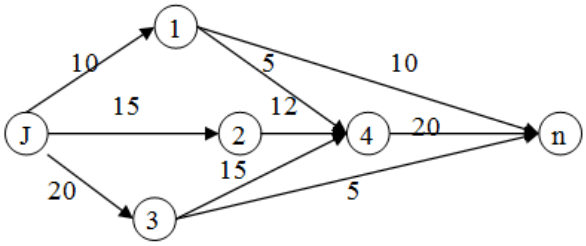
Indirect cost varies as follows:

Days	15	14	13	12	11	10	9	8	7	6
Cost(Rs.)	600	500	400	250	175	100	75	50	35	25

i) Draw the network diagram
ii) Find the normal project duration and the associated total cost
iii) Find the optimal project duration and the associates total cost

(OR)

8. Find the maximum flow for the following network from source to sink. — 14 Marks — L3 — CO4 — PO1 PO2 PO3



UNIT-V

9. a) The arrival rate of customers at the single window booking counter of a two wheeler agency follows poisson distribution and the service time follows exponential distribution and hence, the service rate also follows poisson distribution. The arrival rate and the service rate are 25 customers per hour and 35 customers per hour respectively. Find the following: — 6 Marks — L3 — CO5 — PO1 PO2 PO3

i) Utilization of the booking clerk
ii) Average number of waiting customers in the queue
iii) Average number of waiting customers in the system
iv) Average waiting time per customer in the queue
v) Average waiting time per customer in the system

b) An oil company is constructing a service station on a high way. Traffic analysis indicated that customers' arrivals over most of the day would approximate a poisson distribution with a mean of 40 automobiles per hour, with that service time distribution approximating the negative exponential. If 5 pumps are installed. — 8 Marks — L3 — CO5 — PO1 PO2 PO3

i) What is the probability that an arrival would have to wait in line?

Find out the average waiting time, average time spent in the system and the average number of automobiles in the system.

(OR)

10.	A dentist schedules all her patients for 30 minutes appointments. Some of the patients take more or less than 30 minutes depending on the type of dental work to be done. The following summary shows the various categories of work, their probabilities and time needed to complete the work.	14 Marks	L4	CO5	PO1 PO2 PO3

Category	Time required (Minutes)	Probability of category
Filling	45	0.4
Crown	60	0.15
Cleaning	15	0.15
Extraction	45	0.1
Checkup	15	0.2

Simulate the dentist's clinic for four hours and determine the average waiting time for the patients as well as the idleness of the doctor. Assume that all the patients show up at the clinic at exactly their scheduled arrival times, starting at 8 A.M. Use the following random numbers for handling the above problem: 40, 82, 11, 34, 25, 66, 17, 79.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

THERMAL ENGINEERING-II

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the functions of boiler mountings.	7 Marks	L2	CO1	PO1
	b)	Differentiate between water tube and fire tube boilers.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Derive the condition for maximum discharge through the chimney.	8 Marks	L3	CO1	PO1 PO2
	b)	A boiler uses 18kg air per kg of fuel. Determine the minimum height of chimney required to produce a draught of 25mm of water. The mean temperature of chimney gases is 315^0 C and that of outside air 27^0 C.	6 Marks	L3	CO1	PO1 PO2

UNIT-II

3.	a)	Briefly explain the Nozzle efficiency with h-S diagram.	7 Marks	L2	CO2	PO1
	b)	Dry saturated steam at 10 bar is expanded is entropically in a nozzle to 0.1 bar. Using steam tables only, find the dryness fraction of the steam at exit. Also find the velocity of steam leaving the nozzle when i) Initial Velocity is negligible and ii) Initial Velocity of steam is 135m/s.4	7 Marks	L3	CO2	PO1 PO2
		(OR)				
4.	a)	Explain with neat sketch the working of barometric jet condenser.	7 Marks	L2	CO2	PO1 PO2
	b)	Discuss the evaporative condenser with a neat sketch.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Explain the method of velocity compounding of an impulse turbine.	7 Marks	L1	CO3	PO1
	b)	A Steam jet enters the row of blades with a velocity of 375 m/s at an angle of 20^0 with the direction of motion of the moving blades. If the blade speed is 165 m/s, find the suitable inlet and outlet angles assuming that there is no thrust on the blades. The velocity of steam passing over the blades is reduced by 15%. Also determine power developed by the turbine per kg of steam flowing over the blades per second.	7 Marks	L3	CO3	PO1 PO2
		(OR)				
6.	a)	A reaction turbine with a mean blade diameter of 1m runs at a speed of 50 rev per second. The blades are designed with exit angles of 50^0 and inlet angles of 30^0. If the turbine is supplied with steam at the rate of 20 kg/s and gross efficiency is 85%, determine power output of the stage, specific enthalpy drop in the stage and percentage increase in relative velocity in the moving blades due to steam expansion.	7 Marks	L3	CO3	PO1 PO2
	b)	What is a turbine? Explain the principle of reaction turbine.	7 Marks	L3	CO3	PO1 PO2

UNIT-IV

7.	a)	Differentiate heat pump and refrigerator.	7 Marks	L3	CO4	PO1
	b)	Describe the working principle of vapour absorption refrigeration system with neat sketch.	7 Marks	L3	CO4	PO1
		(OR)				
8.	a)	Define the following: i) Refrigeration ii) Heat pump iii) Heat engine	7 Marks	L3	CO4	PO1 PO2
	b)	A refrigerator working on Bell-Coleman cycle operates between pressure limits of 1 bar and 8 bar. Air is drawn from the cold chamber at 10°C, compressed and then it is cooled to 28°C before entering the expansion cylinder. The expansion and compression follow the law $PV^{1.3} = C$. Determine the theoretical COP of the system.	7 Marks	L3	CO4	PO1 PO2

UNIT-V

9.	a)	Explain in brief, cooling and dehumidification process. Represent the same on a psychrometric chart.	7 Marks	L3	CO5	PO1
	b)	Twenty grams of moisture per kg of dry air is removed from atmospheric air when it is passed through an air conditioning system and its temperature becomes 22°C. The atmospheric conditions are 36°C DBT and 65% RH. Find the following for the conditioned air. i) Relative humidity ii) Wet-bulb temperature iii) Dew point temperature iv) Enthalpy change for the air Assume standard atmospheric pressure	7 Marks	L3	CO5	PO1 PO2
		(OR)				
10.	a)	Represent the following process in a skeleton psychometric chart. i) Sensible heating ii) Sensile cooling iii) Evaporative cooling	7 Marks	L3	CO5	PO1
	b)	In a laboratory test a psychometer recorded 34°C DBT and 28°C WBT calculate the following terms. i) vapour pressure, ii) relative humidity, iii) specific humidity, iv) degree of saturation, v) dew point temperature, vi) enthalpy of the mixture.	7 Marks	L3	CO5	PO1 PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

AUTOMOBILE ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Draw the neat layout of an automobile chassis and mention all the components in it.	14 Marks	L2	CO1	PO1 PO2
		(OR)				
2.		Discuss about the working of mechanical fuel pump in an automobile with neat sketch.	14 Marks	L2	CO1	PO1 PO2 PO6
		UNIT-II				
3.		What is the necessity of cooling system in an automobile? What design changes can be made to thermostat in order to improve the cooling efficiency of the system?	14 Marks	L2	CO2	PO1 PO2 PO6
		(OR)				
4.		Explain the working of capacitive discharge ignition system with neat diagram.	14 Marks	L2	CO2	PO1 PO2
		UNIT-III				
5.		With a neat sketch, explain the working principle of bendix drive mechanism of a modern automobile.	14 Marks	L2	CO3	PO1 PO2
		(OR)				
6.		Explain briefly the Traction Control System (TCS) provided in a car.	14 Marks	L2	CO3	PO1 PO2
		UNIT-IV				
7.		Explain the need for clutches in automobile. Suggest some design changes in clutch system to improve transmission efficiency.	7 Marks	L2	CO4	PO1 PO6
		Illustrate with diagram the working of Universal joints used in Automobiles.	7 Marks	L3	CO4	PO1 PO2
		(OR)				
8.	a)	Demonstrate with neat layout, the working of cone clutch and explain it.	7 Marks	L2	CO4	PO1
	b)	List the various requirements of a steering system. What are the various issues in wheel alignment and balancing?	7 Marks	L2	CO4	PO1
		UNIT-V				
9.		List out the various functions and elements of suspension system and discuss the operation of torsion bar with neat diagram.	14 Marks	L2	CO5	PO1 PO2
		(OR)				
10.		What is the various classifications of brakes? Discuss the working of hydraulic brake with diagram.	14 Marks	L2	CO5	PO1 PO2 PO6



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Interpret the basic RTL and DTL circuit diagram with its truth table.	7 Marks	L2	CO1	PO2
	b)	Describe the circuit diagram of 2-input LS-TTL NAND gate and explain its operation.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Sketch the circuit diagram for basic CMOS gate. Explain its operation.	7 Marks	L1	CO1	PO1
	b)	Analyze the following with reference to TTL gate. i) Voltage levels for logic '1'and logic '0' ii) High state fan-out.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Describe a step-by-step procedure for a typical n-well CMOS process with neat diagrams.	7 Marks	L1	CO2	PO1
	b)	Analyze pull up to pull down ratio of NMOS driven to another NMOS inverter with necessary equations.	7 Marks	L4	CO2	PO2
		(OR)				
4.	a)	Describe a step-by-step procedure for a typical NMOS process with neat diagrams.	7 Marks	L1	CO2	PO1
	b)	Analyze pull up to pull down ratio of CMOS driven to another CMOS inverter with necessary equations.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	What are design rules? Why is metal - metal spacing larger than poly – poly spacing.	7 Marks	L4	CO3	PO8
	b)	Calculate the rise time and fall time of the CMOS inverter (W/L)n = 6 and (W/L)p=8,Kn =150μ A/V 2, Vtn =0.7V, Kp= 62 μ A/V 2, Vtp=-0.85V , VDD =3.3V, Total out-put capacitance =150 fF.	7 Marks	L4	CO3	PO4
		(OR)				
6.	a)	Model a schematic and stick diagram using CMOS logic for Y= (A+B)(C+D))'.	8 Marks	L3	CO3	PO3
	b)	Distinguish between Lambda based Design Rules and Micron based Design Rules.	6 Marks	L4	CO3	PO2
		UNIT-IV				
7.	a)	Analyze the operation of 4-bit Manchester carry chain adder and find the worst case delay of carry chain.	7 Marks	L4	CO4	PO4
	b)	Explain the principle of working of a 4-bit carry-look ahead adder and draw the logical schematic used to obtain the generate and propagate signals.	7 Marks	L2	CO4	PO6

(OR)

8.	a)	Design 4 × 4 array multiplier with neat sketch.	7 Marks	L4	CO4	PO3
	b)	Explain the working of a ripple carry adder using transmission gates with neat sketch.	7 Marks	L2	CO4	PO7

UNIT-V

9.	a)	Explain the programming methods of FPGA.	7 Marks	L2	CO5	PO1
	b)	Discuss in detail about the different architectures of programmable interconnects in FPGA.	7 Marks	L2	CO5	PO8

(OR)

10.	a)	What is CPLD? Draw its basic structure and give its applications.	7 Marks	L1	CO5	PO1
	b)	Compare antifuse and vialink programmable interconnections for PALs.	7 Marks	L2	CO5	PO7

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	With a neat diagram explain ISO - OSI reference model.	7 Marks	L1	CO1	PO1
	b)	Compare Optical Fibers and Copper Cable Guided Transmission Mediums.	7 Marks	L2	CO2	PO2
		(OR)				
2.	a)	Explain in detail about TCP/IP reference model with a neat diagram.	7 Marks	L1	CO1	PO1
	b)	Draw the electromagnetic spectrum and explain it's useful for communication.	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Suppose we want to transmit the "message 1011 0010 0111 and protect it from errors using the CRC polynomial $x^4 + x^2 + 1$. Use polynomial long division to determine the message that should be transmitted. Suppose the leftmost bit of the message is inverted due to noise on the transmission link. What is the result of the 'receiver's CRC calculation? How does the receiver know that an error has occurred?	7 Marks	L2	CO3	PO2
	b)	Differentiate classical ALOHA and slotted ALOHA.	7 Marks	L2	CO1	PO2
		(OR)				
4.	a)	Briefly describe the differences between store-and-forward and cut-through switches.	7 Marks	L2	CO1	PO1
	b)	Discuss the principle of stop and wait flow control algorithm. Draw time line diagrams and explain how loss of a frame and loss of an ACK are handled. What is the effect of delay-bandwidth product on link utilization?	7 Marks	L3	CO3	PO2

UNIT-III

5.	a)	Develop link state routing to find shortest path with an example.	7 Marks	L3	CO2	PO4
	b)	Explain Internet Protocol with the neat block diagram of IP header format.	7 Marks	L3	CO5	PO8
		(OR)				
6.	a)	Apply distance vector routing algorithm to compute shortest path routing.	7 Marks	L3	CO2	PO2
	b)	Distinguish between datagram networks and virtual circuit networks.	7 Marks	L1	CO1	PO1

UNIT-IV

7.	a)	Evaluate TCP congestion control mechanisms.	7 Marks	L3	CO3	PO1
	b)	What is the total size of the minimum TCP MTU, including TCP and IP overhead but not including data link layer overhead?	7 Marks	L3	CO3	PO1

(OR)

8.	a)	A client uses UDP to send data to server. The data length is 16 bytes. Calculate the efficiency of this transmission at the UDP level(ration of useful bytes to total bytes).	7 Marks	L3	CO3	PO2
	b)	Elucidate the following Timers in TCP. i) Retransmission Time Out. ii) Persistence Timer.	7 Marks	L1	CO1	PO1

UNIT-V

9.	a)	What is the use of HTTP protocol? Mention the default port number of HTTP protocol.	7 Marks	L3	CO4	PO6
	b)	List and discuss the types of DNS records.	7 Marks	L2	CO4	PO6

(OR)

10.	a)	Discuss the need for name resolution. Illustrate the domain name hierarchy and the steps in resolution.	7 Marks	L2	CO4	PO6
	b)	Write short notes on File Transfer Protocol.	7 Marks	L1	CO1	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

DESIGN AND ANALYSIS OF ALGORITHMS

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

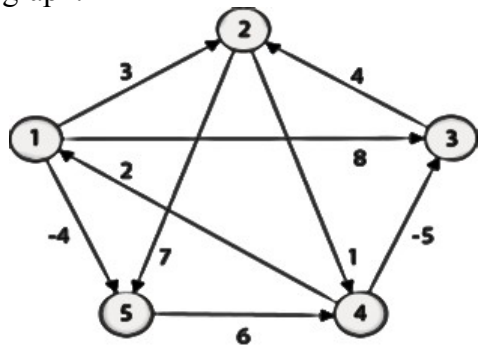
1.	a)	Define Algorithm and Pseudo code. Compare and contrast their properties and characteristics.	7 Marks	L2	CO1	PO1
	b)	Solve the recurrence relation by Substitution Method. $T(n)= T(n/2)+n$ Show that it is asymptotically bounded by O(log n).	7 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Arrange the following functions in increasing order of complexity. Justify your answer. n, log n, n^2 ,n^3 , n log n, 2^n	4 Marks	L2	CO1	PO2
	b)	Apply Master's theorem to solve the following recurrence relations and find its complexity. i) $T(n) = a\,T(n/b) + f(n)$, $a = 8, b=2, f(n) = 1000\,n^2$ ii) $T(n) = 2\,T(n/2) + 10n$.	10 Marks	L4	CO2	PO2

UNIT-II

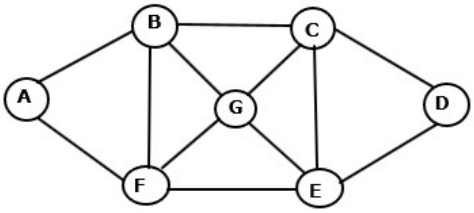
3.	a)	Illustrate SimpleFind() and collapsingFind() algorithms with an example.	6 Marks	L2	CO2	PO2
	b)	Outline an algorithm to detect defective chess board using trionimos.	8 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Demonstrate iterative version of MaxMin algorithm with suitable example.	7 Marks	L1	CO2	PO1
	b)	Place the following elements in a[1:14] and simulate the steps of Binary Search for different values of x. -15,-6,0,7, 9, 23,54, 82,101,112,125,131,142,151	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	Apply Floyd-Warshall algorithm and find the shortest path for the following graph.	7 Marks	L2	CO3	PO3



	b)	Analyze various complexities of Optimal Binary Search Tree by taking suitable example.	7 Marks	L4	CO3	PO2
		(OR)				

6.	a)	Schedule two jobs on 4 machine using flow shop scheduling technique. The time required by each operation of these jobs is given by following matrix. $\mathbf{J} = \begin{matrix} 3 & 0 \\ 0 & 3 \\ 4 & 2 \\ 5 & 2 \end{matrix}$	7 Marks	L2	CO2	PO2
	b)	Apply 0/1 knapsack method for the case in which n = 3,m= 20, (p1,p2,P3)=(25,24,15), (w1,w2,w3)= (18,15,10), find all feasible solutions and compute the maximum profit.	7 Marks	L3	CO3	PO3
		UNIT-IV				
7.	a)	Explain the Graph–Coloring problem and draw the state space tree for m= 3 colors and n=4 vertices graph. Discuss the time and space complexity.	7 Marks	L3	CO2	PO2
	b)	Explain knapsack problem by taking suitable knapsack instance using greedy approach.	7 Marks	L2	CO2	PO2
		(OR)				
8.	a)	Demonstrate 4-Queens problem by placing 4-queens in such a manner on an n x n chessboard that no queens attack each other by being in the same row, column or diagonal, by taking suitable example.	7 Marks	L2	CO2	PO2
	b)	Identify Hamiltonian cycle from the following graph.  	7 Marks	L3	CO2	PO2
		UNIT-V				
9.	a)	State the cook's theorem. Demonstrate the significance of this theorem?	7 Marks	L2	CO4	PO1
	b)	Show that the Hamiltonian cycle problem on directed graphs is NP-complete.	7 Marks	L2	CO4	PO2
		(OR)				
10.		Consider the knapsack instance n = 4, (P1,P2,P3,P4) = (10,10,12,18), (w1,w2,w3,w4) = (2, 4, 6,9), and m = 15. Trace the working of the following techniques. i) LC branch-and-bound and ii) FIFO branch-and-bound	14 Marks	L3	CO3	PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

SOFTWARE PROJECT MANAGEMENT

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What are the activities covered by software project management.	7 Marks	L3	CO1	PO1
	b)	What is the project management life cycle explain it through a diagram.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain Software projects versus other types of project in detail.	7 Marks	L1	CO1	PO1
	b)	Give explanation about project planning and steps involved in project planning in detail.	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	What is the Spiral model in software development.	7 Marks	L4	CO2	PO5
	b)	How do you choose methodologies and technologies in the process of selecting a project approach.	7 Marks	L2	CO2	PO3
		(OR)				
4.	a)	What are software effort estimation techniques.	7 Marks	L2	CO2	PO5
	b)	How does COCOMO II contribute to software project estimation and management.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	What are the main objectives of activity planning in project management.	7 Marks	L2	CO2	PO1
	b)	What are The forward pass, The backward pass in activity planning.	7 Marks	L4	CO5	PO6
		(OR)				
6.	a)	What are categories of risk and explain some risk management approaches.	7 Marks	L2	CO4	PO8
	b)	Explain PERT technique.	7 Marks	L3	CO5	PO7
		UNIT-IV				
7.	a)	Why is resource identification crucial in software project management.	7 Marks	L2	CO2	PO3
	b)	What's the significance of a project's critical path.	7 Marks	L2	CO2	PO2
		(OR)				
8.	a)	How does earned value analysis aid cost monitoring.	7 Marks	L2	CO2	PO1
	b)	Why prioritize monitoring during a software project.	7 Marks	L2	CO1	PO1
		UNIT-V				
9.	a)	How does the Oldham-Hackman job characteristics model impact people management in software projects.	7 Marks	L2	CO3	PO1
	b)	What are the key aspects of ethical and professional concerns when managing people in software project teams.	7 Marks	L4	CO5	PO6
		(OR)				
10.	a)	Why is software quality essential in project planning, and how is it defined in the context of software projects.	7 Marks	L2	CO3	PO1
	b)	What are the primary components of ISO 9126 and process capability models in ensuring software quality.	7 Marks	L2	CO3	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

DATA WAREHOUSING AND DATA MINING

[Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Data Science), Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	List different OLAP operations and explain.	7 Marks	L2	CO1	PO2
	b)	Explain role of concept hierarchies and measures.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Illustrate about different data warehousing design models.	7 Marks	L2	CO1	PO2
	b)	Describe the Architecture of Data Warehouse with its components?	7 Marks	L1	CO1	PO1
		UNIT-II				
3.	a)	Describe about Data Reduction Methods in detail.	7 Marks	L1	CO2	PO1
	b)	Evaluate the Process of Knowledge Discovery with detailed steps involved in Data Mining.	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	With an example explain various forms of data preprocessing.	7 Marks	L2	CO2	PO2
	b)	Illustrate different techniques of data Cleaning Methods.	7 Marks	L3	CO2	PO5
		UNIT-III				
5.	a)	Analyze any two techniques to improve classification accuracy.	7 Marks	L2	CO3	PO2
	b)	With an example explain decision tree induction.	7 Marks	L1	CO3	PO4
		(OR)				
6.	a)	Define Association Rule Mining? Explain Apriori Algorithm with an example.	7 Marks	L3	CO3	PO5
	b)	Explain Linear Regression with suitable example.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Demonstrate about K-Means clustering with an example.	7 Marks	L2	CO4	PO1
	b)	Describe about outlier analysis and detection methods.	7 Marks	L1	CO4	PO3
		(OR)				
8.	a)	Differentiate between partitioning and hierarchical clustering methods.	7 Marks	L2	CO4	PO1
	b)	Explain about DBSCAN clustering algorithm with an example.	7 Marks	L1	CO4	PO2
		UNIT-V				
9.	a)	Discuss about mining sequence data.	7 Marks	L1	CO5	PO1
	b)	What are the current trends in data mining?	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Write about Spatial data mining.	7 Marks	L1	CO5	PO1
	b)	Discuss about Methodologies of Data Mining and its applications.	7 Marks	L2	CO5	PO2



CODE No.: 20BT53103 SVEC-20

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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

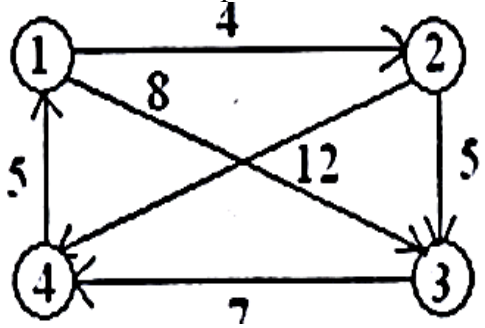
UNIT-I

1.	a)	Demonstrate various types on Complexities and Asymptotic notations with examples.	7 Marks	L2	CO1	PO1
	b)	Obtain the asymptotic bound for the following recurrence relation using recursion tree method. $T(n) = 2T(n/2) + n^2$	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Define Big – O, Big – Omega and Big – Theta notation. Depict the same graphically with an example.	7 Marks	L2	CO1	PO1
	b)	Derive the recurrence relation for Fibonacci series algorithm; also carry out the time complexity analysis.	7 Marks	L3	CO1	PO2

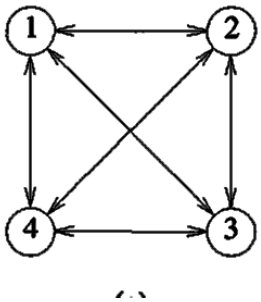
UNIT-II

3.	a)	Illustrate simple Find () and collapsing Find() algorithms with an example.	6 Marks	L2	CO2	PO2
	b)	Illustrate Strassen's Matrix Multiplication and compare its time complexity with conventional matrix multiplication.	8 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Explain the General Method of Divide and Conquer in detail.	7 Marks	L1	CO2	PO1
	b)	Write iterative version of MaxMin algorithm completely and analyze the number of comparisons it requires against Straight MaxMin algorithm.	7 Marks	L4	CO2	PO2

UNIT-III

5.	a)	Obtain all Pairs Shortest paths for the following graph. 	7 Marks	L3	CO2	PO1
	b)	Describe general method of dynamic programming and give its applications.	7 Marks	L2	CO2	PO2

(OR)

6.	a)	Compute the length of optimal tour of traveling sales person for the following digraph with its edge lengths.  $\begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$	7 Marks	L3	CO2	PO2
	b)	Apply 0/1 knapsack method on the following knapsack instance: n = 6 (p1,p2,p3,p4,p5,p6) = (w1,w2,w3,w4,w5,w6) = (100, 50,20,10,7,3), and m = 165. Find out the maximum profit.	7 Marks	L3	CO3	PO3

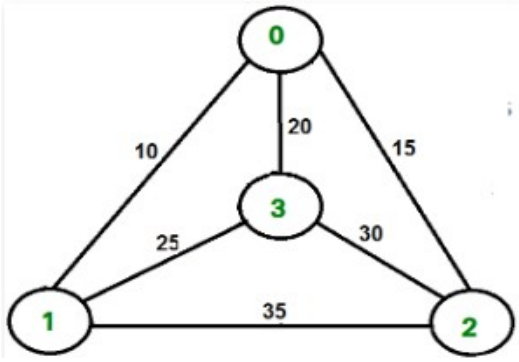
UNIT-IV

7.		Apply algorithm Job sequencing with deadlines and find out optimal solutions for the following problem. Let n = 4, (p1,p2,p3,p4)=(100,10,15,27), (d1,d2,d3,d4)=(2,1,2,1)	14 Marks	L3	CO2	PO2

(OR)

8.		Explain subset-sum problem and discuss the possible solution strategies using backtracking.	14 Marks	L2	CO2	PO2

UNIT-V

9.	a)	Solve the following instance of travelling sales person problem using Least Cost Branch Bound. 	7 Marks	L2	CO2	PO2
	b)	Explain the control abstractions for LC search.	7 Marks	L2	CO3	PO1

(OR)

10.	a)	Generate FIFO branch and bound solution for the given knapsack problem, m = 15, n = 3, (P1, P2, P3) = (10, 6, 8) and (w1, w2, w3) = (10, 12, 3).	7 Marks	L3	CO3	PO2
	b)	Is travelling salesman problem NP-hard or NP-Complete? Justify your answer.	7 Marks	L2	CO4	PO1

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CODE No.: 16BT70302 SVEC-16

Roll No.

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-16) Supplementary Examinations, May – 2025

FINITE ELEMENT METHOD

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

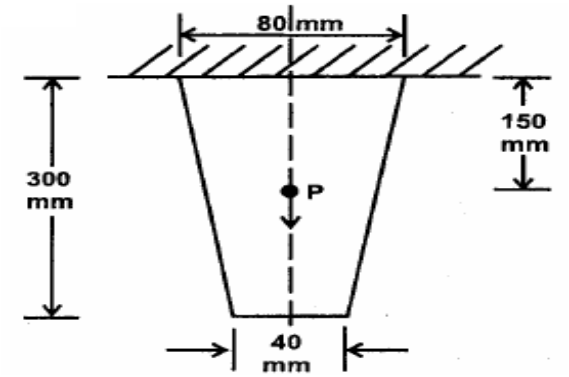
UNIT-I

1. a) Explain in detail the fundamental steps involved in FEM for solving a problem. Also mention the applications of FEM. CO1 7 Marks

   b) Differentiate between Plane strain and Plane stress conditions with examples. Write the stress- strain relationships for the both plane stress and plane strain problems. CO1 7 Marks

(OR)

2. A tapered bar of uniform thickness t = 10 mm as shown in figure. Find the displacements at the nodes by forming into two element model. The bar has a mass density $\rho = 7800$ kg/m^3, the young's modulus E = 2 x10^5 MN/m^2. In addition to self weight, the bar is subjected to a point load P = 1 kN at its centre. Also determine the element stresses and reaction force at the support. CO1 14 Marks



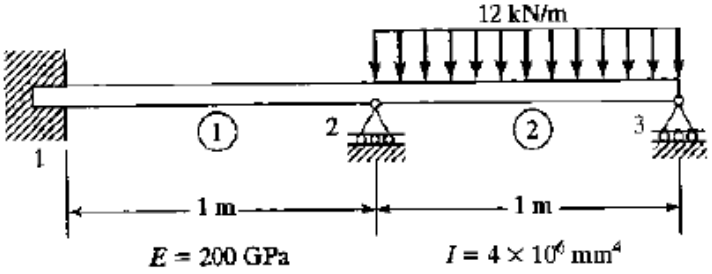
UNIT-II

3. a) Briefly explain how the beam element is different from bar and truss elements. CO2 5 Marks

   b) Explain the role of transformation matrix in truss and derive stiffness matrix of truss element. CO2 9 Marks

(OR)

4. A continuous beam subjected to loading as shown in figure. Determine CO2 14 Marks
   i) the slopes at nodes 2 and 3 and
   ii) the vertical deflection at the midpoint of the distributed load.

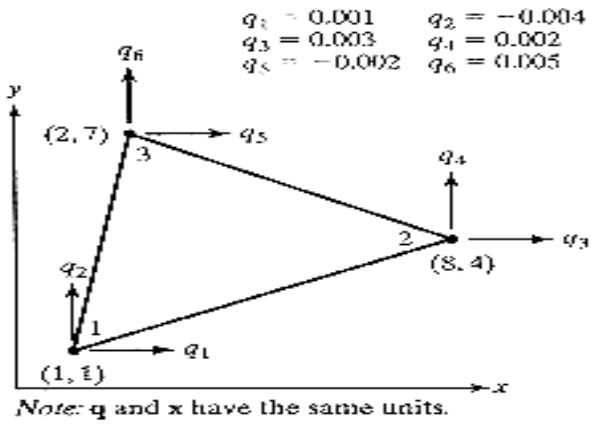


UNIT-III

5. Derive stiffness matrix for a CST element. CO3 14 Marks

(OR)

6. a) Obtain the strain-displacement relation matrix and determine the strains ε_x, ε_y and γ_{xy} and stresses for the triangular element shown in figure. CO3 9 Marks



b) State the conditions to be satisfied in order to use axisymmetric elements and briefly explain finite element formulation of axi-symmetric problems. CO3 5 Marks

UNIT-IV

7. a) Briefly explain the following: CO1 14 Marks

i) Purpose of Isoparametric elements

ii) Shape functions of four noded quadrilateral element

(OR)

8. A uniform aluminum circular fin of diameter 0.8 cm and 6 cm length is extruded from the surface whose temperature is 100 °C. The convection takes place from the lateral surface and tip of the fin. Assuming k = 20 W/mK, h = 100 W/m^{2}K and T_∞ = 20°C, determine the temperature distribution in the pin using three element idealization. CO4 14 Marks

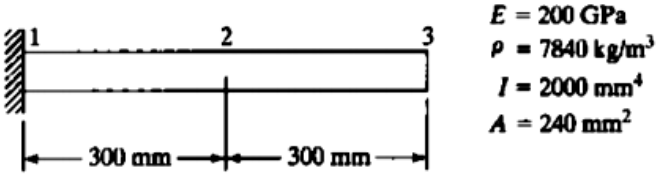
UNIT-V

9. a) Derive the mass matrix for CST element. CO5 7 Marks

b) Discuss the methodology to solve the Eigen value problem for the estimation of natural frequencies of a stepped bar. CO5 7 Marks

(OR)

10. Evaluate the lowest Eigen value and the corresponding Eigen mode for the beam shown in figure. CO6 14 Marks



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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 - 2025

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 manufacturers four different machine parts A, B, C and D using copper and zinc. The requirement of copper and zinc for each part and their availability and the profit earned from each part are given below. CO1 14 Marks

Item	Requirement (Kg)		Profit (Rs.)
	copper	zinc	
A	5	2	12
B	4	3	8
C	2	8	14
D	1	1	10
Availability	100	75	

How many of each part should be manufactured to maximize the profit.

(OR)

2. Solve following problem through BIG-M method CO2 14 Marks

Min $Z= X_1+X_2$

Subject to $2X_1+X_2 \geq 4$

$X_1+7X_2 \geq 7$

$X_1, X_2 \geq 0$

UNIT-II

3. A manufacturer has distribution centers at X, Y and Z. These centers have availability 40, 20 and 40 units of his product. His retail outlet at A, B, C, D and E requires 25, 10, 20, 30 and 15 units respectively. The transport cost (in rupees) per unit between each center outlet is given below. Determine the optimal distribution to minimize the cost of Transportation. CO4 14 Marks

Distribution Center	Retail Outlets				
	A	B	C	D	E
X	55	30	40	50	50
Y	35	30	100	45	60
Z	40	60	95	35	30

(OR)

4. The owner of a small machine shop has four machinists available to assign to jobs for the day. Five jobs are offered with the expected profit (in hundreds of rupees) for each machinist on each job being as follows CO4 14 Marks

Machinist	**A**	**B**	**C**	**D**	**E**
1	6	8	5	10	8
2	7	9	6	7	6
3	9	9	11	7	8
4	5	6	9	8	8

Find the assignment of machinists to jobs that result in a maximum profit. Which job should be declined?

UNIT-III

5. Explain the following: CO2 14 Marks
   i) Saddle point
   ii) n-person zero-sum game
   iii) Mini-max (Maxi-min) Criterion.

(OR)

6. Solve the following game whose payoff matrix for player-A is given below and find the solution to the game. CO6 14 Marks

	Player-B	
Player-A	1	3
	4	2

UNIT-IV

7. Draw the PERT network for the activities whose three time estimates are given in the table. From the three time estimates obtain the expected times of all the activities and find Critical path, Project duration, Slack for all events, Probability of completing the project in 20 days. CO5 14 Marks

Activity	Optimistic time (days)	Most likely time (days)	Pessimistic time (days)
1 – 2	1	2	3
1 – 3	5	6	7
1 – 4	3	5	7
2 – 5	5	7	9
3 – 5	2	4	6
5 – 6	4	5	6
4 – 7	4	6	8
6 – 7	2	3	4

(OR)

8. The activities involved in Alpha Garment Manufacturing Company are listed with their time estimate as in the following table. Draw the network diagram for the given activities and find the Critical path, Total Float and Free Float. CO5 14 Marks

Activity	Precedence	Duration
A	-	10
B	-	7
C	A	5
D	C	3
E	D	2
F	B,E	1
G	F	14

UNIT-V

9. A repairman is to be hired to repair machines which break down at an average rate of 3 per hour. The breakdowns follow Poisson distribution. Non-productive time of machine is considered to cost Rs. 16 per hour. The repairmen have been interviewed: one is slow but cheep, while the other is fast but expensive. The slow repairman demands Rs. 10 per hour and he services at an average rate of 6 per hour. Which repairman should be hired? Assume an 8-hour day. CO3 14 Marks

(OR)

10. At a certain petrol pump customer arrive in Poisson process with an average time of 5min between arrivals. The service time of petrol pump follows exponential distribution and as such mean time taken to service is 2min. On the basis of this information, find what is average queue length and what would be the average number of customers in the system. How long on an average a customer weight in the queue? How long on an average a customer thus spend in the system? What is the probability that the customer enter into the system gets service without waiting? CO3 14 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-16) Supplementary Examinations, May - 2025

PRODUCTION AND OPERATIONS MANAGEMENT
[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Write short notes on operation management objectives.	CO3	7 Marks
	b)	List and explain the factors affecting productivity.	CO2	7 Marks
		(OR)		
2.	a)	Brief notes on Production System Decisions and Environment of Operations.	CO2	7 Marks
	b)	Give a brief notes on International Dimensions of Productivity.	CO5	7 Marks

UNIT-II

3. Estimate the future demand in 2019, 2020 and 2025 through linear regression method for the following details. CO3 14 Marks

S.No	1	2	3	4	5
Year	2010	2012	2014	2016	2018
Sales	75	84	92	98	88

(OR)

4. The super snow paint shop has recorded the demand for a particular colour during the past 6 weeks are shown below: CO3 14 Marks

Week	1	2	3	4	5	6
Forecast F_t	19	17	22	27	29	33

i) Calculate a 3 week moving average for the data to forecast demand for the last week

ii) Calculate a weighted average forecast for the data using a weight of 0.6 for the most recent data and weights of 0.3 and 0.1 for successive older data.

UNIT-III

5.	a)	Discuss the alternatives for managing the supply and demand.	CO5	7 Marks
	b)	Briefly explain the level, chase and mixed strategies for aggregate production planning.	CO1	7 Marks
		(OR)		
6.		Write a Brief notes on Chase, Level and Mixed Strategies for Aggregate Production Planning.	CO1	14 Marks

UNIT-IV

7.		Write a short notes on Bill of Materials and System parameters, System refinements and Manufacturing Resource Planning.	CO1	14 Marks
		(OR)		
8.		List out the functions of CRP using block Diagram and explain the function with example.	CO1	14 Marks

UNIT-V

9. Find total time elapsed, idle time and Gantt chart for the following data. CO6 14 Marks

Job	Machines				
	1	2	3	4	5
1	14	16	10	11	19
2	12	14	16	13	17
3	16	16	12	12	21
4	17	12	11	15	19
5	15	14	13	16	26
6	11	14	17	10	19

(OR)

10. Solve the following problem and find operational completion time through Gantt chart. CO6 14 Marks

Job_i	1	2	3	4	5	6	7	8
t_{i1}	4	3	1	3	4	3	1	3
t_{i2}	3	7	2	4	3	7	2	4
t_{i3}	7	2	4	3	7	2	4	3
t_{i4}	8	5	7	2	8	5	7	2



Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Civil Engineering, Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	"Demand for diamonds is exceptional and violates the law of demand," Execute.	14 Marks	L3	CO1	PO1
	(OR)				
2.	Examine and suggest a suitable demand forecasting technique for a new and highly technical product being launched by a company.	14 Marks	L4	CO1	PO2

UNIT-II

3.	Explain the isoquants and isocosts.	14 Marks	L2	CO2	PO2
	(OR)				
4.	Demonstrate the following: i) opportunity costs ii) outlay costs iii) separable costs vs joint costs	14 Marks	L3	CO2	PO2

UNIT-III

5.	What is the pricing method? Explain the different types of pricing methods.	14 Marks	L2	CO2	PO2
	(OR)				
6.	Define monopoly. Explain the types of monopolies	14 Marks	L2	CO3	PO10

UNIT-IV

7.	From the following transactions pass the necessary journal entries in the books of Meghana. 2021 Jan.1 Meghana commenced a business with Rs.5, 00, 000. Jan. 6 Goods sold to Varma for cash Rs. 98,500/-. Jan. 17 Bought goods by Suresh Rs. 85,700/-. Jan. 21 Commission receivedfromRamu Rs. 2,700/-. Jan. 31 Salaries paid through cheque Rs. 21, 800.	14 Marks	L4	CO4	PO11
	(OR)				
8.	Sketcha trial balance with neat proforma.	14 Marks	L2	CO4	PO2

UNIT-V

9. From the following Trail Balance of Shukla prepare trading and profit and loss a/c for the year ending 31st March 2021 and The balance sheet on the date. 14 Marks L4 CO5 PO11

Particulars	Debit (Rs)	Credit (Rs)
Buildings	10,000	
Capital a/c		50,000
Purchases & Sales	10,000	30,000
Stock on 1-04-2001	5,000	
Debtors & Creditors	10,000	5,000
Drawings	4,000	
Sales returns & purchase Returns	2,000	500
Freight	2,500	
Office Salaries	8,000	
Wages	1,500	
Postage and Telegrams	1,000	
Machinery	15,000	
bills Receivable, Bills Payable	7,000	1,000
Advertisement	2,000	
Cash in hand	3,500	
Loose Tools	4,000	
Total	**86,500**	**86,500**

Adjustments:

i) Closing Stock was valued at Rs 5,000/-

ii) Depreciation Buildings by 10% and Loose Tools arerevalued at Rs 3,500/-

iii) Interest on Capital at 10% and on Drawings at 5%

(OR)

10. The trial balance of a firm on 31.12.2019 is as follows. Prepare final accounts of this firm. 14 Marks L4 CO5 PO11

Particulars	Debit (Rs)	Credit (Rs)
Capital		1,00,000
Plant and Machinery	1,60,000	
Sales		304,000
Returns	2,000	1,500
Opening Stock	700	
Bank charges	150	
Sundry Debtors	80,000	
Sundry Creditors		41,600
Furniture	60,000	
Wages	20,000	
Salaries	13,600	
Carriage inwards	1,500	
Carriage outwards	2,400	
bad debts provision		1,050
rent, rates, taxes	20,000	
Advertisements	4,000	
cash in hand	1,800	
cash at bank	12,000	
Purchases	70,000	

Adjustments:

i) Closing stock Rs.20,000/-

ii) Depreciate plant 6% p.a
iii) Interest on capital to be allowed @ 5% p.a.

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CODE No.: 20BT50405 SVEC-20

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

VLSI SYSTEM DESIGN

[Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	List out the differences between TTL and CMOS logic family	7 Marks	L1	CO1	PO1
	b)	Design a CMOS transistor circuit that has the functional behavior $F(X) = [A(B + C)]'$.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Estimate sinking current for low output and sourcing current for high output of CMOS gate.	7 Marks	L4	CO1	PO2
	b)	Draw the circuit diagram of the basic TTL NAND gate and explain the three parts with the functional operation.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain the fabrication steps of CMOS P-well process with neat diagram and write the mask sequence.	8 Marks	L2	CO2	PO1
	b)	Derive an equation for Transconductance of an n channel enhancement MOS- FET operating in active region.	4 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Draw the circuit diagram of CMOS inverter and explain the operation.	7 Marks	L2	CO2	PO1
	b)	Discuss about MOS transistor threshold voltage.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	Sketch the stick diagram for NAND gate and give its procedural steps	8 Marks	L1	CO3	PO1
	b)	Derive the expression for Sheet resistance.	6 Marks	L2	CO3	PO2
		(OR)				
6.	a)	Design a layout diagram for N-MOS inverter.	7 Marks	L3	CO3	PO3
	b)	Illustrate the lambda-based design rules.	7 Marks	L2	CO3	PO8
		UNIT-IV				
7.	a)	Explain the construction of transmission gate based adder in detail.	7 Marks	L1	CO4	PO1
	b)	Explain in detail about critical delay path in array multiplier.	7 Marks	L4	CO4	PO2
		(OR)				
8.	a)	Outline the features of 4-by-4 barrel shifter using complementary transmission gates. Sketch its circuit diagram and explain its shifting operation.	7 Marks	L3	CO4	PO4
	b)	Write short note on: i) Carry skip adder. ii) Carry select adder.	7 Marks	L1	CO4	PO6
		UNIT-V				
9.	a)	Outline the different programmable blocks used in the general architecture of FPGA.	7 Marks	L2	CO4	PO2
	b)	Differentiate the channeled gate array and channel less gate array.	7 Marks	L4	CO4	PO4
		(OR)				
10.	a)	What is CPLD? Draw its basic structure and give its applications.	7 Marks	L1	CO4	PO1
	b)	Compare antifuse and vialink programmable interconnections for	7 Marks	L4	CO4	PO7

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CODE No.: 20BT50504 SVEC-20

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

CYBER SECURITY

[Computer Science and System 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)	Briefly explain about Cyber crime definition and origins of the world.	7 Marks	L1	CO1	PO1
	b)	Analyze the various classifications of cyber crime.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Discuss in detail about cyber crime and information security.	7 Marks	L1	CO1	PO1
	b)	Explain in detail about various online frauds.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.	a)	Enumerate the procedure for How criminal plan the attacks.	7 Marks	L1	CO1	PO1
	b)	State the art of "Cyber Stalking".	7 Marks	L1	CO1	PO1
		(OR)				
4.	a)	List and explain various types of Identity Thefts.	7 Marks	L2	CO1	PO2
	b)	Specify various types of phishing techniques.	7 Marks	L1	CO1	PO2
		UNIT-III				
5.	a)	With a neat sketch explain in detail about proliferation of mobile and wireless devices.	7 Marks	L2	CO3	PO3
	b)	Discuss briefly about attacks on mobile/cell phones.	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	Describe briefly about security implications for organizations.	7 Marks	L1	CO3	PO1
	b)	What are the various security challenges posed by mobile devices?	7 Marks	L2	CO3	PO2
		UNIT-IV				
7.	a)	List and explain various types of Keyloggers in cyber crime.	7 Marks	L1	CO2	PO1
	b)	With a neat sketch, Discuss in detail about various aspects of DoS and DDoS attacks.	7 Marks	L1	CO2	PO2
		(OR)				
8.	a)	Specify various tools that are used to fine the common vulnerabilities in a cyber crime.	7 Marks	L1	CO2	PO5
	b)	Explain in detail about attacks on wireless networks.	7 Marks	L1	CO2	PO1
		UNIT-V				
9.	a)	Discuss in detail about Digital Forensics Lifecycle.	7 Marks	L1	CO4	PO6
	b)	Describe briefly about chain custody concept.	7 Marks	L1	CO4	PO6
		(OR)				
10.	a)	Illustrate the concept of how official website of maharastra government was hacked.	7 Marks	L3	CO5	PO6
	b)	How Indian Case of Intellectual property crime was solved.	7 Marks	L3	CO5	PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

IMAGE PROCESSING

[Electrical and Electronics Engineering, Computer Science and Engineering (Cyber Security), Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is Image Processing and explain the types of Digital Image Processing.	8 Marks	L2	CO1	PO1
	b)	Derive the necessary equations in 2D-Discrete Fourier Transform.	6 Marks	L2	CO1	PO2
		(OR)				
2.	a)	What is the storage capacity to store an image with size of 1024x768 and 256 gray levels?	8 Marks	L4	CO1	PO4
	b)	Explain the KL transform with necessary equations.	6 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Explain different Gray level intensity transformations.	9 Marks	L2	CO2	PO2
	b)	Derive the steps involved in homomorphic filtering and explain the advantages of homomorphic filtering.	5 Marks	L4	CO2	PO3
		(OR)				
4.	a)	What is histogram of a digital image. Explain histogram Equalization process.	7 Marks	L2	CO2	PO1
	b)	Explain Image Enhancement by point processing method.	7 Marks	L3	CO2	PO5
		UNIT-III				
5.		Analyze how a degraded image can be restored using Inverse, wiener and Constrained least squares filtering with the necessary mathematical equations.	14 Marks	L2	CO3	PO7
		(OR)				
6.	a)	Explain how an image can be restored using following filters: i) Mean Filter ii) Order-Statistic filters	7 Marks	L2	CO3	PO1
	b)	Explain various types of noise models. Give the mathematical equations for Probability density functions.	7 Marks	L4	CO3	PO3
		UNIT-IV				
7.	a)	What is redundancy and explain various types of redundancies with examples.	8 Marks	L2	CO4	PO1
	b)	Compare JPEG and JPEG 2000 in Image compression.	6 Marks	L2	CO4	PO8
		(OR)				
8.	a)	Explain dictionary-based compression in detail.	7 Marks	L3	CO4	PO5
	b)	What is the need of Fidelity Criteria in Modern image Compression?	7 Marks	L2	CO4	PO6

UNIT-V

9.	a)	Define thresholding and explain various techniques used in global thresholding.	7 Marks	L2	CO5	PO2
	b)	Apply various techniques involved in Converting HSI color components in to RGB components.	7 Marks	L3	CO6	PO5
		(OR)				
10.	a)	Explain the need of Region Splitting and Merging in image Segmentation.	7 Marks	L2	CO5	PO2
	b)	What is the need of Pseudo color image processing in Security Applications?	7 Marks	L2	CO6	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

MACHINE LEARNING

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Information Technology]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Illustrate Find S Algorithm with suitable example.	7 Marks	L4	CO2	PO2
	b)	Describe Version Space and Representation of version Space with an example.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Discuss Concept learning as search with respect to General to specific ordering of hypothesis.	7 Marks	L2	CO1	PO1
	b)	Describe the process of finding the hypothesis that best fits the training examples in the Concept Learning.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Which attribute should be tested at the root of the decision tree? What is a good quantitative measure of the worth of an attribute?	7 Marks	L3	CO2	PO2
	b)	What is the policy by which ID3 generalizes from observed training examples to classify unseen instances?	7 Marks	L3	CO2	PO1
		(OR)				
4.	a)	Explain the various kernels used in Support Vector Learning.	7 Marks	L2	CO2	PO2
	b)	Which attribute is considered as the best classifier in the decision tree learning? Investigate	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	List and explain the problems well suited to be solved with artificial neural network.	7 Marks	L2	CO4	PO1
	b)	Analyze the representational power of perceptrons.	7 Marks	L3	CO4	PO2
		(OR)				
6.	a)	Explain how to learn Multilayer Networks using Backpropagation Algorithm.	7 Marks	L2	CO4	PO3
	b)	Illustrate Under what conditions the perceptron rule fails and it becomes necessary to apply the delta rule.	7 Marks	L2	CO4	PO3
		UNIT-IV				
7.	a)	How to predict probabilities using maximum likelihood hypotheses? Explain with necessary mathematical equations.	7 Marks	L2	CO2	PO2
	b)	Explain the minimum description length principle in detail.	7 Marks	L2	CO2	PO1
		(OR)				
8.	a)	Illustrate the Naïve Bayes theorem with an example.	7 Marks	L3	CO3	PO3
	b)	Which is the most probable classification of the new instance? Write a short note on the Bayes optimal classification.	7 Marks	L2	CO2	PO1

UNIT-V

9.	a)	Write the algorithm for the k-NEAREST NEIGHBOR for approximating a discrete-valued function.	7 Marks	L2	CO3	PO3
	b)	Is Locally weighted regression is a generalization of the k-nearest neighbor approach? Analyze.	7 Marks	L4	CO2	PO2
		(OR)				
10.	a)	Explain the architecture of the radial basis function network.	7 Marks	L2	CO2	PO1
	b)	*Q* learning is a special case of a general class of *Temporal Difference* algorithms. Justify	7 Marks	L4	CO2	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

CLOUD COMPUTING

[Computer Science and Engineering, Computer Science and Systems Engineering, 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)	Illustrate Risks and Challenges in Cloud Computing.	7 Marks	L2	CO1	PO1
	b)	List and Explain the characteristics of Cloud.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Demonstrate how to virtualizing an execution environment at different levels of the computing stack with the help of machine reference model.	7 Marks	L2	CO1	PO2
	b)	Explain about desktop and server editions of VMware.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Illustrate two different deployment models in Cloud computing.	7 Marks	L2	CO2	PO2
	b)	Define Virtual Appliances. Outline the concept with the help of Amazon, VMwares and JumpBox virtual appliances.	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	What separates a platform from a virtual appliance is that the software that is installed is constructed from components and services and controlled through the API that the platform provider publishes. Justify?	7 Marks	L4	CO2	PO4
	b)	Outline the three basic methods for securely connecting over a connection.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Demonstrate the modern implementation of SaaS using an Enterprise Service Bus and architected with SOA components with a neat diagram.	7 Marks	L4	CO3	PO4
	b)	Recall Networked identity service classes and Identity system codes of conduct in IDaas.	7 Marks	L3	CO3	PO3
		(OR)				
6.	a)	Illustrate the concept of Server and instance types with an example of Amazon Machine Instance (AMI).	7 Marks	L2	CO3	PO2
	b)	Elaborate the three aspects to assessing network capacity.	7 Marks	L2	CO3	PO2
		UNIT-IV				
7.		With a neat sketch illustrate Azure AppFabric service pathways	14 Marks	L3	CO4	PO3
		(OR)				
8.	a)	Summarizes the different Google APIs.	7 Marks	L2	CO4	PO5
	b)	Illustrate Six main elements are part of Windows Azure.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Categorize Amazon web services.	7 Marks	L2	CO5	PO2
	b)	Outline the Operating Systems offered by Amazon AWS.	7 Marks	L2	CO5	PO2

(OR)

10.	a)	Develop a catalogue web page for online book store and alsocreate a Simple Storage Service (S3) bucket on Amazon WebServices (AWS) cloud and upload booking web page of anyreservation system into S3 bucket.	7 Marks	L4	CO5	PO5
	b)	Outline the EC2 enterprise Software Types.	7 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ESTIMATION AND QUANTITY SURVEYING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Estimate the detailed quantity for the following items of two roomed building from the given plan and cross section as shown in Fig.1 below. Use long wall and short wall method. i) Earth work excavation ii) Brick work in CM (1:4) for substructure up to plinth level iii) D.P.C. in cc (1:1:3) with 2.50 cm thick	14 Marks	L5	CO1	PO1 PO2 PO4 PO5

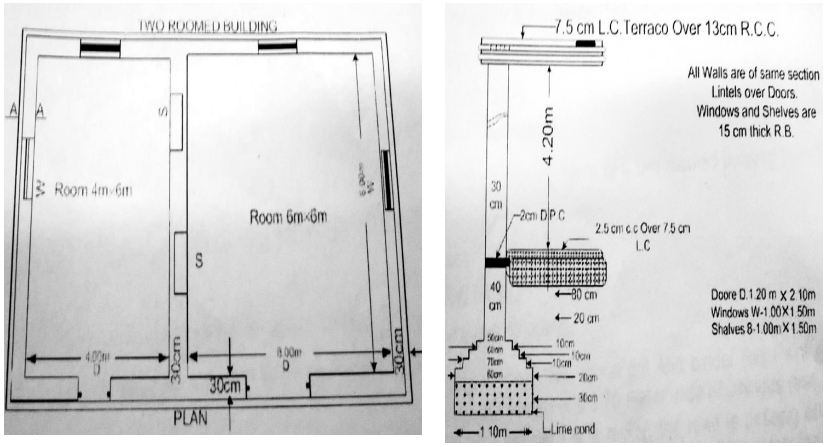


Fig.1

(OR)

2.	Find out the quantities of the following items of work from the drawing shown in Fig.2 below using centre line method. i) Random Rubble masonry in CM 1:6 ii) Earth filling inside the hall iii) Brickwork in Cement mortar 1:4 iv) RCC in roof slab	14 Marks	L5	CO1	PO1 PO2 PO4 PO5

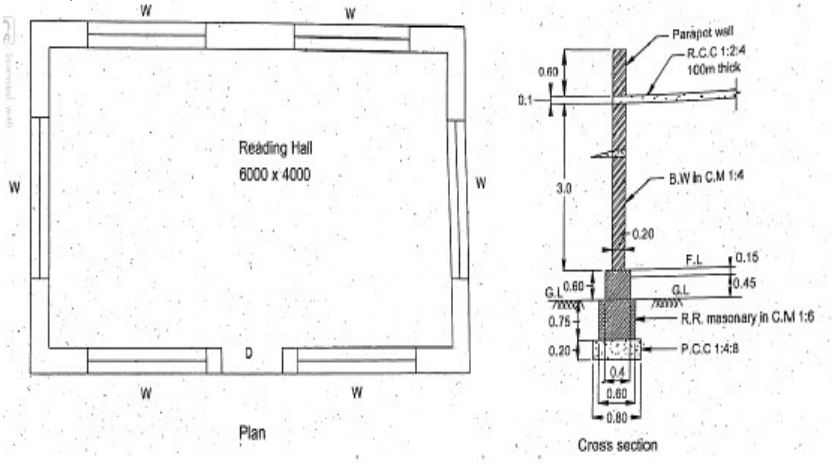


Fig.2

UNIT-II

3.		Prepare a detailed estimate of a Septic tank for the following items from the given Fig.3 a) Earth work exaction b) Cement concrete (1:3:6) c) Brick masonry in CM (1:4). d) Outside plastering in CM (1:3), 20 mm thick	14 Marks	L5	CO2	PO1 PO2 PO4 PO5

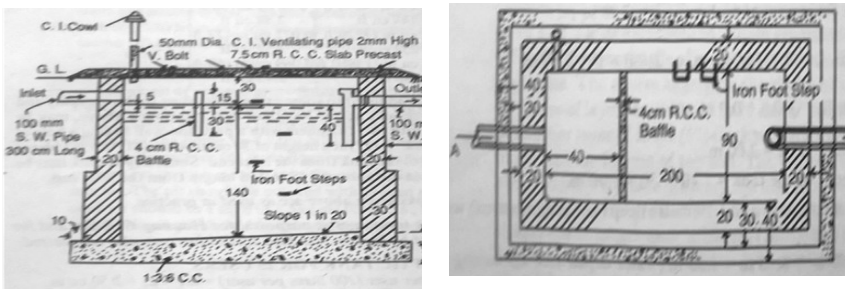


Fig.3

(OR)

4.	a)	Prepare a detailed estimate for the bituminous road shown in Fig.4	14 Marks	L5	CO2	PO1 PO2 PO4 PO5

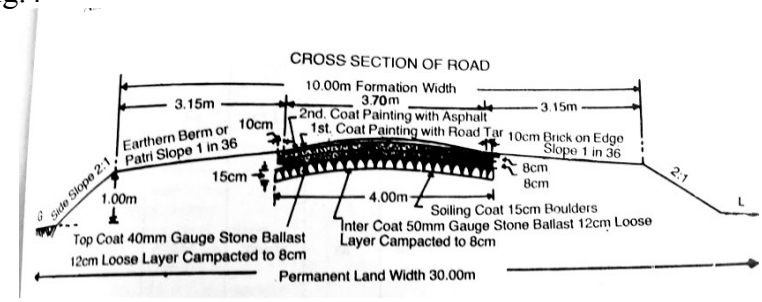


Fig.4

UNIT-III

5.	a)	Compare the differences in specification for various class buildings as per SSR.	7 Marks	L4	CO3	PO1
	b)	Write the detailed specification as per SSR for the following items of second-class building. i) Earth work excavation ii) Brick masonry for super structure iii) Plastering for exterior walls	7 Marks	L4	CO3	PO1 PO2 PO4 PO6 PO11

(OR)

6.	a)	Determine the cost of the following items of work. i) PCC for bed concrete with 1:4:8 proportion ii) Brick masonry for super structure with cement mortar 1:8 iii) Plastering in CM (1:4), 12 mm thickness.	8 Marks	L4	CO3	PO1 PO2 PO4
	b)	Classify the various types of specification and distinguish its merits and demerits.	6 Marks	L4	CO3	PO1

UNIT-IV

7.	a)	Explain the type of contract made for metro projects across India.	7 Marks	L2	CO4	PO1
	b)	Compare contract and agreement with a best example.	7 Marks	L4	CO4	PO1

(OR)

8.	a)	Explain the specifications for labor contract and material contract.	7 Marks	L2	CO4	PO1 PO6 PO11
	b)	Discuss how technology transfer helps in developing the public private partnerships in construction industry.	7 Marks	L4	CO4	PO1 PO2

UNIT-V

9.	a)	Classify the various methods of valuation.	4 Marks	L4	CO5	PO1 PO2 PO5
	b)	An old building has been purchased by a person @ a cost of Rs. 6,00,000 excluding the cost of land. Calculate the amount of annual sinking fund @ 9% interest assuming the life of building as 30 years and the scrap value of the building as 10% of the purchase and prepare a report.	10 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO6
		(OR)				
10.	a)	Prepare a detailed report on valuation of an old building has been purchased by a person @ a cost of Rs. 6,00,000 excluding the cost of land. Calculate the amount of annual sinking fund @ 9% interest assuming the life of building as 30 years and the scrap value of the building as 10% of the purchase.	8 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO5 PO6 PO11
	b)	Define the following: i) Obsolescence ii) Book value iii) Sinking fund iv) Salvage value	6 Marks	L2	CO5	PO1 PO6



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

INFRASTRUCTURE DEVELOPMENT AND MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Discuss the impact of infrastructure development on economic growth, standard of living and environment.	14 Marks	L4	CO1	PO1 PO2 PO6 PO7 PO11
		(OR)				
2.	a)	Discuss the reasons for the rise of public sector and government involvement in infrastructural activities.	7 Marks	L4	CO1	PO1 PO2 PO6
	b)	Describe the changed socio-economic scenario and current infrastructure problems in India.	7 Marks	L4	CO1	PO1 PO2 PO6 PO11

UNIT-II

3.		State the current power scenario in India? Discuss different strategies of power generation and factors affecting power generation.	14 Marks	L4	CO2	PO1 PO2 PO6 PO7
		(OR)				
4.	a)	Discuss in detail about public private partnership contracts. Identify it's role in infrastructure development.	7 Marks	L4	CO2	PO1 PO2 PO6 PO8 PO11
	b)	Write a short note on turnkey contracts.	7 Marks	L2	CO2	PO1 PO8 PO11

UNIT-III

5.		Giving a historical review of the government policies on the highways infrastructure, discuss the different 20year plan for the development of highways in India.	14 Marks	L4	CO3	PO1 PO2 PO4 PO6
		(OR)				
6.	a)	Discuss the effects of current public policies on transportation, power and telecom sectors.	7 Marks	L4	CO3	PO1 PO2 PO4
	b)	Explain the legal framework for regulating private participation in roads and highways.	7 Marks	L2	CO3	PO1 PO8

UNIT-IV

7.	a)	Explain the construction component of oil and gas sector.	7 Marks	L2	CO4	PO1
	b)	Discuss the change in regulatory framework of government policies and future plans that could lead to the development of infrastructure in India.	7 Marks	L4	CO4	PO1 PO2 PO4 PO7
		(OR)				
8.		Discuss the technological and methodological demands on construction management in infrastructure development projects.	14 Marks	L4	CO4	PO1 PO2 PO4 PO6
		UNIT-V				
9.		What do you mean by thermal power and nuclear power? Discuss the advantages and disadvantages of both in infrastructure development.	14 Marks	L4	CO5	PO1 PO2
		(OR)				
10.	a)	Explain the toll collection strategy in India. Differentiate between shadow tolling and direct tolling.	7 Marks	L4	CO5	PO1 PO2 PO5 PO8 PO11
	b)	Write a brief note on MRTS, LRT and Multi model transport system.	7 Marks	L2	CO5	PO1 PO6 PO7



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ADVANCED FOUNDATION ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Discuss Vesic's bearing capacity theory.	14 Marks	L2	CO1	PO1 PO5
		(OR)				
2.	a)	Where do you provide a combined footing? Discuss the procedure for the design of trapezoidal combined footing.	7 Marks	L4	CO1	PO1 PO2 PO5 PO10
	b)	Figure 1 shows a shallow foundation in a clay. The following data are given: B = 1.4 m; D_f = 1.4 m; b = 0.9 m; H = 6.5 m; slope angle = 30°, unit weight of soil = 17.5 kN/m^3, φ=0° and c = 50 kN/m^2. Determine the gross allowable bearing capacity with a factor of safety 4. Take N_c = 6.3.	7 Marks	L4	CO1	PO1 PO2 PO4 PO6 PO8 PO10

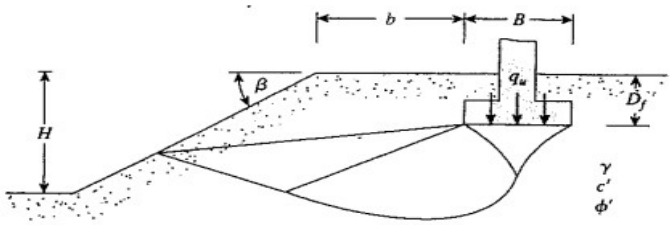


Fig. 1

UNIT-II

3.	a)	Discuss the Janbu's method of estimating end bearing resistance of pile, Q_p.	7 Marks	L2	CO2	PO1 PO5
	b)	A pile 40 cm in dia., 10 m long, is driven into a clay soil with C_u = 40 kN/m^2 and saturated unit weight of clay is 20 kN/m^3. Ground water is almost at the level of the ground surface. Determine the uplift capacity of the pile under undrained conditions. The submerged weight of the pile is 50 kN. Take α = 0.50.	7 Marks	L4	CO2	PO1 PO2 PO4 PO8
		(OR)				
4.	a)	Write a brief note on the analysis and design of laterally loaded piles.	7 Marks	L4	CO2	PO1 PO2
	b)	A steel pipe pile of 61 cm outside diameter with a wall thickness of 2.5 cm is driven into loose sand (D_r = 30%) under submerged conditions to a depth of 20 m. The submerged unit weight of the soil is 8.75 kN/m^3 and the angle of internal friction is 33°. The EI value of the pile is 4.35 x 10^{11} kg-cm^2 (4.35 x 10^2 MN-m^2)**.** Compute the ground line deflection of the pile under a lateral load of 268 kN at ground level under a free head condition using the non-dimensional parameters of Matlock and Reese. The n_h value for D_r = 30% is 6 MN/m^3 for a submerged condition.	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO6 PO8 PO10

UNIT-III

5.	a)	What are sheet piles? Classify sheet piles.	7 Marks	L4	CO3	PO1 PO2
	b)	A cantilever sheet pile is to be constructed to retain sandy soil to a depth of 8 m. The dry unit weight of sand is 17 kN/m^3 and the saturated unit weight is 20 kN/m^3. The angle of shearing resistance of sand is 34°. The water level is 4 m above the dredge line. Compute the depth of embedment of the sheet pile.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO8 PO10
		(OR)				
6.	a)	Draw different types of apparent pressure diagrams used in the design of braced cuts.	7 Marks	L2	CO3	PO1 PO10
	b)	An anchored bulkhead retains cohesionless soil of height 8 m. The free water level is at 2.0 m below the top ground surface. Anchors are provided at 1.0 m below top. The saturated and submerged unit weights of the soil are 18.5 kN/m^3 and 9 kN/m^3 respectively. The angle of internal friction of the soil is 30°. Determine i) depth of embedment, ii) anchor pull and iii) maximum moment in the sheet pile. Use the free earth support method.	7 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO8 PO10

UNIT-IV

7.	a)	What are the characteristics of an expansive soil? How do you identify that? Discuss the factors affecting the swelling of expansive soils.	7 Marks	L2	CO5	PO1 PO2 PO8
	b)	Determine the length and capacity of triple undereamed pile of stem diameter 400 mm. The stratum is a deep deposit of average cohesion of 70 kN/m^2.	7 Marks	L4	CO4	PO1 PO2 PO8 PO10
		(OR)				
8.	a)	What are the foundation techniques available for different structures to be constructed in expansive soils? Describe any two of them in detail.	7 Marks	L4	CO5	PO1 PO2 PO10
	b)	Determine the capacity of a 5 m long single underreamed pile of 400 mm stem diameter. The stratum is a deep deposit of medium dense sand having γ = 18 kN/m^3 and φ = 30°.	7 Marks	L4	CO4	PO1 PO2 PO8 PO10

UNIT-V

9.		Write short notes on the following: i) Breakwaters ii) Wharves iii) Jetties iv) Ship Impact	14 Marks	L2	CO6	PO1 PO10
		(OR)				
10.	a)	Explain different types of marine structures and their uses.	7 Marks	L2	CO6	PO1 PO10
	b)	Enumerate the design of rubble-mound breakwaters.	7 Marks	L2	CO4	PO1 PO10

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

PRESTRESSED CONCRETE

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Explain the basic concept of pre–stressed concrete with examples? Compare any two types of pre–stressing.	14 Marks	L4	CO1	PO1 PO2 PO5
		(OR)				
2.		Discuss the necessity of high strength concrete and high tensile steel in the prestressed concrete than in reinforced cement concrete structures.	14 Marks	L4	CO1	PO1 PO2

UNIT-II

3.		A rectangular concrete beam of cross–section 200mm x 300mm is pre–stressed by means of 10 wires of 5mm diameter located at 60mm from the soffit of the beam and 5 number of 5mm diameter wires located at 25mm from the top. Assuming the pre–stress in the steel as 850 N/mm^2, Calculate the stresses at the extreme fibres of the mid– span section when the beam is supporting its own weight over a span of 8m. Assume the live load as 6 kN/m is imposed.	14 Marks	L4	CO2	PO1 PO2
		(OR)				
4.		A post-tensioned concrete beam, 100 mm wide and 300 mm deep, spanning over 10 m is stressed by successive tensioning and anchoring of three cables 1, 2 and 3, respectively. The cross-sectional area of each cable is 200 mm^2 and the initial stress in the cable is 1400 N/mm^2, $\alpha_e = 6$. The first cable is parabolic with an eccentricity of 50 mm below the centroidal axis at the centre of span and 50 mm above the centroidalais at the support sections. The second cable is parabolic with zero eccentricity at the supports and an eccentricity of 50 mm at the centre of the span. The third cable is straight with a uniform eccentricity of 50mm below the centroidal axis. Estimate the percentage loss of stress in each of the cables, if they are successively tensioned and anchored.	14 Marks	L4	CO2	PO1 PO2

UNIT-III

5.	a)	A pretensioned prestressed concrete beam of rectangular section is required to support a design ultimate moment of 100 kNm. Design the section if f_{ck} is 50 N/mm^2. and f_p=1600 N/mm^2.	7 Marks	L6	CO3	PO1 PO2 PO3 PO8
	b)	A post-tensioned bonded beam of unsymmetrical I-section is required to support a design ultimate moment of 1400 kNm. Determine the overall depth and the thickness of the compression flange required if f_{ck} is 35 N/mm^2 and f_p= 1500 N/mm^2.	7 Marks	L6	CO3	PO1 PO2 PO3 PO8

(OR)

6.	A prestressed girder of rectangular section 200 mm wide by 400 mm deep is to be designed to support an ultimate shear force of 150 kN. The uniform prestress across the section is 5 N/mm^2. Given the characteristic cube strength of concrete as 40 N/mm^2 and Fe-415 HYSD bars of 8 mm diameter, design suitable spacing for the stirrups confirming to the Indian Standard Code IS 1343 recommendations. Assume cover to the reinforcement as 50 mm.	14 Marks	L6	CO3	PO1 PO2 PO3 PO8

UNIT-IV

7.	The end block of a prestressed concrete beam, rectangular in section is 100mm wide and 200 mm deep. The prestressing force of 100 kN is transmitted to concrete by a distribution plate, 100 mm wide and 50 mm deep, concentrically located at the ends. Calculate the position and magnitude of the maximum tensile stress on the horizontal section through the centre and edge of the anchor plate. Compute the bursting tension on the horizontal planes using Magnel method.	14 Marks	L6	CO4	PO1 PO2 PO3 PO8

(OR)

8.	Calculate the position and magnitude of the maximum tensile stress and the bursting tension on the horizontal planes using Guyon's method. The end block of a prestressed concrete beam, rectangular in section is 150mm wide and 250 mm deep. A concentric anchor force of 100 kN is transmitted to concrete by a distribution plate, 100 mm wide and 50 mm deep, concentrically located at the ends.	14 Marks	L6	CO4	PO1 PO2 PO3 PO8

UNIT-V

9.	Design a precast prestressed inverted T-section to be used in a composite slab of total depth 600 mm and width 300 mm. The composite slab is required to support an imposed load of 16 kN/m^2 over a span of 14 m. The compressive stress in concrete at transfer and the tensile stress under working loads may be assumed to be 20 and 1 N/mm^2 respectively. The loss ratio is 0.85. Determine the prestressing force required for the section. Load due to self-weight of the precast beam and in situ concrete.	14 Marks	L6	CO5	PO1 PO2 PO3

(OR)

10.	A precast pre-tensioned beam of rectangular section has a breadth of 200 mm and a depth of 150 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 150 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 400 mm and thickness 40 mm. If the composite beam supports a live load of 6 kN/m^2, calculate the resultant stresses developed in the precast and in situ concrete assuming the pre-tensioned beam as unpropped. M40 and M20 concrete are used for pre tensioned and in-situ concrete.	14 Marks	L4	CO5	PO1 PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

BRIDGE ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the different types of live loads considered in the design of RCC bridges? Explain them.	8 Marks	L2	CO1	PO1 PO6 PO8 PO10
	b)	Explain the gauges which are used in railways.	6 Marks	L2	CO1	PO1 PO6 PO8

(OR)

2.	a)	Discuss about general design requirements of bridges.	7 Marks	L2	CO1	PO1 PO6 PO8
	b)	Mention the importance of investigation of site in bridge design.	7 Marks	L2	CO1	PO1 PO6 PO8

UNIT-II

3.		Design a reinforced concrete slab bridge using the following data: Clear width of road way=7.8 m Clear span =11 m Live load= IRC class AA loading. Use M-25 grade concrete & Fe 415 steel.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

(OR)

4.		Design the RC box culvert bridge, situated in the state highway with following data: Width of the bridge: 12 m Wearing course: 56 mm thick Condition of exposure: Moderate Depth of foundation: 1.35 m Clear span: 5 m Height of the vent: 3 m Load case: AA tracked vehicle M25 grade concrete and HYSD bars.	14 Marks	L6	CO2	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10

UNIT-III

5.		Design the interior slab panel of a reinforced concrete T-beam bridge using the following data by Pigeauds method. Clear width of road way=8 m Effective span =16 m Live load=class AA. Use M-20 grade of concrete & Fe 415 steel.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6

						PO7 PO8 PO10
		(OR)				
6.		Design the intermediate longitudinal girder of the bridge by Courbon's method for the maximum loading of class AA tracked vehicle. An RCC bridge consists of 3 longitudinal girders of span 15 m each with 4 cross beams at appropriate places. Assume the other preliminary dimensions of this two lane bridge as per the IRC specifications, moderate exposure and cement concrete wearing coat.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10
		UNIT-IV				
7.	a)	Explain the forces acting on bridge bearings.	5 Marks	L2	CO4	PO1 PO6 PO8
	b)	Design a steel rocker bearing for transmitting a vertical reaction of 1100 kN and a horizontal reaction of 150 kN at the support of a bridge girder, assuming the following permissible stresses according to IRC. Permissible compressive stress in concrete bed block = 5 N/mm^2 Permissible bending stress in steel plate = 165 N/mm^2 Permissible bearing stress in steel plate = 190 N/mm^2 Permissible shear stress in steel = 110 N/mm^2 Sketch the typical details of the rocker bearing.	9 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10
		(OR)				
8.		Design an elastomeric pad bearing to support a tee beam girder of a major bridge using the fallowing data: Maximum dead load reaction/bearing = 340 kN Maximum load reaction/ bearing = 550 kN Longitudinal force due to friction for each bearing = 35 kN Effective span of the girder = 23 m Estimated rotation at bearing of the girder due to dead and live loads = 0.003 radians. M20 grade concrete is used. Total estimated shear strain due to creep, shrinkage and temperature = 5 x 10^{-4} units. Draw the details of the bearing.	14 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO10
		UNIT-V				
9.	a)	List out the various forces acting on piers.	7 Marks	L2	CO5	PO1 PO6 PO8
	b)	Specify the design principles of abutment as per code.	7 Marks	L2	CO5	PO1 PO6 PO8
		(OR)				
10.		Write short note on: i) Bed block ii) Wing walls and approach slab iii) Bridge foundations	14 Marks	L2	CO5	PO1 PO6 PO8 PO10



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

GEOSPATIAL TECHNOLOGIES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Discuss the computation of photographs for flight planning.	7 Marks	L2	CO1	PO1
	b)	Calculate the flying height of the aircraft if the elevation of terrain is 800m above MSL, the camera's focal length50mm and the scale of image required is 1:3500.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		(OR)				
2.	a)	Explain Categories of aerial photogrammetry.	7 Marks	L2	CO1	PO1
	b)	Calculate the scale of photographs, if the flying height of the aircraft is 1500m, the elevation of terrain is 1000m and the focal length of the camera is 250mm.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10
		UNIT-II				
3.		What is the basic process and elements involved in electromagnetic remote sensing of earth resources? Explain them.	14 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO6
		(OR)				
4.	a)	Explain the following : i) Spatial resolution ii) Spectral resolution	7 Marks	L4	CO2	PO1 PO2 PO7
	b)	Explain the basics of visual interpretation of imageries.	7 Marks	L4	CO2	PO1 PO2 PO7
		UNIT-III				
5.		Distinguish between Raster GIS and vector GIS.	14 Marks	L4	CO3	PO1 PO2 PO5 PO6
		(OR)				
6.		Explain the Geographical Information system and also explain the components used in GIS analysis.	14 Marks	L4	CO3	PO1 PO2 PO5 PO6
		UNIT-IV				
7.		Evaluate the various network analysis tools used in GIS.	14 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO7

(OR)

8.	Analyze the process of vector overlay analysis to identify the availability of natural resources.	14 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO7

UNIT-V

9.	How GIS is useful as a tool in Urban planning and management.	14 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO6

(OR)

10.	Discuss suitable RS and GIS methods to assess the impact due to floods and droughts.	14 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO6



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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

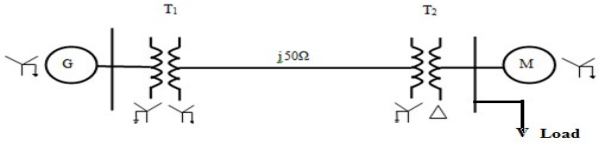
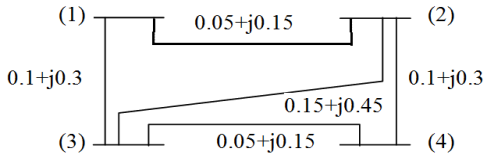
POWER SYSTEM ANALYSIS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Draw the per unit reactance diagram for the power systems shown in figure. Neglecting resistance, use a base of 100 MVA, 220 kV in 50 Ohms line.  The ratings of the network components are: G: 40 MVA, 25 kV, X'' = 20%; M: 50 MVA, 11 kV, X'' = 30%; T1:40 MVA, 33 Y / 220 Y kV, X = 15%; T2: 30 MVA, 11 Δ /220Y kV, X = 15%, Load: 11 kV, 50MW + j68 MVAR.	8 Marks	L3	CO1	PO4
	b)	Develop Y_{bus} matrix by direct inspection method for the given power system shown in figure. 	6 Marks	L3	CO1	PO5

(OR)

2.	a)	Develop the design procedure for the building up of Zbus when new element is added between two existing buses. Assume mutual coupling between the added element and the elements in the partial network.	7 Marks	L3	CO1	PO3
	b)	Select suitable algorithm and find the bus impedance matrix for the given network connections. Element Bus code Impedance 1 1-2 0.2 2 1-3 0.4 3 2-3 0.4	7 Marks	L4	CO1	PO5

UNIT-II

3.	a)	Define bus in power system? Explain the types of buses and their significance.	4 Marks	L1	CO2	PO1
	b)	The system data for a load flow problem are given in table.	10 Marks	L4	CO2	PO5

Line Data:

Line	Bus code	Admittance in PU
1	1-2	2-8j
2	1-3	1-4j
3	2-3	0.6-2.6j

Bus data:

Bus code	P_d	Q_d	V	Remarks
1	--	--	1.06	Slack
2	0.5	0.2	--	PQ
3	0.4	0.3	--	PQ

Determine bus voltages at the end of first iteration by G-S method by taking α=1.6.

(OR)

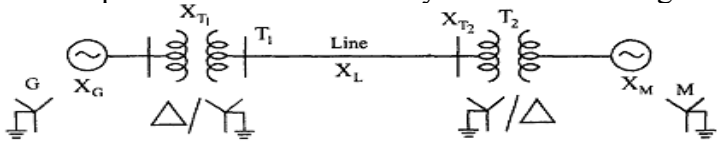
4.	a)	The voltage at bus-1 is $V_1=1.0\angle 0^0$p. u. The scheduled loads on bus-2 is $P_{d2}=4.0$pu, $Q_{d2}=3.2$pu. Given the line admittances, Y_{12}= j30 p.u, Y_{13}=j80 p.u. and Y_{23} =j20pu using NR-method with initial at voltage start. Find V2 and V3.	7 Marks	L4	CO2	PO5
	b)	Develop the load flow equations suitable for N-R method in polar co ordinates	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Write short note on: i) Short circuit capacity, ii) Current limiting reactor.	6 Marks	L2	CO3	PO1
	b)	Four busbar sections have each a generator of 40 MVA 10% reactance and a busbar reactor of 8% reactance. Determine the maximum MVA fed into a fault on any bus bar section and also the maximum MVA if the number of similar bus bars in sections is very large.	8 Marks	L3	CO3	PO2

(OR)

6.	a)	Derive an expression for power in a 3-phase circuit in terms of symmetrical components.	7 Marks	L4	CO3	PO1
	b)	Draw the sequence networks for the system shown in Figure.	7 Marks	L4	CO3	PO2



UNIT-IV

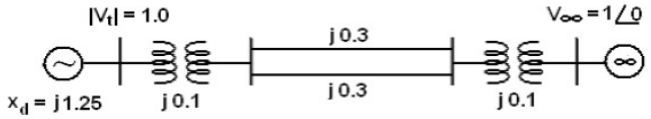
7.		Analyze the zero sequence reactance diagram of a transformer when the primary and secondary windings are connected as grounded Y/Delta, ungrounded Y/ Delta and in Delta/Delta connections.	14 Marks	L3	CO3	PO1

(OR)

8.	a)	Derive the necessary equation to determine the fault current for Double line to ground fault with fault impedance. Sketch the connection diagram of the sequence network for LLG fault.	7 Marks	L3	CO3	PO1
	b)	A 50 MVA, 11 kV three-phase alternators was subjected to different types of faults. The fault currents are as under: 3-phase fault = 2000 A; Line-to-Line fault = 2600 A; Line-to-ground fault = 4200 A. The generator neutral is solidly grounded. Find the values of the three sequence reactance of the alternator. Ignore resistances.	7 Marks	L3	CO3	PO2

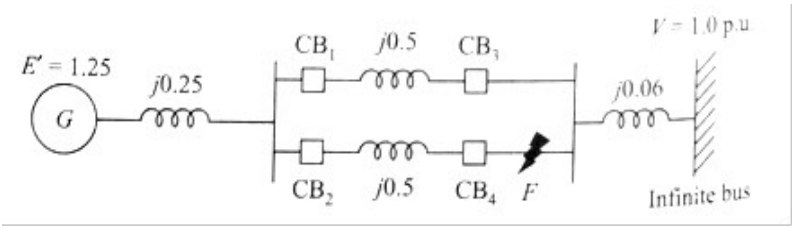
UNIT-V

9.	a)	State the assumptions made in deriving swing equation. Based on the laws of rotation, develop an equation to simulate the motion of the rotor of a single machine connected to an infinite bus system.	7 Marks	L3	CO4	PO1
	b)	A generator supplies 1.0 pu power to an infinite bus as shown in figure. The terminal voltage and infinite bus voltage are 1.0 pu. All the reactance are on a common base.	7 Marks	L3	CO4	PO2



Determine steady state stability limit when both lines are in and when one line is switched off.

(OR)

10.	a)	Given the circuit as shown in below, where a 3-ϕ fault is applied on one end of a line near circuit breaker CB4. Find the critical fault clearing angle for clearing the fault simultaneous opening of breaker CB2 and CB4. The generator is delivering 1.0 p.u MW at the instant preceding the fault. All the p.u. quantities are in common MVA. 	10 Marks	L4	CO4	PO2
	b)	Explain the methods of improving the power system stability.	4 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

SOLID STATE DRIVES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	A motor drives two loads. One has rotational motion. It is coupled to the motor through a reduction gear with a = 0.1 and efficiency of 90%. The load has a moment of inertia of 10 Kg-m^2 and a torque of 10 N-m. Other load has translational motion and consists of 1000 Kg weight to be lifted up a uniform speed of 1.5 m/s. Coupling between this load and the motor has an efficiency of 85 %. Motor has an inertia of 0.2 Kgm^2 and runs at a constant speed of 1420 rpm. Determine the equivalent inertia referred to the motor shaft and power developed by the motor.	7 Marks	L1	CO1	PO4
	b)	Discuss a detail on status of AC and DC drives.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	An industrial application demands multi-quadrant operation. Suggest a suitable arrangement of hoist load meeting the requirements. Justify your suggestion with relevant proof.	9 Marks	L1	CO1	PO6
	b)	Discuss any two closed loop control schemes of electric drive with a neat block diagram.	5 Marks	L2	CO1	PO1
		UNIT-II				
3.		Analyze the operation and characteristics of a single-phase multi-quadrant operation of separately excited DC motor fed from fully controlled rectifier using reversible switch in armature, dual converter and field current reversal.	14 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Discuss the functioning of a three-phase half-controlled rectifier fed separately excited DC motor including voltage and current waveforms with an appropriate expression. Also sketch the speed-torque characteristics.	7 Marks	L1	CO2	PO1
	b)	A 230 V, 1500 rpm, 60 A separately excited motor with armature resistance of 0.5 Ω, is fed from a 3-phase fully controlled rectifier. Available AC source has a line voltage of 440 V, 50 Hz. A star-delta connected transformer is used to feed the armature so that motor terminal voltage equals rated voltage when converter firing angle is zero. i) Calculate transformer ratio. ii) Determine the value of firing angle when: (A) motor is running at 1300 rpm and rated torque; (B) when motor is running at (-700) rpm and twice the rated torque.	7 Marks	L4	CO2	PO4
		UNIT-III				
5.		An industrial application demands motoring, regenerative and dynamic control. Suggest a suitable arrangement of chopper fed DC series motor meeting the requirements. Justify your	14 Marks	L4	CO2	PO6

suggestion with relevant proof.

(OR)

6.	a)	A 230 V, 960 rpm and 200 A separately excited DC motor has an armature resistance of 0.02 Ω. This motor is fed from a chopper which provides motoring and motoring operations. The source has a voltage of 230 V, a motor is now operated in dynamic braking with chopper control with the braking resistance of 2 Ω. i) Calculate duty ratio of chopper for a motor of 600 rpm and braking torque of twice the rated value. ii) What will be the motor speed for a duty ratio of 0.6 and motor torque equal to twice the rated value.	7 Marks	L2	CO2	PO4
	b)	A 230 V, 1000 rpm, 180 A, separately excited DC motor whose armature resistance id 0.015 Ω. Is fed from a chopper which provides both motoring braking operations. The source voltage is 230 V. calculate to duty ratio of chopper for motoring and braking at rated torque and 400 rpm.	7 Marks	L2	CO2	PO4

UNIT-IV

7.		Describe in detail about the static scherbius drive improves the sustainability of slip ring induction motor. Also sketch the speed-torque characteristics with relevant expressions.	14 Marks	L1	CO3	PO7

(OR)

8.	a)	Summarize a short note about induction motor operation with an injected voltage using slip power recovery schemes.	7 Marks	L3	CO3	PO5
	b)	A 440 V, 50 Hz, 6-pole, Y-connected wound rotor motor has the following parameters: Rs = 0.5 Ω, Rr' = 0.4 Ω, Xs = Xr' = 1.2 Ω, Xm = 50 Ω Stator to rotor turns ratio is 3.5. Motor is controlled by static rotor resistance control. External resistance is chosen such that the breakdown torque is produced at standstill for a duty ratio is zero. Calculate the value of external resistance. How duty ratio should be varied with speed so that motor accelerates at maximum torque.	7 Marks	L3	CO3	PO4

UNIT-V

9.		Explain the operation of closed Loop control of CSI fed synchronous motor drives.	14 Marks	L2	CO4	PO1

(OR)

10.	a)	Discuss a detail of variable reluctance motor with an equivalent circuit and speed-torque characteristics.	7 Marks	L1	CO4	PO1
	b)	Discuss in detail how to design an efficient bipolar drive circuit for variable reluctance motor as compared to low power drive.	7 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

SWITCHGEAR AND PROTECTION

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the merits and demerits of SF6 gas used as insulating and arc quenching medium.	7 Marks	L2	CO1	PO1
	b)	What are the advantages and disadvantages of using air as the arc quenching medium?	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Compare the following types of air-blast circuit breaker. i) Axial blast type ii) Cross blast type	7 Marks	L4	CO1	PO2
	b)	Design the value of resistance to be used across the contacts to eliminate the restriking voltage and also calculate the voltage appearing across the pole of a CB if a magnetizing current of 10A is interrupted for a system of 132KV, 3-ph, 50 Hz, the circuit Phase to ground capacitance is 0.01μF, the inductance is 6H.	7 Marks	L6	CO1	PO3

UNIT-II

3.	a)	With the help of a neat sketch explain the principle of operation of Differential relays and biased Differential relays.	7 Marks	L2	CO2	PO2
	b)	Analyze With the help of a flowchart about the operation of microprocessor based over current relay with inverse time and IDMT characteristics.	7 Marks	L4	CO2	PO2
		(OR)				
4.	a)	Discuss how an Amplitude comparator can be converted into a Phase comparator and vice versa.	7 Marks	L4	CO2	PO2
	b)	Explain the operation of a static inverse time over current relay with the help of a block diagram.	7 Marks	L2	CO2	PO2

UNIT-III

5.	a)	Design and sketch the complete protection scheme for 120 MVA, Δ-Y connected, 11/220 kV transformer is to be protected by percentage differential scheme. CT's used are of 5000/5 A and 400/1A ratios respectively.	7 Marks	L6	CO3	PO3
	b)	Enumerate various types of faults that may occur in a three phase alternator and discuss the protection schemes used for the protection from these faults.	7 Marks	L2	CO3	PO5
		(OR)				
6.	a)	List the various faults that occur in a transformer and also mention the suitable protective schemes available for the protection of transformers.	7 Marks	L1	CO3	PO5
	b)	Explain the construction and principle of operation of Buchholtz relay.	7 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Compare the protective characteristic of a Surge Arresters against the with stand characteristic of equipment on a voltage/ Time curve.	7 Marks	L4	CO4	PO2
	b)	Write a short notes on: i) Fault-bus protection. ii) Merz-price voltage balance system for protection of feeder.	7 Marks	L1	CO4	PO1
		(OR)				
8.	a)	How do earthing screen and ground wires provide protection against direct lightning strokes?	7 Marks	L1	CO4	PO2
	b)	What is the importance of bus bar protection? Describe any one method used for the bus bar protection scheme.	7 Marks	L1	CO4	PO2

UNIT-V

9.	a)	Determine the value of reactance to be connected in the neutral connection to neutralize the capacitance current, of a overhead line to ground capacitance of each line equal to 0.015 μF. Frequency=50 Hz.	7 Marks	L2	CO5	PO2
	b)	In a 50 Hz, overhead line the capacitance of one line to earth was 1.5 μF. It was decided to use an earth fault neutralizer. Evaluate the reactance parameter to neutralizer the capacitance of: i) 100% of the length of the line ii) 95% of the length of the line iii) 90% of the length of the line	7 Marks	L4	CO5	PO4
		(OR)				
10.	a)	Calculate the reactance of Peterson coil suitable for a 33 kV, 3-phase transmission line having a capacitance to earth of each conductor as 4.5 μF. Assume supply frequency to be 50 Hz.	7 Marks	L2	CO5	PO2
	b)	Describe the human societal issues if the electrical wiring of a house is not followed the proper grounding methods.	7 Marks	L3	CO5	PO6



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

ELECTRIC VEHICLES

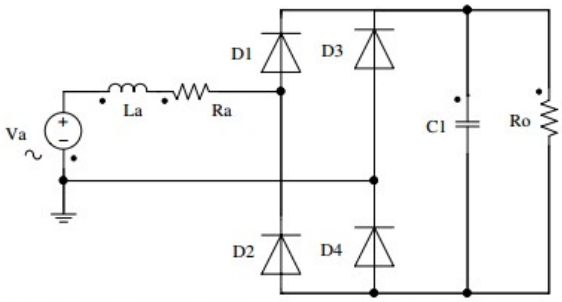
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	List out the different types of architectures of hybrid electric vehicle and explain it with neat diagrams.	7 Marks	L2	CO1	PO1
	b)	Identify the challenges and analyze the key technologies found to overcome those disabilities in Hybrid electric vehicles.	7 Marks	L2	CO1	PO2
		(OR)				
2.		Explain with a neat diagram about the detailed structure of EV system and list out its features.	14 Marks	L2	CO1	PO1
		UNIT-II				
3.		Analyze the operations of isolated bidirectional DC-DC converter and non-isolated converter in attaining higher performance characteristics for EVs.	14 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Explain the bidirectional battery chargers and contact less charging techniques for EV system with suitable diagram and performance characteristics.	7 Marks	L3	CO2	PO5
	b)	Demonstrate the operation of fly-back converters for HEVs.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Discuss the construction and operation of flux reversal permanent magnet motor drives with neat diagrams and necessary equations.	7 Marks	L2	CO3	PO1
	b)	Analyze the performance characteristics of flux switching motor drives with and without PM to obtain its suitability for electric vehicles.	7 Marks	L2	CO3	PO2
		(OR)				
6.	a)	Explain the operation and different types of control techniques associated with outer rotor flux Mnemonic permanent magnet drives.	7Marks	L2	CO3	PO5
	b)	Describe the design criteria of outer-rotor hybrid-excited DSPM motor drives for EVs with relevant equations.	7 Marks	L3	CO3	PO1
		UNIT-IV				
7.		Explain the electric circuit modelling of batteries and ultra-capacitors in electric vehicle systems with relevant diagrams and equations.	14 Marks	L3	CO4	PO1
		(OR)				

8.	a)	Explain the characterization of batteries with required diagrams and necessary equations.	7 Marks	L2	CO4	PO1
	b)	For the given practical circuit diagram, Va = 220 V, 400 Hz, La = 1 mH, Ra = 0.05 (which can be neglected in the analytical calculations), C = 10 mF, and VD = 0.8 V. The DC output is equivalent to 10 Ω. Find the output voltage, voltage regulation and also calculate voltage ripple by assuming the load current is constant and the capacitor supplies current to the load 50% of the time.	7 Marks	L3	CO4	PO2



UNIT-V

9.	a)	Explain the types, principle and modelling concepts of magnetic gear machines with suitable pictorial representation and necessary equations.	8 Marks	L2	CO5	PO1
	b)	Justify how the magnetic gear concepts to PMBLDC outer rotor motor for EVs can enrich its sustainability by performance capability.	6 Marks	L2	CO5	PO7
		(OR)				
10.	a)	Illustrate the types of multiport magnetic gear and explain it with EVT systems.	8 Marks	L2	CO5	PO1
	b)	List out the application of magnetic gear EVT systems based on the society needs.	6 Marks	L2	CO5	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Solar PV voltage is affected by the irradiance and solar PV current is affected by the temperature. Justify the statements.	7 Marks	L3	CO1	PO1
	b)	Multilevel inverters are used in solar PV systems to improve the AC voltage THD. Justify the statement.	4 Marks	L2	CO1	PO1
	c)	On what factors sizing of battery and PV array are to be designed?	3 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Mention the reason, why the converters called as line commutated converters. Explain its working principle?	7 Marks	L2	CO1	PO1
	b)	A house has the following electrical appliance usage: i) One 18 Watt fluorescent lamp with electronic ballast used 4 hours per day. ii) One 60 Watt fan used for 2 hours per day. iii) One 75 Watt refrigerator that runs 24 hours per day with compressor run 12 hours and off 12 hours. The system will be powered by 12 Vdc, 110 Wp PV module. Calculate the size of PV panel and Battery.	7 Marks	L3	CO1	PO4
		UNIT-II				
3.	a)	With neat sketch explain the operation of stand-alone PV system.	7 Marks	L2	CO1	PO1
	b)	What is the necessity of tracking algorithms in solar PV systems? Explain in detail about any one maximum power point tracking algorithm.	7 Marks	L3	CO1	PO5
		(OR)				
4.	a)	With neat sketch explain the operation of grid connected PV system.	7 Marks	L2	CO1	PO1
	b)	How does a solar PV technology is used in water pumping application.	7 Marks	L3	CO1	PO6
		UNIT-III				
5.	a)	With neat sketch, demonstrate the working principle of double fed induction generator.	7 Marks	L2	CO2	PO1
	b)	Explain in detail the components of wind energy conversion system.	7 Marks	L2	CO2	PO1
		(OR)				
6.	a)	Discuss the methods, to extract the maximum power from wind energy systems.	7 Marks	L3	CO2	PO5
	b)	With neat sketch, demonstrate the working principle and analysis of induction generator.	7 Marks	L3	CO2	PO1

UNIT-IV

7.	a)	Describe in detail about the stand alone and grid connected wind power system.	10 Marks	L3	CO3	PO1
	b)	Calculate the power in the wind system if the wind speed is 20 m/s and blade length is 50 m.	4 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Explain in detail the operation of matrix converters with neat sketch.	7 Marks	L2	CO3	PO1
	b)	With neat sketch explain the operation of grid interactive inverters.	7 Marks	L2	CO3	PO1

UNIT-V

9.	a)	Describe in detail about the various power quality issues occurs in the grid integration of renewable energy sources.	7 Marks	L3	CO4	PO1
	b)	List the varios tools can be used to mitigate power quality issues?	7 Marks	L2	CO4	PO5
		(OR)				
10.	a)	Explain in detail the operation of DVR with neat sketch.	7 Marks	L2	CO4	PO1
	b)	Why the industry has to follow power quality standards?. List some power quality standards.	7 Marks	L2	CO4	PO8



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

Power System Automation

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	With neat diagram, explain various operating modes in power system control.	7 Marks	L2	CO1	PO1
	b)	Discuss briefly about Investment factor in power system.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	What is Power Deregulation? Discuss in detail about the need for deregulation in modern power system.	7 Marks	L2	CO1	PO1
	b)	With a neat sketch, describe the organization and operation activities in power system control.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	With neat block diagram, describe the functional responsibilities of SCADA in power system.	7 Marks	L3	CO1	PO1
	b)	Illustrate about the role human machine interface (HMI) in power system.	7 Marks	L2	CO1	PO5
		(OR)				
4.		With a neat block diagram, describe the SCADA communication systems in power system automation.	14 Marks	L2	CO1	PO1
		UNIT-III				
5.		Draw the substation automation architecture and explain the function of each block.	14 Marks	L2	CO2	PO6
		(OR)				
6.	a)	Describe various equipment's used in conventional high voltage substation with a single line diagram.	7 Marks	L2	CO2	PO6
	b)	Explain the benefits of an automated substation as against a conventional substation.	7 Marks	L2	CO2	PO6
		UNIT-IV				
7.	a)	List the major functions of the energy control centre and explain each block with a real time application.	7 Marks	L2	CO3	PO1
	b)	Define Energy Management System framework. Write the functional roles of EMS used in power transmission system.	7 Marks	L2	CO3	PO1
		(OR)				
8.		With neat block diagram, Discuss briefly about data acquisition and communication system used in EMS.	14 Marks	L2	CO3	PO1
		UNIT-V				
9.	a)	List the merits and demerits of power system distribution automation.	7 Marks	L1	CO4	PO1
	b)	With neat block diagram, describe briefly about the subsystems used in distribution control center.	7 Marks	L2	CO4	PO1
		(OR)				
10.		With neat block diagram, explain in detail about the distribution automation architecture.	14 Marks	L2	CO4	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

OPERATIONS MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Describe the role of Internet in the practices of operations management. Does it have any implication for operation strategy?	14 Marks	L2	CO1	PO1
	(OR)				
2.	List three emerging environmental concerns and their impact on operations management. What changes do you envisage in operations management to address their concerns?	14 Marks	L4	CO1	PO1 PO6

UNIT-II

3.	A manufacturer of television picture tubes has the following data pertaining to the actual demand for picture tubes (in thousands) during the period April to September in a year. Use a three-period moving average method to forecast the demand for October.	14 Marks	L2	CO2	PO1 PO2

Month	Demand
April	125
May	110
June	95
July	130
August	110
September	100

(OR)

4.	Ganesh Darshini is known for its specialty item, the Mysore Masala Dosa (MMD). Estimating the demand for MMD during the evening peak hours (6.00 pm to 8.00 pm) is crucial. Table 14.14 has data regarding the demand for MMD during the last six weeks. a) Use the exponential smoothening method to estimate the demand for the next week. b) Compute the MAD and SFE at the end of Week 6. (Hint: Assume the forecast for Week 1 to be the same as the demand).	14 Marks	L4	CO2	PO1 PO2

Week	Demand
Week 1	80
Week 2	95
Week 3	75
Week 4	110
Week 5	100
Week 6	90

UNIT-III

5. A manufacturer of ceiling fans offers three different versions of the product to its customers: basic (three blades), improved (four blades) and deluxe (enhanced performance features). Table has information on the machine-hours required for each of these variations and the number of fans to be manufactured in the next quarter. Assume 25 working days per month. — 14 Marks | L2 | CO3 | PO1 PO2 PO3

Fan type	April	May	June	M/C Hrs per unit
Basic	140	160	160	9.50
Improved	110	150	150	12.00
Deluxe	120	120	140	18.50

i) Choose an appropriate aggregate unit for planning the production. ii) For the chosen aggregate unit, estimate the capacity required. iii) If the manufacturer operates two shifts each of eight hours, how many machines are required for meeting the demand during the next quarter?

(OR)

6. Give the difference between MRP & MRP II and explain MRP – II with Block diagram. — 14 Marks | L2 | CO3 | PO1 PO2 PO3

UNIT-IV

7. An organization has a certain number of work stations in its final assembly for a desired production rate. If the desired production rate has gone up by 10 per cent, how would you respond to the new requirement? Will this change have an effect on cycle time? — 14 Marks | L2 | CO4 | PO1 PO2

(OR)

8. What is the order of processing the jobs using Johnson's rule for the data given in the following table? — 14 Marks | L2 | CO4 | PO1 PO2 PO3

Processing Times (Days)		
Job	Machine 1	Machine 2
A	8	12
B	4	9
C	11	7
D	2	6
E	10	5

UNIT-V

9. Describe the term lean management. Why do organizations need of it? — 14 Marks | L4 | CO5 | PO1 PO2 PO3

(OR)

10. Explain in detail the six-sigma approach to quality control. — 14 Marks | L4 | CO5 | PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

POWER PLANT ENGINEERING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What are the essentials requirements of steam power plant design and explain the various circuits with neat sketch?	7 Marks	L1	CO1	PO1
	b)	List out the dust collectors and explain mechanical dust collectors.	7 Marks	L1	CO1	PO1 PO2 PO7
		(OR)				
2.		Differentiate between stoker firing and pulverized firing and explain pulverized fuel burners?	14 Marks	L2	CO1	PO1 PO6 PO8
		UNIT-II				
3.		What are the advantages and disadvantages of diesel power plant and explain its operation?	14 Marks	L2	CO2	PO1 PO2
		(OR)				
4.		Explain the inter cooling employed for improvement of thermal efficiency of open cycle gas turbine plant with T-S diagram.	14 Marks	L2	CO2	PO1 PO2
		UNIT-III				
5.		Briefly explain the various types of surge tanks used in hydro electric power plant.	14 Marks	L2	CO3	PO1 PO2
		(OR)				
6.		Describe with the help of neat sketch the construction, working of Boiling water reactor (BWR).	14 Marks	L3	CO3	PO1 PO2
		UNIT-IV				
7.		List out the components of tidal power plant and classify the operation of tidal power plant with neat sketch.	14 Marks	L2	CO4	PO1 PO2
		(OR)				
8.		Classify biogas plants and explain anyone type of biogas plant with neat sketch.	14 Marks	L2	CO4	PO1 PO2
		UNIT-V				
9.		The yearly duration curve of a certain plant can be considered as a straight line from 150 MW to 40 MW. The power is supplied with one generating unit of 100 MW and two units of 40MW each. Calculate i) installed capacity ii) load factor iii) Plant factor iv) utilization factor and v) Maximum demand.	14 Marks	L3	CO5	PO1 PO2 PO3
		(OR)				
10.		Write short note on the following i) Utilization factor ii) Plant capacity factor iii) Plant use factor iv) Diversity factor.	14 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

HYBRID AND ELECTRIC VEHICLES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	Discuss in detail the Environmental Impact of the modern transportation system with few case studies.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Explain the History of Modern transportation system. How the transportation using Electrical Vehicles changed the life of a common man?	14 Marks	L2	CO1	PO1
	UNIT-II				
3.	Explain the various configuration and control techniques of DC motor drives.	14 Marks	L2	CO2	PO1
	(OR)				
4.	Justify the suitability of permanent magnet motor drives to ensure the enhancement in environmental aspects with neat sketch.	14 Marks	L2	CO2	PO1 PO7
	UNIT-III				
5.	Distinguish with valid 10 points the electrical machine and an Internal combustion engine.	14 Marks	L2	CO3	PO1
	(OR)				
6.	Analyze the sizing of various propulsion motor for EV and HEV system according to gradability, speed torque characteristics.	14 Marks	L2	CO3	PO1 PO2
	UNIT-IV				
7.	Define the term specific Energy. With the neat sketch discuss the working of Lead acid Battery used in Electric Vehicles.	14 Marks	L2	CO4	PO1 PO2
	(OR)				
8.	Explain with neat sketch the working of Nickel based Battery used as energy storage device in Electrical Vehicles.	14 Marks	L2	CO4	PO1
	UNIT-V				
9.	Explain the performance parameters involved in Energy management system for hybrid and electric vehicles with neat diagrams.	14 Marks	L2	CO5	PO1
	(OR)				
10.	Discuss the performance characteristics associated with sustainable criteria for Energy management system in hybrid and electric vehicles.	14 Marks	L2	CO5	PO1 PO7



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

RAPID PROTOTYPING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Select a product and appropriate prototypes for each of the four quadrants of the focused-comprehensive vs. physical-analytical chart. Justify the reason for placing it in respective quadrant?	14 Marks	L2	CO1	PO1 PO5
		(OR)				
2.		Explain the historical evaluation of Rapid Prototyping in detail? Briefly explain various types of prototypes?	14 Marks	L2	CO1	PO1 PO2 PO5
		UNIT-II				
3.		What is Selective Laser Sintering (SLS)? Explain various components of SLS Equipment? How SLS is different from Stereo lithography System?	14 Marks	L2	CO2	PO1 PO5
		(OR)				
4.		List out various powder based Rapid Prototyping (RP) systems? Explain various steps involved in the manufacturing of a typical product using any of the powder based RP system with neat sketches?	14 Marks	L2	CO2	PO1 PO5
		UNIT-III				
5.		Discuss the steps involved in Laminated Object manufacturing to create a typical product using suitable laser power and heater speed in detail with a neat sketch. Also list the merits and demerits of Laminated object manufacturing process.	14 Marks	L2	CO3	PO1 PO2 PO3
		(OR)				
6.		Write a short note on: i) Sander's model maker ii) GenisysXs printer HP system	14 Marks	L3	CO3	PO1 PO6 PO10
		UNIT-IV				
7.		Based on the available knowledge on indirect soft tooling select a RP method and demonstrate the procedure to produce urethane or epoxy prototypes under vaccum condition.	14 Marks	L3	CO4	PO1 PO8
		(OR)				
8.	a)	Explain the process of Laminated tooling in detail.	7 Marks	L3	CO4	PO1 PO5
	b)	Discuss briefly on direct AIM process with a neat sketch.	7 Marks	L3	CO4	PO1 PO2

UNIT-V

9.		Write a short note on the following: i) STL files ii) Magic communicator	14 Marks	L3	CO5	PO1 PO4 PO6
		(OR)				
10.	a)	Identify various factors influencing the accuracy in a Rapid Manufacturing Process?	7 Marks	L3	CO5	PO1 PO5
	b)	Explain the Vacuum Casting process with a neat sketch.	7 Marks	L3	CO5	PO1 PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

HYDRAULICS AND PNEUMATICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	Explain the working principle of following pumps with neat sketch. i) Internal gear pump ii) External gear pump	14 Marks	L2	CO1	PO1
	(OR)				
2.	Explain the working principle following types of cylinders Single acting cylinder, double acting cylinder.	14 Marks	L2	CO1	PO1
	UNIT-II				
3.	What are the methods of actuating direction control valve, explain the working of poppet valve with neat sketch.	14 Marks	L2	CO2	PO1
	(OR)				
4.	List and explain the components used in the hydraulic system, mention any six.	14 Marks	L2	CO2	PO1
	UNIT-III				
5.	Draw the ANSI symbols of any three types of flow lines and reservoirs used in hydraulic system.	14 Marks	L3	CO2	PO1
	(OR)				
6.	Explain and Design the hydraulic circuit for double acting cylinder with neat sketch.	14 Marks	L3	CO3	PO1
	UNIT-IV				
7.	Explain the following i) 4/3-DirectionControl Valve (7) ii) 3/2-DirectionControlValve iii) 4/2-DirectionControlValve iv) 2/2-DirectionControlValve	14 Marks	L2	CO2	PO1
	(OR)				
8.	Explain the following i) pneumatic circuit control single acting cylinder ii) air pilot control of double acting actuator	14 Marks	L2	CO3	PO1
	UNIT-V				
9.	Explain about any three different position sensors with neat sketch.	14 Marks	L2	CO4	PO1
	(OR)				
10.	Design a pneumatic cylinder sequencing circuit using logics.	14 Marks	L3	CO4	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

INDUSTRIAL INTERNET OF THINGS

[Mechanical Engineering, Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence) Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Explain the physical and logical design of IoT in detail.	14 Marks	L2	CO1	PO1 PO2
		(OR)				
2.		Demonstrate the IIoT Components with neat diagram.	14 Marks	L2	CO1	PO1 PO2
		UNIT-II				
3.		Explain in detail about the devices and gateways with respect to IIoT concept.	14 Marks	L2	CO2	PO1 PO2
		(OR)				
4.		Deliberate the need of network and explain in detail the modern communication protocols implemented in industrial internet systems.	14 Marks	L2	CO2	PO1 PO6 PO10
		UNIT-III				
5.	a)	Enlighten the concept of Augmented Reality	7 Marks	L2	CO3	PO1 PO5
	b)	Enlist the applications of big data platforms in Cyber-Physical Systems.	7 Marks	L2	CO3	PO1 PO2 PO5
		(OR)				
6.	a)	Detail the relationship between IIoT and Big Data with suitable examples.	7 Marks	L3	CO3	PO1 PO2 PO3
	b)	Explain the application of Cyber-Physical Systems.in machine tools	7 Marks	L3	CO3	PO1 PO5
		UNIT-IV				
7.	a)	Designate a use case example of M2M and IoT approach.	7 Marks	L3	CO4	PO1 PO2 PO10
	b)	Explain the application of IIOT in Smart Logistics Management.	7 Marks	L3	CO4	PO1 PO8
		(OR)				
8.	a)	Distingus between M2M value chain and IoT value chain	7 Marks	L3	CO4	PO1 PO2
	b)	Explain the application of IIOT in Predictive Maintenance	7 Marks	L3	CO4	PO1 PO2

UNIT-V

9.	a)	Explain the Business process in IOT.	7 Marks	L3	CO5	PO1 PO6 PO8
	b)	Explain in detail about the Data Management	7 Marks	L3	CO5	PO1 PO2
		(OR)				
10.		Discuss cloud of things and explain the service variation from Web of things to cloud of things.	14 Marks	L3	CO5	PO1 PO5



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

EMBEDDED SYSTEMS

[Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering Information Technology, 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)	Contrast RISC to CISC architectural features.	7 Marks	L3	CO1	PO2
	b)	Illustrate the role language plays in programming microcontrollers using suitable example.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Sketch the Anatomy of a typical microcontroller.	7 Marks	L2	CO1	PO1
	b)	Sketch the pin out of MSP430 and explain each pin.	7 Marks	L1	CO1	PO1

UNIT-II

3.	a)	Evaluate the usage of movement instruction in MSP430 assembly programming.	7 Marks	L2	CO2	PO5
	b)	Develop an Assembly Language Programme to multiply two 16-bit numbers.	7 Marks	L4	CO2	PO3
		(OR)				
4.	a)	Illustrate the block diagram of clock module in MSP430F and summarize its usage.	7 Marks	L1	CO2	PO6
	b)	Develop program for MSP430 to read input from a push button switch and switch on Led when the push button switch was pressed.	7 Marks	L4	CO2	PO4

UNIT-III

5.	a)	Model the block diagram of basic Timer 1 and discuss about associated counters and their configuration using BTCTL register.	7 Marks	L3	CO3	PO5
	b)	Outline the block diagram of comparator A and list the bits that control its operation.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Model the block diagram of Timer_A in MSP430 microcontroller.	7 Marks	L1	CO3	PO1
	b)	Explore MSP430 Timers and importance of resolution of a timer.	7 Marks	L1	CO3	PO6

UNIT-IV

7.	a)	Paraphrase the usage of USI in MSP430 Communication Interfaces.	7 Marks	L1	CO3	PO1
	b)	Contrast USART to USCI communication models	7 Marks	L3	CO3	PO2
		(OR)				
8.	a)	Detail out various MSP430 Communication modules	7 Marks	L1	CO3	PO8
	b)	Discuss in detail about SPI.	7 Marks	L1	CO3	PO8

UNIT-V

9.	a)	Distinguish FSM to FSMD models.	7 Marks	L3	CO4	PO2
	b)	Write short notes on Processor Technology.	7 Marks	L2	CO4	PO6
		(OR)				
10	a)	Explain in detail about PSM system modeling.	7 Marks	L2	CO4	PO1
.	b)	Discuss in detail about Concurrent Process Model.	7 Marks	L2	CO4	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Why hexagonal shape is used for representation of cell in Cellular System?	6 Marks	L2	CO1	PO2
	b)	Design an Omni-directional Antenna System in the worst cases and obtain C/I for different K patterns (K=7 & 9).	8 Marks	L3	CO4	PO3
		(OR)				
2.	a)	Outline the types of frequency re-use concept implemented in 1G Cellular System?	7 Marks	L2	CO1	PO2
	b)	Justify how cell splitting will improve the utilization of spectrum efficiency.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	Develop a frequency Marksanagement chart of 1G systems for duopoly Marksarket with K=7 with 3 sector interference free.	7 Marks	L4	CO4	PO3
	b)	Explain various non-fixed channel assignment techniques used in Marksobile communications.	7 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Obtain propagation path loss curve using Lee Model for non-obstructive path.	7 Marks	L3	CO2	PO4
	b)	List out various channels used in 1G cellular system.	7 Marks	L2	CO4	PO1
		UNIT-III				
5.	a)	What is advantage of GSM over 1G? List the limitations of GSM.	7 Marks	L1	CO4	PO1
	b)	Classify how the channels are categorized based on the functionality in GSM.	7 Marks	L4	CO4	PO2
		(OR)				
6.	a)	Illustrate with the help of architecture what procedure is followed to set up a call in 2G system.	7 Marks	L2	CO4	PO2
	b)	Write short notes on the following: i) GPRS interface ii) Mobility Management in GPRS	7 Marks	L1	CO4	PO2
		UNIT-IV				
7.	a)	Discuss the concept of Handoff in WCDMA.	7 Marks	L2	CO4	PO1
	b)	Contrast between 2G and 3G systems. Also Mention the features of 3G standard systems.	7 Marks	L2	CO4	P01
		(OR)				
8.	a)	Illustrate about Spectrum allocation for 3G WCDMA.	7 Marks	L2	CO4	PO1
	b)	Discuss few real time applications of High Speed Packet Data Access (HSPA).	7 Marks	L2	CO4	PO8
		UNIT-V				
9.	a)	Summarize various E-UTRAN interfaces in LTE systems.	7 Marks	L2	CO4	PO1
	b)	Elaborate LTE architecture and its components.	7 Marks	L3	CO4	PO1

(OR)

10.	a)	Interpret in detail about User equipment of LTE systems.	7 Marks	L2	CO4	PO2
	b)	Explain briefly about MIMO systems.	7 Marks	L1	CO4	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

SPEECH PROCESSING

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Analyze the impact of vocal tract length on formant frequencies. How does this relate to speaker normalization techniques in speech recognition?	7 Marks	L4	CO1	PO2
	b)	Discuss the concept of co-articulation in speech production. How does it challenge the assumption of independent phoneme production?	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain the concept of the glottal flow derivative in speech production. How is it modeled in digital speech processing systems?	7 Marks	L2	CO1	PO1
	b)	Derive the relationship between formant frequencies and the poles of the vocal tract transfer function.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Describe in detail about cepstral analysis of speech.	7 Marks	L2	CO1	PO1
	b)	Explain the concept of linear predictive analysis in speech processing.	7 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Discuss in detail about SIFT algorithm.	7 Marks	L2	CO1	PO1
	b)	Explain the process of glottal closure instant detection in speech signals. Why is it important in speech analysis?	7 Marks	L2	CO1	PO1
		UNIT-III				
5.	a)	Describe the concept of statistical parametric speech synthesis.	7 Marks	L2	CO2	PO1
	b)	Explain the challenges in synthesizing spontaneous conversational speech. How are they addressed in modern TTS systems?	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Explain in detail about klatt synthesizer with the help of a neat diagram.	7 Marks	L2	CO2	PO1
	b)	Explain the concept of articulatory synthesis based on physical modeling. What are its advantages and limitations?	7 Marks	L2	CO2	PO1
		UNIT-IV				
7.	a)	Describe the principle of code-excited linear prediction (CELP) in speech coding.	7 Marks	L2	CO3	PO1
	b)	Explain the concept of vector quantization in speech coding. How does it exploit the correlation between adjacent speech samples?	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Discuss in detail about any one coding technique used in speech compression.	7 Marks	L2	CO3	PO1
	b)	Explain the concept of low-delay coding in speech compression. What are the trade-offs involved in reducing coding delay?	7 Marks	L2	CO3	PO1

UNIT-V

9.	a)	Given an HMM with 2 states and 2 possible observations, and the following parameters: Initial state probabilities: π = [0.6, 0.4] Transition probabilities: A = [[0.7, 0.3], [0.4, 0.6]] Emission probabilities: B = [[0.5, 0.5], [0.3, 0.7]] Calculate the probability of the observation sequence O = [1, 2, 1] using the forward algorithm. Show your work step by step.	7 Marks	L4	CO4	PO4
	b)	Explain the concept of continuous density HMMs. How do they differ from discrete HMMs, and when are they preferred in speech recognition?	7 Marks	L2	CO4	PO1
		(OR)				
10.	a)	Describe the process of adapting a speaker-independent HMM-based speech recognition system to a specific speaker. What techniques are commonly used for this adaptation?	7 Marks	L2	CO4	PO1
	b)	Explain the concept of language modeling in speech recognition systems. How do n-gram models work, and what are their limitations?	7 Marks	L2	CO4	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

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)	Derive an expression for short circuit power dissipation in a CMOS inverter and Discuss the techniques to minimize the power dissipation.	7 Marks	L1	CO1	PO1
	b)	Estimate the importance of Low Power Figure of Merits.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Design a pseudo nMOS NAND gate and explain	7 Marks	L4	CO1	PO3
	b)	Derive the most important equation for power dissipation in digital VLSI circuits by taking into account in Charging and Discharging Capacitance of CMOS circuits.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	Briefly, discuss in detail about the following terms i) SPICE Basics ii) Hardware Emulation	7 Marks	L1	CO2	PO1
	b)	Derive the equation for static power and discuss the techniques in minimizing this power dissipation.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Briefly explain Static state power with necessary equations.	7 Marks	L1	CO2	PO1
	b)	Evaluate the Effects of data correlation on bit switching frequency in dual bit type model and Datapath Module Characterization of Power Analysis.	7 Marks	L5	CO2	PO4
		UNIT-III				
5.	a)	With the help of neat diagrams, explain the impact of transistor sizing, gate oxide thickness and technology scaling on low power electronics.	7 Marks	L1	CO3	PO1
	b)	Hypothesize the Differential input latch for high-speed and low voltage application with its neat sketch.	7 Marks	L6	CO3	PO1
		(OR)				
6.	a)	Design a network composition of CMOS complex logic gate y=A(B+C) and explain	7 Marks	L3	CO3	PO1
	b)	Criticize single edge triggered flip-flop and double edge triggered flip-flop and bring out the various advantages and disadvantages of each with the help of neat diagrams and equations.	7 Marks	L4	CO3	PO4
		UNIT-IV				
7.	a)	Write the limitations of low swing bus technique.	7 Marks	L1	CO4	PO1
	b)	Discuss the methods to improve speed in memory.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	With neat diagram explain the operation of differential sense amplifier.	7 Marks	L1	CO4	PO1
	b)	Explain in detail of floating Node.	7 Marks	L1	CO4	PO1

UNIT-V

9.	a)	Construct algorithmic level transforms for low power devices.	7 Marks	L1	CO4	PO1
	b)	Distinguish between pass transistor logic and transmission gate logic.	7 Marks	L2	CO4	PO1
		(OR)				
10.	a)	Analyze the functionality of Adaptive Performance Management by voltage control technique	7 Marks	L4	CO4	PO2
	b)	Explain the general method in the synthesis of Pass transistor circuits.	7 Marks	L1	CO4	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

PLC AND SCADA

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the architecture PLC with neat diagram and mention any of its two applications.	7 Marks	L2	CO1	PO1
	b)	Compare Ladder logic diagram and Relay ladder diagram with examples.	7 Marks	L2	CO2	PO2
		(OR)				
2.		Explain the principle of operation of discrete ac input and output modules used in PLC with suitable diagrams.	14 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Explain the on-delay timer with timing diagram.	7 Marks	L2	CO1	PO1
	b)	Describe in detail about Input group register scheme.	7 Marks	L2	CO1	PO1
		(OR)				
4.		Develop a PLC program For a package dual stamping operation. Write ladder logic program for this condition where stamping times of 8 and 14 sec. are required. When the package arrives in place INOO1, is actuator and stop the conveyor. The end is stamped for 8 sec., output (M), and the top for 14sec., output (N). Turning of IN001 and IN002 releases the package to continuous along with the conveyor.	14 Marks	L3	CO2	PO3
		UNIT-III				
5.		Construct the PLC program using the ADD function for a conveyor part count. Two conveyors feed a main conveyor to make a count. The counters on each feeder conveyor are input pulsed by a proximity detector once for each part leaving the conveyors. The count of total parts entering the main conveyor is then determined by adding the two feeder conveyor counts.	14 Marks	L3	CO2	PO3
		(OR)				
6.	a)	Explain the Sequencer function in PLC.	7 Marks	L2	CO1	PO1
	b)	Illustrate about SKIP function in PLC.	7 Marks	L2	CO2	PO2
		UNIT-IV				
7.	a)	Describe about how MTU message calls for Analog Output of particular register.	7 Marks	L2	CO3	PO1
	b)	Describe about SCADA Analog Control with neat diagram.	7 Marks	L2	CO3	PO1
		(OR)				
8.	a)	Describe what factor makes SCADA different from other control and Monitoring systems.	7 Marks	L2	CO4	PO2
	b)	Name the three primary subsystems of a SCADA system. Explain?	7 Marks	L2	CO3	PO1

UNIT-V

9.	a)	Describe in detail about configuring HMI applications.	7 Marks	L2	CO3	PO2
	b)	Illustrate about equipment control displays in SCADA.	7 Marks	L2	CO3	PO1
		(OR)				
10.	a)	Explain about configuration of I/O server in SCADA.	7 Marks	L2	CO3	PO1
	b)	Describe in detail about process graphic displays in SCADA.	7 Marks	L2	CO3	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

DATA ANALYTICS

[Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What kinds of tools would be used in the following phases, and for which kinds of use scenarios? Phase 6: Operationalize, Phase 4: Model building.	7 Marks	L2	CO1	PO2
	b)	Explain the differences between Business Intelligence and Data Science.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain the Key Roles for a Successful Analytics Project.	7 Marks	L2	CO1	PO2
	b)	Describing the emerging Big Data ecosystem and new roles needed to support its growth, explain with example of Big Data Analytics in different areas.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	With neat sketch explain about decision trees in R Programming.	7 Marks	L2	CO2	PO2
	b)	Explain the importance of rug plot and its usage in a density plot?	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	What is a type I error? What is a type II error? Is one always more serious than the other? Why?	7 Marks	L2	CO2	PO2
	b)	List out different Statistical Methods for Evaluation for data Analysis in R programming.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Why use autocorrelation instead of auto-covariance when examining stationary time series?	7 Marks	L3	CO3	PO3
	b)	Explain the building and evaluating an ARIMA model and reasons to choose and its cautions in Time-Series Analysis.	7 Marks	L4	CO3	PO2
		(OR)				
6.	a)	List out the methods that can be used for sentiment analysis?	7 Marks	L2	CO3	PO5
	b)	What are the main challenges of text analysis and What is the definition of topic in topic models?	7 Marks	L2	CO3	PO2
		UNIT-IV				
7.		List out the key outputs for each of the main stakeholders of an analytics project and what they usually expect at the conclusion of a project.	14 Marks	L2	CO5	PO2

(OR)

8.	a)	Describe core material for Multiple Audience in creating the final deliverables.	7 Marks	L2	CO5	PO2
	b)	"The final main component of the presentation involves creating a set of recommendations", Justify the statement with explanation of recommendations.	7 Marks	L3	CO5	PO3

UNIT-V

9.		Elucidate recommendation systems in data analytics.	14 Marks	L3	CO5	PO3

(OR)

10.	a)	Compute the basic properties of nodes of the created network: degrees, the distance matrix, and the closeness, betweenness and clustering coefficients.	7 Marks	L3	CO5	PO3
	b)	Illustrate the importance of stemming in data analytics and its applications.	7 Marks	L2	CO5	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

BIG DATA FRAMEWORKS

[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)	Discuss the differences between structured and unstructured data. Provide examples of each.	7 Marks	L2	CO1	PO1
	b)	Describe the key differences between batch processing and real-time/streaming processing in data querying. Provide use cases for each.	7 Marks	L4	CO1	PO2
		(OR)				
2.	a)	What is distcp, and how does it facilitate parallel copying of data between Hadoop clusters and other file systems?	7 Marks	L4	CO1	PO2
	b)	What is data locality in HDFS, and why is it crucial for performance optimization?	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	Explain the importance of security in Hadoop clusters. Describe authentication and authorization mechanisms in Hadoop, including Kerberos.	7 Marks	L2	CO2	PO5
	b)	Define benchmarking in the context of a Hadoop cluster. What are the key metrics and benchmarks used to evaluate cluster performance?	7 Marks	L2	CO2	PO2
		(OR)				
4.		Compare and contrast running MapReduce jobs locally versus running them on a Hadoop cluster. What are the challenges and benefits of each approach?	14 Marks	L4	CO2	PO2

UNIT-III

5.	a)	Explain the key components and architecture of a Spark cluster, including the roles of the Driver, Workers, and Executors.	7 Marks	L2	CO3	PO1
	b)	Discuss the configuration aspects of Spark. Compare and contrast Spark Standalone, YARN, and Mesos cluster management approaches.	7 Marks	L2	CO3	PO5
		(OR)				
6.	a)	Describe the hardware and software requirements for establishing a Single-Node Setup. What considerations should be taken into account when configuring a single-node cluster for data processing tasks?	7 Marks	L4	CO3	PO2
	b)	Provide examples of scenarios where each cluster management system might be preferred based on specific requirements and use cases.	7 Marks	L4	CO3	PO2

UNIT-IV

7.	a)	What are the best practices for optimizing the execution model to maximize efficiency?	7 Marks	L2	CO4	PO1
	b)	How does the use of broadcast variables impact the performance	7 Marks	L4	CO4	PO2

		and resource utilization of Spark applications?				
		(OR)				
8.	a)	How do shared variables, such as shared memory, affect the coordination and synchronization of multi-processing applications?	7 Marks	L4	CO4	PO2
	b)	How does Spark's caching mechanism work, and what are the benefits and potential trade-offs of caching RDDs (Resilient Distributed Datasets) in a Spark application?	7 Marks	L4	CO4	PO2
		UNIT-V				
9.	a)	How can external utilities be effectively integrated into task scheduling processes for optimizing resource allocation and workflow automation in modern computing environments.	7 Marks	L4	CO5	PO2
	b)	What are the crucial roles and responsibilities of a Spark worker node within the Apache Spark framework.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	What are the fundamental differences between batch processing and streaming processing in the context of data analytics.	7 Marks	L2	CO5	PO1
	b)	What are the most effective testing strategies and methodologies for ensuring the quality and reliability of software applications in various development environments and industries.	7 Marks	L2	CO5	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B.Tech I Semester (SVEC-20) Supplementary Examinations, May – 2025

DATA ENGINEERING

[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)	Explain the Lambda data lake architecture.	7 Marks	L2	CO1	PO1
	b)	Illustrate the Kappa data lake architecture.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Discuss about the adhering to compliance frameworks.	7 Marks	L2	CO1	PO1
	b)	Describe the Lakehouse data lake Architecture.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	Explain the running a data pipeline system.	7 Marks	L2	CO2	PO1
	b)	Discuss about the components of a data pipeline system.	7 Marks	L2	CO2	PO2
		(OR)				
4.		Calssify the Ingestion pipeline system.	14 Marks	L4	CO2	PO1
		UNIT-III				
5.	a)	Describe the process of performing upserts of data	7 Marks	L2	CO3	PO2
	b)	Discuss about the Isolation levels	7 Marks	L2	CO3	PO3
		(OR)				
6.	a)	Explain the steps involved in verifying curated data in the silver layer.	10 Marks	L2	CO3	PO2
	b)	Describe the need for curating raw data.	4 Marks	L2	CO3	PO3
		UNIT-IV				
7.	a)	Discuss about the process of running a aggregation pipeline system.	7 Marks	L2	CO4	PO1
	b)	Explain the process of understanding data consumption.	7 Marks	L2	CO4	PO2
		(OR)				
8.	a)	Describe the process of verifying aggregated data in the gold layer.	7 Marks	L2	CO4	PO1
	b)	Explain the process of aggregated data.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Classify the monitoring pipeline system.	7 Marks	L3	CO5	PO1
	b)	Discuss about the deployment strategy.	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	Explain the process of schema evolution.	7 Marks	L2	CO5	PO1
	b)	Describe the steps involved in sharing data.	7 Marks	L2	CO5	PO2

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Anantapur)

I B.Tech II Semester (SVEC16) Supplementary Examinations, April-2025

TRANSFORMATION TECHNIQUES AND PARTIAL 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. Define Fourier series of $f(x)$ in the interval $(0, 2\pi)$ and Express $f(x) = e^{-x}$ as Fourier series for $0 < x < 2\pi$. 14 Marks

(OR)

2. Obtain the Fourier expansion of $x \sin x$ as a cosine series in $(0, \pi)$ and hence show that $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \ldots = \frac{1}{4}(\pi - 2)$. 14 Marks

UNIT-II

3. State Fourier integral theorem and applying Fourier integral show that $e^{-ax} - e^{-bx} = \frac{2(b^2 - a^2)}{\pi} \int_0^\infty \frac{\lambda \sin \lambda x \, d\lambda}{(\lambda^2 + a^2)(\lambda^2 + b^2)}$, $a, b > 0$. 14 Marks

(OR)

4. Find the finite sine transform of $f(x) = \begin{cases} -x, & x < c \\ \pi - x, & x > c \end{cases}$ where $0 \le c \le \pi$. 14 Marks

UNIT-III

5. Evaluate $L^{-1}\left\{\frac{s}{(s^2+1)^2}\right\}$ by convolution property. 14 Marks

(OR)

6. Find the general solution to $y'' + 9y = \cos 2t$ by Laplace transform method. 14 Marks

UNIT-IV

7. Find inverse Z-transform of $\frac{2z}{(z-1)(z^2+1)}$. 14 Marks

(OR)

8. i) Evaluate $Z(\sin h\, n\theta)$. 14 Marks
ii) Determine Z-transform of unit step sequence.

UNIT-V

9. A rod of length l with insulated sides is initially at a uniform temperature u_0. Its ends are suddenly cools to 0^0C and kept at that temperature. Construct an expression to find the temperature at time t at a point distant x from one end of the rod. 14 Marks

(OR)

10. Solve $\frac{\partial^2 z}{\partial x^2} + z = 0$, given that when $x = 0$, $z = e^y$ and $\frac{\partial z}{\partial x} = 1$. 14 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Supplementary Examinations, April – 2025

ENGINEERING MECHANICS

[Civil Engineering, Mechanical Engineering]

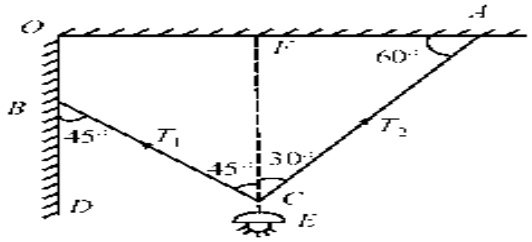
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1 a) Define force. What are its characteristics? Explain with suitable sketch. 7 Marks

b) An Electric light fixture weighing 15N hangs from a point *C* by two strings *AC* and *BC*. *AC* is inclined at 60^0 to the horizontal and *BC* at 45^0 to the vertical as shown in figure below. Determine the forces in the strings *AC* and *BC*. 7 Marks



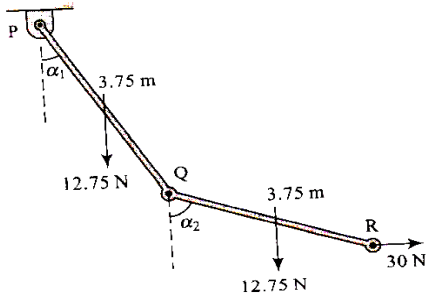
(OR)

2 a) The resultant of the two forces when they act at an angle of 65^0 is 20N. If the same forces are acting at right angles their resultant is 16.5N, determine the magnitude of the two forces. 7 Marks

b) State and explain parallelogram law of forces with a neat sketch. 7 Marks

UNIT-II

3 Two uniform bars from a link are shown in Figure. Bars are of 3.75m in length and 12.75N weight. The system is pulled with a force of 30 N. Using method of virtual work, determine the angles α_1 and α_2 with the verticals. 14 Marks



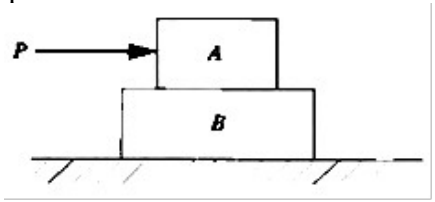
(OR)

4 a) State and explain Varignon's theorem. 7 Marks

b) Explain different types of supports, beams and loads in detail with neat sketches. 7 Marks

UNIT-III

5 a) The coefficient of friction between a copper block A and an aluminum block B is 0.3 and between the block B and the floor is 0.2. The weight of block A is 30N and of block B is 20N as shown in given figure. What force P will cause the motion of block A to impend? 7 Marks

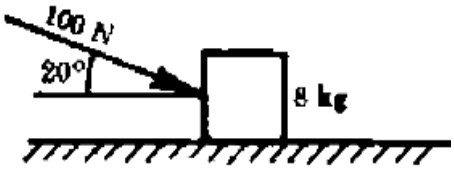


b) Define cone of friction and wedge friction. Write the laws of friction. 7 Marks

(OR)

6 a) Define angle of repose and explain laws of Coulomb friction. 7 Marks

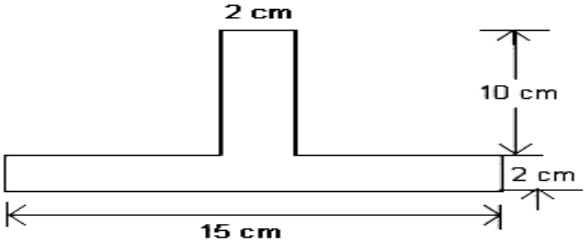
b) The 8 kg block is acted upon by a 100N force as shown in figure below. If the coefficient of sliding friction is 0.30, determine the work done by all forces as the block moves 4m to the right. 7 Marks



UNIT-IV

7 a) State and prove theorems of Pappus–Guldinus. 7 Marks

b) Find the centroid of the inverted T section shown in below figure. 7 Marks



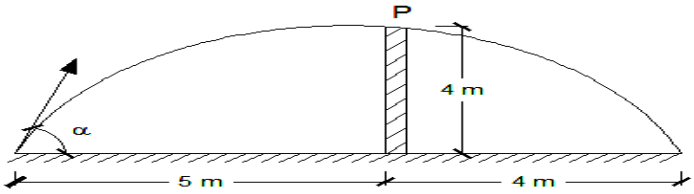
(OR)

8 a) Distinguish centroid and centre of gravity. Distinguish moment of inertia and mass moment of inertia. 7 Marks

b) What are the centroidal coordinates of a right angle triangle of base 6cm and height 9cm placed in first quadrants? 7 Marks

UNIT-V

9 Find the least initial velocity with which a projectile is to be projected so that it clears a wall 4m height located at a distance of 5m, and strikes the horizontal plane through the foot of the wall at a distance 4m beyond the wall shown in figure. The point of projection is at the same level as the foot of the wall. 14 Marks



(OR)

10 a) An aeroplane has a mass of 25000kg and its engines develop a total thrust of 40KN along the run way. The force of air resistance to motion of aeroplane is given by $R = 2.25V^2$ where 'V' is m/s and R is in Newton. Determine the length of runway required if the plane takes off and becomes airborne at a speed of 240km/hr. 7 Marks

b) A train is uniformly accelerated and passes successive kilometer stones with velocities of 18 km/hr and 36 km/hr respectively. Calculate the velocity when it passes the third kilometer stone. Also find the time taken for each of the two intervals of one kilometer. 7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-19) Supplementary Examinations, April – 2025

DIGITAL LOGIC DESIGN

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Simplify the following using Boolean Theorems: $F = (w + y' + z')(w' + x' + z')(x' + y + z)$.	6 Marks	L2	CO1	PO1
	b)	Convert the following: i) (428) into hexa decimal ii) $(10110)_2$ into decimal	6 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Perform the following substraction in binary using 1's and 2's complement method $(677)_{10}$-$(899)_{10}$.	6 Marks	L3	CO1	PO1
	b)	Draw the truth tables for all logic gates .	6 Marks	L3	CO1	PO1
		UNIT-II				
3.	a)	Convert the given expression into canonical POS $F = a'b'c' + a'bc' + a'bc + abc' + abcd$.	6 Marks	L4	CO1	PO2
	b)	Simplify the following Boolean function with only two input NAND gates: $F = (AB' + D')E + C(A' + B')$.	6 Marks	L4	CO1	PO3
		(OR)				
4.	a)	Simplify the following Boolean function with the don't conditions d using k-map method $F(A,B,C,D) = \sum(1,3,8,10,15); d(A,B,C,D) = \sum(0,2,9)$.	6 Marks	L4	CO1	PO2
	b)	Minimize the following Boolean equation $F = \sum m(0,1,2,4,5,7,11,15)$ using k-map.	6 Marks	L4	CO1	PO2
		UNIT-III				
5.	a)	Design a full subtractor circuit by using logic gates.	6 Marks	L4	CO2	PO5
	b)	Design a 3 bit magnitude comparator.	6 Marks	L4	CO2	PO3
		(OR)				
6.	a)	Implement the following Boolean function with 8x1 multiplexer and external gates $F(A,B,C,D) = \sum(1,3,4,11,12,13,14,15)$.	6 Marks	L4	CO2	PO4
	b)	Implement full adder using 3x8 decoder.	6 Marks	L4	CO2	PO4
		UNIT-IV				
7.	a)	Convert JK flip-flop into D flip-flop.	6 Marks	L2	CO2	PO1
	b)	Design a 4-bit register with SIPO, PTPO, PISO,SISO.	6 Marks	L4	CO2	PO4
		(OR)				
8.	a)	What is race around condition? How it can be eliminated?	6 Marks	L4	CO2	PO2
	b)	Explain the operation of a ring counter.	6 Marks	L2	CO2	PO1
		UNIT-V				
9.	a)	Implement the following Boolean functions using PLA i) F1=Σ(0,1,2,4) ii) F2= Σ(0,5,6,7).	6 Marks	L4	CO2	PO2
	b)	Explain about different types of memories.	6 Marks	L2	CO2	PO1
		(OR)				
10.	a)	Design a full adder circuit with PAL.	6 Marks	L4	CO1	PO2
	b)	Explain about sequential programmable devices.	6 Marks	L4	CO1	PO2



Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations,April – 2025

ENGINEERING CHEMISTRY

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

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the importance of fluorides in water. Compare the merits and demerits of various methods of defluoridation.	8 Marks	L2	CO1	PO6
	b)	Distinguish between: i) Temporary and permanent hardness. ii) Sludge and Scale. iii) Softening and demineralization	6 Marks	L2	CO1	PO1
		(OR)				
2.		Describe the ion exchange process with a neat diagram. Ion exchange process is more advantageous than zeolite, Why?	14 Marks	L2	CO1	PO1

UNIT-II

3.		Predict and draw the structures of the following molecules $BeCl_2$, BF_3, CH_4, PCl_5, NH_3, XeF_4 and SF_6 using VSEPR theory.	14 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Draw the molecular orbital energy level diagram of CO molecule. Write its electronic configuration, bond order and magnetic behavior.	8 Marks	L2	CO2	PO2
	b)	Explain π-molecular orbital diagram of benzene.	6 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Define fuel cell and discuss about the construction, working of H_2-O_2 Fuel cell. Mention its limitations and applications.	7 Marks	L2	CO3	PO1
	b)	Define Reference electrode and write a brief note on Calomel electrode.	7 Marks	L1	CO3	PO1
		(OR)				
6.	a)	What is the principle of cathodic protection and explain sacrificial anodic protection with examples.	7 Marks	L2	CO3	PO1
	b)	Define Corrosion and discuss how the following factors can affect the rate of corrosion, i) Purity of metals ii) Over Voltage iii) Humidity iv) pH v) Conductance of corrosive medium.	7 Marks	L2	CO3	PO1

UNIT-IV

7.		Discuss the working principle and applications of Transmission Electron Microscope with a neat diagram.	14 Marks	L2	CO4	PO1
		(OR)				

8.	a)	Write a note on the following: i) Batho chromic shift and Hypso chromic shift. ii) Chromophore and Auxochrome.	8 Marks	L1	CO4	PO1
	b)	Explain the basic principle of UV-Visible spectroscopy. What are the possible electronic transitions?	6 Marks	L1	CO4	PO1

UNIT-V

9.		Write in detail about properties of lubricants.	14 Marks	L1	CO5	PO1

(OR)

10.	a)	Discuss the classification of fuels and explain the characteristics of good fuels.	8 Marks	L2	CO5	PO1
	b)	What is meant by knocking of internal combustion engine? Discuss the function of Tetra ethyl lead (TEL).	6 Marks	L2	CO5	PO1

CODE No.: 20BT2BS01 SVEC-20

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Regular Examinations September – 2021

TRANSFORMATION TECHNIQUES AND LINEAR ALGEBRA

[Civil Engineering, Electrical and Electronics Engineering, Mechanical Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security) Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Find the Fourier series of the function $f(x) = x^2$ *in* $(0, 2\pi)$.	7 Marks	L1	CO1	PO1
	b)	Applying Fourier integral theorem, show that $\int_0^\infty \frac{1-\cos \pi\lambda}{\lambda} \sin x\lambda \, d\lambda = \begin{cases} \frac{\pi}{2}, & \text{if } 0 < x < \pi \\ 0, & \text{if } x > \pi \end{cases}$.	7 Marks	L3	CO1	PO2

(OR)

2.	a)	Find the half-range sine series of $f(x) = \begin{cases} kx, & 0 < x < \frac{\pi}{2} \\ k(\pi - x), & \frac{\pi}{2} < x < \pi \end{cases}$ *in* $0 < x < \pi$.	7 Marks	L1	CO1	PO1
	b)	Find the Fourier cosine transform of $f(x) = e^{-ax}, a > 0$ and hence deduce the integral $\int_0^\infty \frac{\cos px}{a^2 + p^2} dp$.	7 Marks	L1	CO1	PO1

UNIT-II

3.	a)	Determine $L\{f(t)\}$ where $f(t) = \frac{1-\cos t}{t}$.	7 Marks	L3	CO2	PO1
	b)	Find the Laplace transform of $t^2 e^{-2t} \cos t$.	7 Marks	L1	CO2	PO1

(OR)

4.	a)	Applying Laplace transforms, show that $\int_0^\infty t^3 e^{-t} \sin t \, dt = 0$.	7 Marks	L3	CO2	PO2
	b)	Find the Laplace transformation of the periodic square wave function defined by $f(t) = \begin{cases} k, & 0 \le t < a \\ -k, & a \le t < 2a \end{cases}$.	7 Marks	L1	CO2	PO1

UNIT-III

5.		Apply Laplace transform technique to solve $(D^2 - 2D + 1)x = e^t$, *if* $x(0) = 2,\ x'(0) = -1$.	14 Marks	L3	CO2	PO2

(OR)

6.	a)	Find the inverse Laplace transform of $\frac{s+1}{\left(s^2 + 2s + 2\right)^2}$.	7 Marks	L1	CO2	PO1
	b)	Applying convolution theorem, evaluate $L^{-1}\left[\frac{s^2}{\left(s^2+4\right)\left(s^2+9\right)}\right]$.	7 Marks	L3	CO2	PO2

UNIT-IV

7.		Identify the real value of λ for which the system of equations $x + 2y + 3z = \lambda x,\ 3x + y + 2z = \lambda y,\ 2x + 3y + z = \lambda z$ has a non-zero solution, and hence solve them completely.	14 Marks	L3	CO3	PO2

(OR)

8.	a)	Determine the characteristic roots of A and A^{-1}, where $A = \begin{pmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{pmatrix}$.	7 Marks	L3	CO3	PO1
	b)	Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$ by reducing it into echelon form.	7 Marks	L2	CO3	PO2

UNIT-V

9.		Suppose $T : R^2 \to P_2$ is a linear transformation such that $T\begin{bmatrix}1\\1\end{bmatrix} = 2 - 3x + x^2$ *and* $T\begin{bmatrix}2\\3\end{bmatrix} = 1 - x^2$, then find $T\begin{bmatrix}a\\b\end{bmatrix}$ *and hence* $T\begin{bmatrix}-1\\2\end{bmatrix}$ where P_2 is a vector space of polynomials of degree atmost two over R.	14 Marks	L1	CO4	PO2

(OR)

10.	a)	Show that the set $\{x, 1 + x, x - x^2\}$ forms a basis for the vector space P_2 of polynomials of atmost degree two over R.	9 Marks	L2	CO4	PO1
	b)	Find the Linear transformation $T : R^2 \to R^3$ defined by $T(1,2) = (3,-1,5),\ T(0,1) = (2,1,-1)$.	5 Marks	L1	CO4	PO1



Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

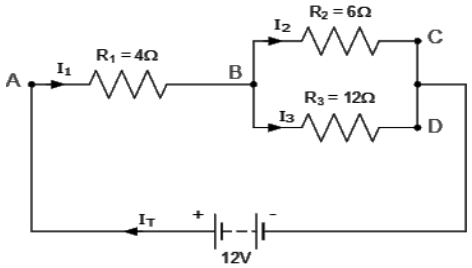
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

[Civil 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)	How is the sinusoidal voltage produced by a single loop generator? Explain in detail with the relevant sketch.	9 Marks	L1	CO1	PO1
	b)	An AC Supply given by v(t)=685 sin314t, determine i) Frequency ii) V_{max} iii) V_{rms} iii) Period of Time iv) Instantaneous value at t=2.8ms	5 Marks	L3	CO1	PO1
		(OR)				
2.	a)	State and verify Kirchhoff's Current law for the given circuit. 	9 Marks	L3	CO1	PO2
	b)	For the AC circuit is having a v(t) = 250 sin (ωt+100°) in volts and i(t) = 15 sin (ωt+30°) in Amperes. Determine the power factor, active, reactive and apparent power.	5 Marks	L2	CO1	PO2

UNIT-II

3.	a)	With neat sketch explain the operation of hydro power plant. How does hydropower plant superior compared to a thermal power plant in terms of environmental prospect.	7 Marks	L2	CO2	PO7
	b)	i) What is the difference between MCB and MCCB?	4 Marks	L2	CO2	PO1
		ii) Explain the significance of Energy Efficiency ratio.	3 Marks	L2	CO2	PO8
		(OR)				
4.	a)	With a neat sketch explain the operation of thermal power plant in detail. Also, comment on the impact of thermal power plant operation on environment.	10 Marks	L2	CO2	PO7
	b)	Explain the significance of Energy Efficiency ratio which needs to be followed while rating an appliance.	4 Marks	L2	CO2	PO8

UNIT-III

5.		Explain the principle of operation and constructional features of a three phase induction motor. Mention it's applications.	14 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Explain why the single phase induction motor is not a self-starting motor also suggest the method/technique to make it self-starting?	7 Marks	L3	CO3	PO5
	b)	Explain the constructional details and working of stepper motor.	7 Marks	L2	CO3	PO1

UNIT-IV

7.		Explain the operation of full-wave-rectifier without filter and derive the expressions for ripple factor, % regulation, Efficiency and PIV.	14 Marks	L2	CO4	PO1

(OR)

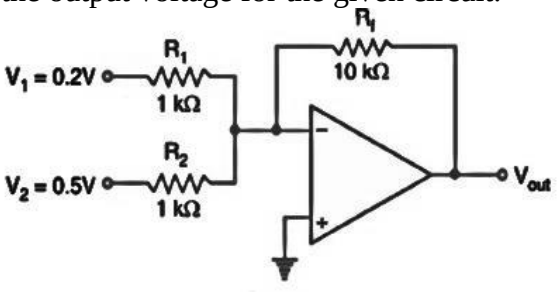
8.	a)	Explain about Zener break down and avalanche breakdown.	7 Marks	L2	CO4	PO1
	b)	Explain the input and output characteristic of a transistor in Common Collector configurations.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Draw the block diagram of operational amplifier and explain it in detail.	7 Marks	L2	CO4	PO1
	b)	List out the ideal characteristics of an operational amplifier	7 Marks	L2	CO4	PO1

(OR)

10.	a)	Explain, how an operational amplifier can be used as differentiator?	7 Marks	L2	CO4	PO1
	b)	Determine the output voltage for the given circuit.	7 Marks	L2	CO4	PO2



Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

ELECTRICAL CIRCUITS

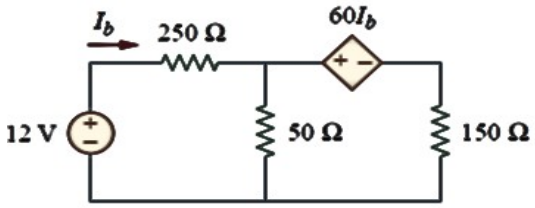
[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

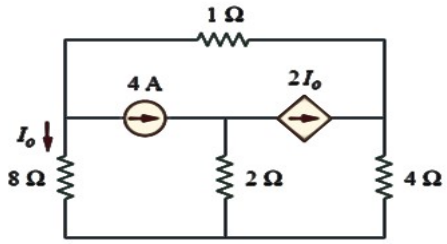
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Determine I_b of the circuit shown in figure using mesh analysis. 7 Marks L4 CO1 PO2

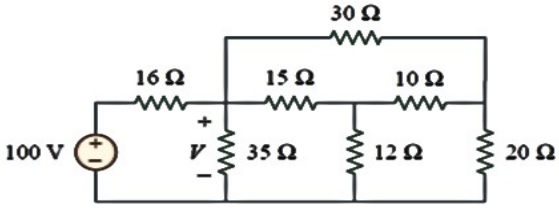


b) Obtain I_0 of the circuit shown in figure. 7 Marks L4 CO1 PO2

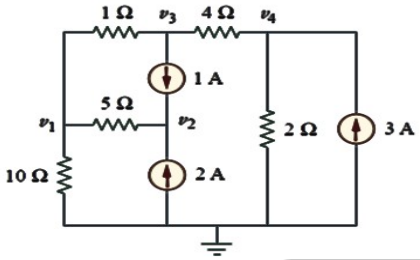


(OR)

2. a) Find the V of the circuit shown in figure. 7 Marks L3 CO1 PO2

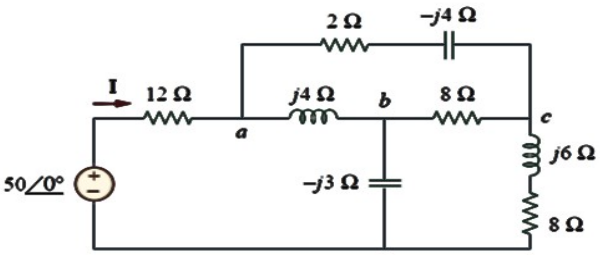


b) Determine the nodal voltages of the circuit shown in figure. 7 Marks L3 CO1 PO4



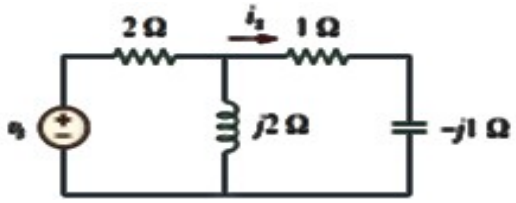
UNIT-II

3. Find total impedance and total power supplied by the source of the circuit shown in figure. 14 Marks L4 CO2 PO2



(OR)

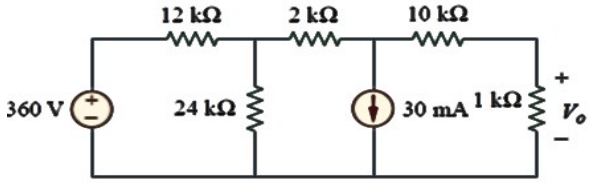
4.	a)	Find $V_s(t)$ of the circuit shown in figure, if the current through the 1 Ω resistor is 0.5 sin 200t A.	7 Marks	L3	CO2	PO2



	b)	A coil with impedance (8+j6) Ω is connected in series with a capacitive reactance X. The series combination is connected in parallel with a resistor R. Design the value of R and X if the equivalent impedance of the resulting circuit is $5\angle 0^0$.	7 Marks	L3	CO2	PO3

UNIT-III

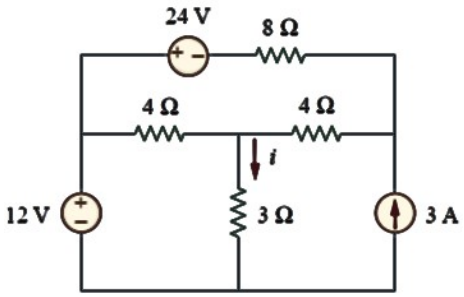
5.	a)	Use Norton's theorem to find V_0 in the circuit shown in figure.	7 Marks	L3	CO3	PO5



	b)	State and explain Maximum power transfer theorem and derive the necessary conditions for maximum power transfer for AC excitations.	7 Marks	L2	CO3	PO1

(OR)

6.	a)	Find current i of the circuit shown in figure using superposition theorem.	7 Marks	L3	CO3	PO5



	b)	Construct the dual circuit of the network shown in figure. Mention the procedural steps.	7 Marks	L3	CO3	PO5

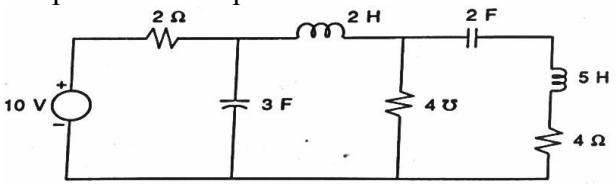
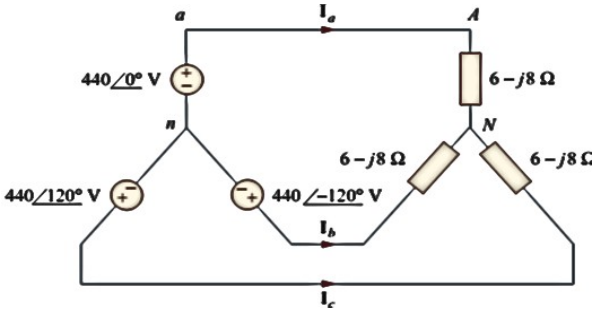


Fig.

UNIT-IV

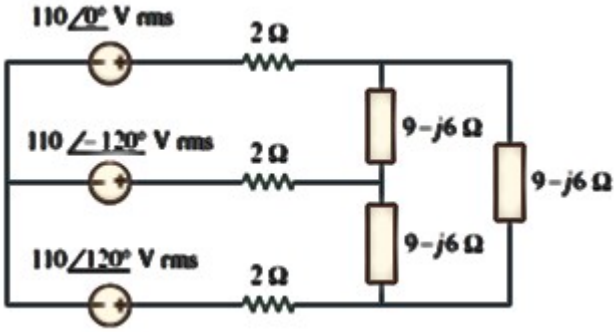
7.	a)	Obtain the line currents in the three-phase circuit shown in figure.	7 Marks	L3	CO4	PO2



	b)	In two wattmeter method the reactive power input is 15 kVAR and P.f. is 0.8 lag. Calculate the total input power of three phase balanced load and each wattmeter reading.	7 Marks	L3	CO4	PO2

(OR)

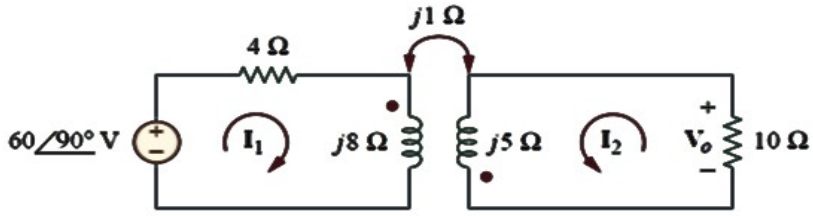
8.	a)	A balanced three-phase Y- system shown in figure, find the line current and the average power delivered to the load.	7 Marks	L3	CO4	PO2



	b)	A balanced delta-connected load has line current $I_a = 5\angle -25^0\ A$ Find the phase currents I_{ab}, I_{bc} and I_{ca}.	7 Marks	L2	CO4	PO2

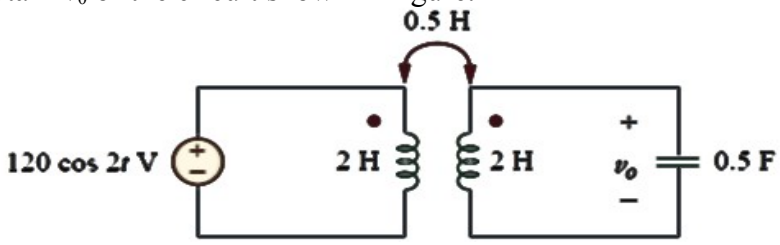
UNIT-V

9.	a)	Two coils connected in series-aiding fashion have a total inductance of 250 mH. When connected in a series-opposing configuration, the coils have a total inductance of 150 mH. If the inductance of one coil is three times the other, find and M. What is the coupling coefficient?	7 Marks	L2	CO5	PO1
	b)	Determine the mesh currents of the circuit shown in figure.	7 Marks	L4	CO5	PO2

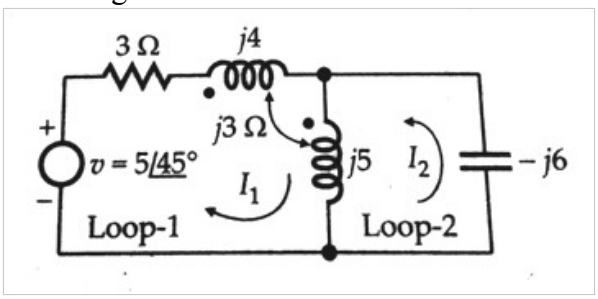


(OR)

10.	a)	Obtain v_0 of the circuit shown in figure.	7 Marks	L4	CO5	PO2



	b)	Find the voltage drop across the capacitor and resistor in the circuit shown in figure.	7 Marks	L4	CO5	PO2



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Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

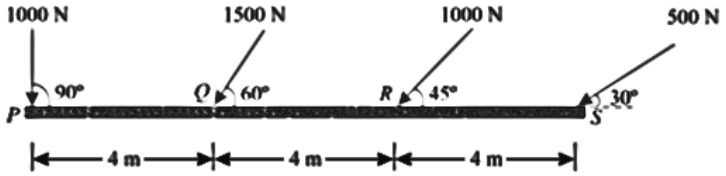
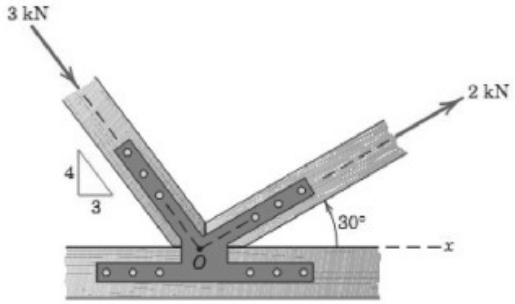
BASIC ENGINEERING MECHANICS

[Mechanical Engineering]

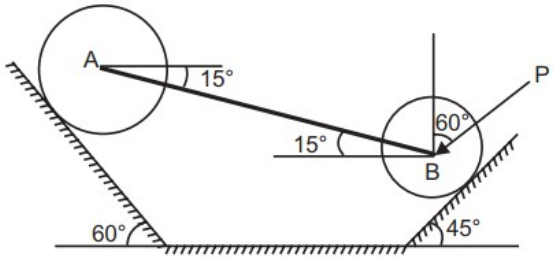
Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

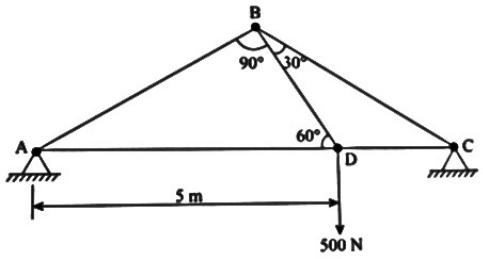
1.	a)	A horizontal line PQRS is 12 m long, where PQ = QR = RS = 4 m. Forces of 1000 N, 1500 N, 1000 N and 500 N act at P, Q, R and S respectively with downward direction. The lines of action of these forces make angles of 90°, 60°, 45° and 30° respectively with PS. Find the magnitude, direction and position of the resultant force. 	7 Marks	L4	CO1	PO1
	b)	The two structural members, one of which is in tension and the other in compression, exert the indicated forces on joint O. Determine the magnitude of the resultant R of the two forces and the angle θ which R makes with the positive x-axis. 	7 Marks	L4	CO1	PO1 PO2

(OR)

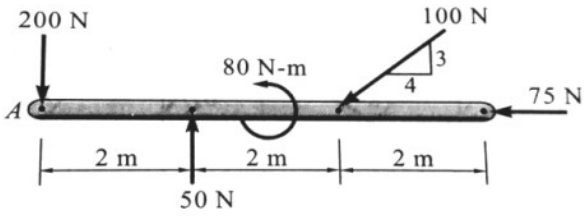
2.	a)	Two cylinders, A of weight 4000 N and B of weight 2000 N rest on smooth inclines as shown in Fig.2a. They are connected by a bar of negligible weight hinged to each cylinder at its geometric centre by smooth pins. Find the force P to be applied as shown in the figure such that it will hold the system in the given position.  Fig. 2a	7 Marks	L4	CO1	PO1 PO2
	b)	A point is acted upon by a set of three forces given by (3i+5j+2k), (2i+7j+3k) and (i+2j+5k). Find the magnitude of the resultant force and irs direction cosines.	7 Marks	L4	CO1	PO1 PO2

UNIT-II

3.	a)	A truss is loaded as shown in figure. Find the forces in members AB, BD and BC.	7 Marks	L4	CO1	PO1 PO2



	b)	Replace the system of forces and couple shown in figure by a single force couple system at A.	7 Marks	L4	CO1	PO1 PO2



(OR)

4.	a)	A beam AB is located supported and loaded as shown in Fig.4a Find the reactions at the supports.	7 Marks	L4	CO1	PO1 PO2

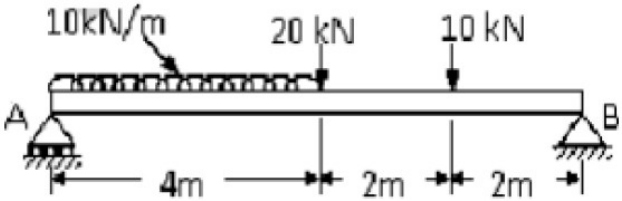
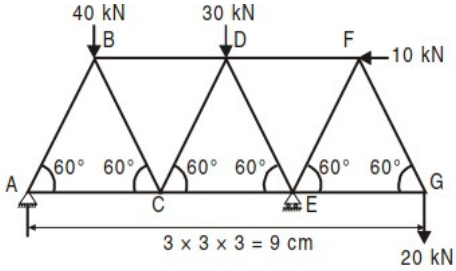


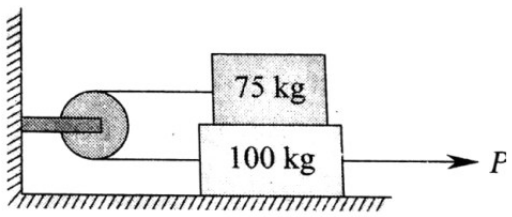
Fig. 4a

	b)	Analyze the truss shown in Fig. 3b. All the members are of 3 m length.	7 Marks	L4	CO1	PO1 PO2



UNIT-III

5.	a)	In Fig. 5a determine the horizontal force P applied to the lower block to just pull it to the right. The coefficient of friction between the blocks is 0.2 and that between the lower block and the plane is 0.25. Assume the pulley to be friction less.	7 Marks	L4	CO1	PO1 PO2



	b)	Explain the following terms: i) Friction ii) Angle of friction iii) Limiting friction iv) Cone of friction	7 Marks	L4	CO1	PO1

(OR)

6.	a)	A 4 m ladder weighing 200 N is placed against a vertical wall as shown in Fig.6a. as a man weighing 800 N, reaches a point 2.7 m from A, the ladder is about to slip. Assuming that the coefficient of friction between the ladder and the wall is 0.2, determine the coefficient of friction between the ladder and the floor.	7 Marks	L4	CO1	PO1

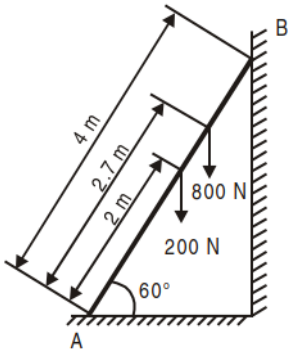
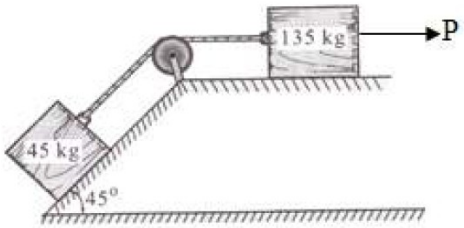


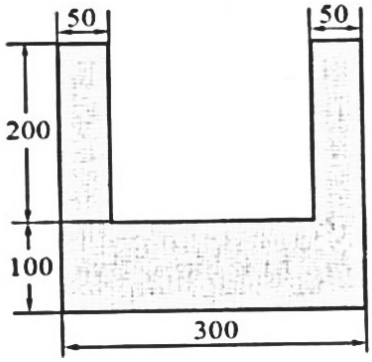
Fig.6a.

	b)	Determine the necessary force P acting parallel to the plane to cause motion to impend as shown in the Fig. 6b. Assume coefficient of friction as 0.25 and the pulley to be smooth.	7 Marks	L4	CO1	PO1 PO2



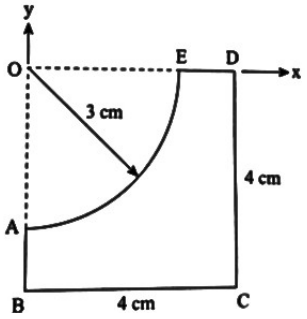
UNIT-IV

7.	a)	Derive an equation for moment of inertia of a Circle.	7 Marks	L4	CO2	PO1 PO2
	b)	Calculate the Moment of Inertia about the centroidal x and y for the section shown in the Fig.7b.	7 Marks	L4	CO2	PO1 PO2

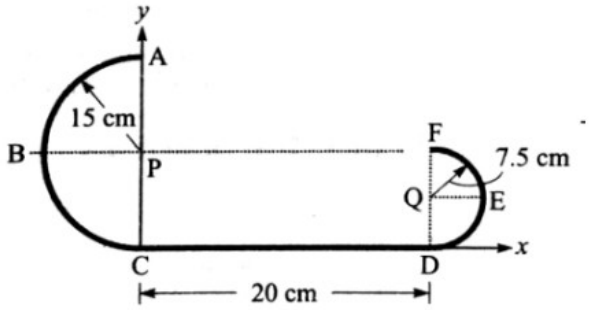


(OR)

8.	a)	Calculate the polar moment of inertia of the area shown in figure about point O.	7 Marks	L4	CO2	PO1

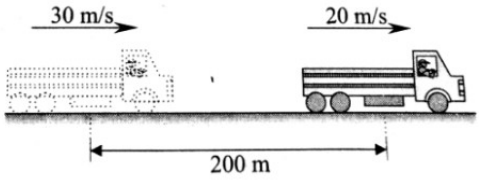


	b)	A wire has been bent into the shape as shown in figure. Determine the position of the centroid of the wire.	7 Marks	L4	CO2	PO1 PO2



UNIT-V

9.	a)	The motion of a flywheel around its geometrical axis is described by the equation: $\omega=15t^2+3t+2$ rad/s and angular displacement is 160 radians at t=3 seconds. Find the angular acceleration, velocity, displacement at t = 1 second.	7 Marks	L4	CO3	PO1
	b)	The speed of a truck moving at a constant speed of 30 m/s is reduced to 20 m/s in a distance of 200 m. Determine i) the acceleration assuming to be constant, and ii) the time taken to a stop with the acceleration calculated in part (i).	7 Marks	L4	CO3	PO1 PO2



(OR)

10.	a)	Define the terms amplitude, periodic time, and frequency as applied to Simple Harmonic Motion.	7 Marks	L4	CO4	PO1
	b)	A small flywheel of mass 85 kg is suspended in a vertical plane as a compound pendulum. The distance of centre of gravity from the knife edge support is 100 mm and the flywheel makes 100 oscillations in 145 seconds. Find the moment of inertia of the flywheel through the centre of gravity.	7 Marks	L4	CO4	PO1 PO2

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

PROGRAMMING IN C AND DATA STRUCTURES

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

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is an operator? Explain the arithmetic, relational, logical, and assignment operators in C language.	7 Marks	L2	CO2	PO1
	b)	Write a program to evaluate the following arithmetic expressions. i) a + b ii) a–b iii) a * b iv) a/b v) a % b	7 Marks	L3	CO2	PO2
		(OR)				
2.	a)	Define algorithm. Explain its characteristics.	7 Marks	L2	CO1	PO1
	b)	Write a C program that computes the size of int, float, double and char variables.	7 Marks	L3	CO2	PO3

UNIT-II

3.	a)	Explain formatted input and output statements used in C with syntax and example.	7 Marks	L2	CO2	PO1
	b)	Explain the syntax of IF-ELSE statement. Write a C program to check whether a given number is even or odd using IF-ELSE statement.	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	With general syntax, explain unformatted input-output statements. Give example for each.	7 Marks	L2	CO2	PO1
	b)	Discuss the following : i) Break ii) Continue iii) Go to	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Explain how to declare and initialize a single and two dimensional array With an example.	7 Marks	L2	CO3	PO1
	b)	Differentiate between call by value and call by reference. Explain with syntax.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Write a C program to find the largest element in an array.	7 Marks	L3	CO3	PO4
	b)	What is function parameter? Explain different types of parameters in C functions.	7 Marks	L2	CO2	PO2

UNIT-IV

7.	a)	What is dynamic memory allocation? Write and explain the different dynamic memory allocation functions in C.	7 Marks	L2	CO3	PO1
	b)	Write a C program to a create structure with employee details and display the same.	7 Marks	L4	CO3	PO4
		(OR)				
8.	a)	What is a Single linked list? Explain Applications of linked lists.	7 Marks	L2	CO3	PO1
	b)	Write a C program to pass structure variable as function argument.	7 Marks	L3	CO2	PO3

UNIT-V

9.	a)	Define stack? Write a C program to implement stack operations using arrays.	7 Marks	L4	CO3	PO4
	b)	Briefly differentiate linear search with binary search.	7 Marks	L2	CO4	PO2
		(OR)				
10.	a)	Define Queue? Write a C program to implement Queue operations using arrays.	7 Marks	L4	CO3	PO4
	b)	Write a C program to implement Bubble sort.	7 Marks	L3	CO4	PO3



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence and Machine Learning), Computer Science and Engineering (Internet of Things), Computer Science and Engineering (Cyber Security), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What is a Constructor? Write a program to initialize instance variables using constructor concept.	7 Marks	L2	CO1	PO1
	b)	Write about OOP Paradigm.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Develop a program to define a class student with name, registration number and marks for three subjects as instance variables and describe a constructor to initialize them. Also define a method display to print all the values.	7 Marks	L3	CO2	PO3
	b)	Differentiate between JVM, JRE and JDK.	7 Marks	L2	CO1	PO2
		UNIT-II				
3.	a)	Develop a program to generate fibonacci sequence.	7 Marks	L3	CO2	PO3
	b)	With an example program explain the concept of Method Overloading.	7 Marks	L2	CO3	PO2
		(OR)				
4.	a)	Give the syntax of 'for' loop with an example code segment.	7 Marks	L2	CO1	PO1
	b)	Write a program to read n values into an array and display their sum.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	What are Nested Interfaces? Explain with a suitable example.	9 Marks	L2	CO1	PO1
	b)	Write about CLASSPATH.	5 Marks	L2	CO1	PO1
		(OR)				
6.	a)	Write a program that imports the User-defined package P1 and access the member variables and methods of classes that contained in the package P1.	7 Marks	L3	CO3	PO3
	b)	Discuss how Block Lambda Expressions are created with a proper example.	7 Marks	L2	CO1	PO1
		UNIT-IV				
7.	a)	What are built in exceptions? Create a java program to generate and catch an Index out of Bounds Exception, and with an example prove that always finally block will execute.	9 Marks	L3	CO3	PO3
	b)	List out different types of exceptions in Java.	5 Marks	L2	CO1	PO1
		(OR)				
8.	a)	Implement Readers Writers Problem using the concept of multithreading.	7 Marks	L3	CO4	PO2
	b)	Write a java program to throw a user defined exception called Negative, if the entered input is a negative number.	7 Marks	L3	CO3	PO3

UNIT-V

9.	a)	Develop a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time, No light is on when the program starts.	7 Marks	L3	CO5	PO5
	b)	List and explain about key listener interfaces.	7 Marks	L2	CO1	PO2
		(OR)				
10.	a)	Design calculator using Swings concept.	9 Marks	L3	CO5	PO5
	b)	Briefly explain about Mouse Listener Interfaces.	5 Marks	L2	CO3	PO1



SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations, April - 2025

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Briefly explain the working of a single plate clutch with neat diagram.	CO1	7 Marks
	b)	What is clutch? Make a sketch of a single plate clutch and describe its working.	CO1	7 Marks
		(OR)		
2	a)	Explain the working of Belt transmission dynamometer with neat sketch and derive the expression for brake power.	CO1	7 Marks
	b)	A simple band brake is operated by a lever of length 500mm. The brake drum has a diameter of 500mm and the brake band embraces 5/8 of the circumference. One end of the band is attached to the fulcrum of the lever while the other end is attached to a pin on the lever 100mm from the fulcrum. If the effort applied to the end of the lever is 2kN and the coefficient of friction is 0.25, find the maximum braking torque on the drum.	CO2	7 Marks

UNIT-II

3	a)	Derive the expression for gyroscopic couple with neat sketch.	CO2	7 Marks
	b)	Illuminate the terms ‘fluctuation of energy’ and ‘fluctuation of speed’ as applied to flywheels.	CO1	7 Marks
		(OR)		
4	a)	Discuss the difference between flywheel and governor.	CO1	7 Marks
	b)	Explain the terms used in a Naval Ship. Explain the effect of Gyroscopic Couple on a Naval Ship in each case with neat sketches.	CO1	7 Marks

UNIT-III

5	a)	Briefly discuss about the Isochronism and Hunting of a governor.	CO1	6 Marks
	b)	A loaded Porter governor has four links each 250mm long, two revolving masses each of 3kg and a central dead weight of mass 20kg. All the links are attached to respective sleeves at radial distances of 40mm from the axis of rotation. The masses revolve at a radius of 150mm at minimum speed and at a radius of 200 mm at maximum speed. Determine the range of speed.	CO2	8 Marks
		(OR)		
6	a)	Derive the expression for mean speed of a watt governor and state its limitations.	CO2	7 Marks
	b)	State and explain the following terms relating to governors. i) Stability. ii) Sensitiveness. iii) Isochronism. iv) Hunting.	CO1	7 Marks

UNIT-IV

7	a)	Derive the expression for resultant balancing mass when several masses are rotating in the same plane.	CO2	7 Marks
	b)	Write a short note on primary and secondary balancing.	CO1	7 Marks
		(OR)		
8	a)	Derive the expression for swaying couple induced due the partial balancing of two cylinder locomotives.	CO2	7 Marks
	b)	Explain clearly the terms ‘static balancing’ and ‘dynamic balancing’. State the necessary conditions to achieve them.	CO1	7 Marks

UNIT-V

9	a)	Derive the expression for natural frequency of free longitudinal vibrations using equilibrium method.	CO2	6 Marks
	b)	Describe Dunkerley's method to find the natural frequency of a shaft carrying several loads.	CO1	8 Marks

(OR)

10	a)	Drive the expression to locate the node of a two rotor system for free torsional vibrations.	CO2	6 Marks
	b)	A rotor has a mass of 12kg and is mounted midway on a 24mm diameter horizontal shaft supported at the ends by two bearings. The mass of the shaft is 2kg and bearings are 1m apart. The shaft rotates at 2400 r.p.m. If the center of mass of the rotor is 0.11mm away from the geometric center of the rotor due to a certain manufacturing defect, find the amplitude of steady state vibration and the dynamic force transmitted to the bearing. $E=200GN/m^2$.	CO5	8 Marks

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-16) Supplementary Examinations, April - 2025

FLUID MECHANICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Define and derive expression for surface tension on a Soap bubble.	CO1	7 Marks
	b)	Discuss different types of fluids based on Newton's law of viscosity.	CO1	7 Marks
		(OR)		
2	a)	Define and derive Newton's law of viscosity.	CO1	7 Marks
	b)	What is the pressure inside the droplet of water 0.05mm in diameter at 20^0C, if the pressure outside the droplet is 103kPa. Take surface tension is 0.0736N/m at 20^0C. .	CO4	7 Marks

UNIT-II

3		Derive the expressions total pressure and centre of pressure for a vertical plane surface.	CO3	14 Marks
		(OR)		
4	a)	In fluid flow, what are the forces present in fluids are in motion? Derive Euler's equation of motion and derive the Bernoulli's equation from Euler's equation of motion.	CO3	7 Marks
	b)	What do you understand from orifice? Explain.	CO1	7 Marks

UNIT-III

5		Derive expression for loss of head due to friction in pipes.	CO3	14 Marks
		(OR)		
6		A jet of water having a velocity of 40m/s strikes a curved vane, which is moving with a velocity of 20m/s. The jet makes an angle of 30° with the direction of motion of vane at inlet and leaves at an angle of 90° to the direction of motion of vane at outlet. Draw the velocity triangles at inlet and outlet and determine the vane angles at inlet and outlet so that the water enters and leaves the vane without shock.	CO2	14 Marks

UNIT-IV

7		Derive an expression for work done and efficiency of a Pelton wheel with help of velocity triangles.	CO4	14 Marks
		(OR)		
8		Derive an expression for specific speed of a turbine in terms of power (P), head (H), speed in rpm (N).	CO1	14 Marks

UNIT-V

9		Define a centrifugal pump. Derive an expression for the work done by an impeller of a centrifugal pump with sketch.	CO3	14 Marks
		(OR)		
10		What is a reciprocating pump? Describe the principle and working of a reciprocating pump with neat sketch and also derive work done per second.	CO6	14 Marks

CODE No.: 19BT4HS01 SVEC-19

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-19) Supplementary Examinations, April – 2025

BANKING AND INSURANCE

[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.	Explain how the RBI is a central bank of the country.	12 Marks	L3	CO1	PO3 PO12
	(OR)				
2.	Explain about the recent trends in banking sector in India?	12 Marks	L3	CO1	PO3 PO12
	UNIT-II				
3.	Discuss the essentials involved in the procedure for –Opening and Closing of an account	12 Marks	L3	CO2	PO3 PO5 PO12
	(OR)				
4.	Why is it important to select a suitable loan product?	12 Marks	L3	CO2	PO3 PO12
	UNIT-III				
5.	Distinguish between electronic purse and debit cards.	12 Marks	L3	CO2	PO5 PO12
	(OR)				
6.	How do payment portals influence e-payment mechanism?	12 Marks	L3	CO1	PO3 PO11
	UNIT-IV				
7.	Discuss the essential elements of insurance.	12 Marks	L3	CO1	PO3
	(OR)				
8.	Why decision making under uncertainty is critical?	12 Marks	L3	CO2	PO3 PO12
	UNIT-V				
9.	What makes an insurance contract unique?	12 Marks	L3	CO1	PO3
	(OR)				
10.	Compare –Principle of Caveat Emptor Vs Principle of Utmost Good Faith".	12 Marks	L3	CO2	PO12 PO5 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

SOFTWARE ENGINEERING

[Computer Science and Engineering, Computer Science and Engineering (IoT), 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)	Compare different types of myths in Software Engineering.	7 Marks	L2	CO1	PO2
	b)	Explain Waterfall Process Model.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Illustrate the general model of the design process.	7 Marks	L2	CO1	PO2
	b)	Which Prescriptive Process model is the best one among three process models? Justify with example.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.		Explain the steps to gather the process model of Requirement elicitation and analysis process in detail.	14 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Develop non-functional requirement for on-line banking system.	7 Marks	L3	CO2	PO5
	b)	Assess on Software requirement specification for Banking system.	7 Marks	L3	CO2	PO5
		UNIT-III				
5.	a)	Design a model for online bookshop communication system through activity diagram using swim lanes.	7 Marks	L3	CO3	PO4
	b)	Discuss in detail about State machines along with simple state, nested states, concurrent states, different events and action within each state for Point of Sale system.	7 Marks	L3	CO3	PO4
		(OR)				
6.	a)	Illustrate in detail about any four Architectural Styles.	7 Marks	L1	CO3	PO1
	b)	Describe the terms and concepts of State chart diagram.	7 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	Using your own words, describe the differences between verification and validation.	5 Marks	L2	CO4	PO2
	b)	Define debugging? Explain the process of debugging.	5 Marks	L1	CO4	PO1
	c)	Illustrate different types of testing in Control structure testing.	4 Marks	L3	CO4	PO3
		(OR)				
8.	a)	Explain different test strategies for Object oriented design.	7 Marks	L1	CO4	PO1
	b)	Compare between Black box and White box testing.	7 Marks	L2	CO4	PO2
		UNIT-V				
9.	a)	Explain in detail about risk identification.	7 Marks	L1	CO5	PO1
	b)	Analyze on the concept of risk Projection.	7 Marks	L2	CO5	PO2
		(OR)				
10.		Explain the following: i) Reverse Engineering to Understand Data and Processing ii) Reverse Engineering User Interfaces iii) Forward Engineering for Client-Server Architectures	14 Marks	L2	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

OPERATING SYSTEMS

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

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain about services of operating systems.	7 Marks	L2	CO1	PO1
	b)	Justify the reason why the lack of a hardware-supported dual mode can cause serious shortcoming in an operating system.	7 Marks	L4	CO1	PO4

(OR)

2.	a)	Describe inter process communication with neat diagram.	7 Marks	L1	CO1	PO1
	b)	Compute the average waiting time for the processes using non-preemptive SJF scheduling algorithm.	7 Marks	L3	CO1	PO5

Process	Arrival Time	Burst time
P1	0.0	7
P2	2.0	4
P3	4.0	1
P4	5.0	4

UNIT-II

3.	a)	Define Race Condition. With pseudo code, present the Peterson's solution for critical section problem.	7 Marks	L4	CO2	PO3
	b)	Using monitors, explain solution for Producer-Consumer classical synchronization problem.	7 Marks	L2	CO2	PO5

(OR)

4.	a)	Describe the methods for handling for deadlocks.	7 Marks	L1	CO3	PO1
	b)	Suppose there are four processes in execution with 12 instances of resources R in a system. The maximum need of each process and current allocation are given below:	7 Marks	L3	CO3	PO3

Process	Max need	Allocation
P1	8	3
P2	9	4
P3	5	2
P4	3	1

Find out the safe sequence?

UNIT-III

5.	a)	Compare the segmented paging scheme with the hashed page table Scheme for handling large address spaces. Under what circumstances is one scheme preferable to the other?	7 Marks	L2	CO4	PO2
	b)	Distinguish between internal and external fragmentation.	7 Marks	L2	CO4	PO1

(OR)

6.	a)	Consider the following page reference string: 1, 2, 3, 2, 5, 6, 3, 4, 6, 3, 7, 3, 1, 5, 3, 6, 3, 4, 2, 1, 3, 4, 5, 1 Indicate page faults and calculate total number of page faults and successful ratio for FIFO, optimal and LRU algorithms. Assume there are four frames and initially all the frames or empty.	7 Marks	L3	CO4	PO2
	b)	Draw the diagram of segmentation memory management scheme and explain its principle.	7 Marks	L2	CO4	PO1

UNIT-IV

7.	a)	Compare file allocation methods in operating systems.	7 Marks	L2	CO5	PO2
	b)	Explain about kernel I/O subsystem and transforming I /O to hardware operations.	7 Marks	L2	CO6	PO5

(OR)

8.	a)	What are the different allocation methods in disk storage? Explain it with a neat sketch.	7 Marks	L2	CO5	PO5
	b)	With a neat sketch explain about the i) Directory structure ii) File sharing.	7 Marks	L4	CO5	PO1

UNIT-V

9.	a)	Describe the several methods of implementing access matrix.	7 Marks	L2	CO6	PO1
	b)	Analyse the schemes that are used to implement revocation for capabilities.	7 Marks	L4	CO6	PO4

(OR)

10.	a)	Explain the various questions that arise in revocation of access rights.	7 Marks	L2	CO6	PO2
	b)	Write a short note on Design principles of security.	7 Marks	L2	CO6	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

ENGINEERING HYDROLOGY

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) The isohyets drawn for a storm which occurred over a drainage basin of area 950 sq.km yielded the following information. Determine the average depth of rainfall over the basin. — 7 Marks | L4 | CO1 | PO1 PO2

Isohyetal interval in mm	85-75	75-65	65-55	55-45	45-35
Area between isohyets in sq.km	125	236	264	175	150

   b) Differentiate between recording and non-recording rain gauges. — 7 Marks | L4 | CO1 | PO1 PO2

(OR)

2. a) The average annual rainfalls in cm at 4 existing rain gauge stations in a basin are 105, 79, 70 and 66. If the average depth of rainfall over the basin is to be estimated within 10% error, determine the additional number of gauges needed. — 7 Marks | L4 | CO1 | PO1 PO2

   b) Describe analysis and interpretation of rainfall data with a neat sketch. — 7 Marks | L2 | CO1 | PO1 PO10

UNIT-II

3. a) Mention the purpose of lysimeter and explain with a neat sketch. — 7 Marks | L2 | CO2 | PO1

   b) List infiltration indices and in a 140 min storm the following rates of rainfall were observed in successive 20 min intervals: 6, 6, 18, 13, 2, 2 and 12 mm/h. Assuming the ø index value as 3 mm/h and an initial loss of 0.8 mm, determine the total rainfall, net runoff and W- index for the storm. — 7 Marks | L4 | CO2 | PO1 PO2

(OR)

4. a) Derive rainfall runoff relationship. — 7 Marks | L4 | CO2 | PO1 PO2

   b) Define and explain stage discharge curve and list various factors affecting stream flow. — 7 Marks | L2 | CO2 | PO1 PO6

UNIT-III

5. a) Classify the various types of aquifers and explain briefly with a neat sketch. — 7 Marks | L4 | CO3 | PO1 PO2

   b) Use appropriate techniques to enhance the groundwater using artificial recharge methods. — 7 Marks | L4 | CO3 | PO1 PO5

(OR)

6.	a)	During a recuperation test conducted on an open well in a region, the water level in the well was depressed by 3 m and it was observed to rise by 1.75 m in 75 minutes. What is the specific yield of open wells in that region? What could be the yield from a well of 5 m diameter under a depression head of 2.5 m. What should be the diameter of the well to give a yield of 12 lit/s under a depression head of 2 m.	7 Marks	L4	CO3	PO1 PO2 PO4
	b)	Classify the methods of groundwater exploration.	7 Marks	L2	CO3	PO1 PO2

UNIT-IV

7.	a)	Differentiate between channel routing and reservoir routing.	7 Marks	L4	CO4	PO1
	b)	Describe the most commonly used two methods for routing of floods through reservoir.	7 Marks	L2	CO4	PO1

(OR)

8.		Route the following flood hydrograph through a river reach for which K=12.0 hr, and x=0.20. At the start of the inflow flood, the outflow discharge is 10 cumec.	14 Marks	L6	CO5	PO1

Time (hr)	0	6	12	18	24	30	36	42	48	54
Inflow (m^3/s)	10	20	50	60	55	45	35	27	20	15

UNIT-V

9.		Analyze the various erosion and reservoir sedimentation problems in India.	14 Marks	L4	CO6	PO1

(OR)

10.		Classify reservoirs and mention the methods for predicting sediment distribution.	14 Marks	L4	CO6	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

ENVIRONMENTAL ENGINEERING

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Why it is necessary to treat water and supply to the town? Explain.	7 Marks	L2	CO1	PO1 PO6
	b)	Analyze the process of estimation of per capita water demand. Compute fire water demand for the city of 2 lakhs population by the national board of fire under writer's formula.	7 Marks	L4	CO1	PO6 PO7
		(OR)				
2.	a)	Draw a neat sketch of canal intake structure.	7 Marks	L2	CO1	PO1 PO10
	b)	i) Explain the procedure for population forecasting by logistic curve method. ii) Forecast the population at the end of 2 decades by arithmetic increase method if the average increase in the population of a town during the past 5 years was 15500 and the population in the last decade was 55000.	7 Marks	L4	CO1	PO1 PO2 PO5 PO10

UNIT-II

3.	a)	Compile and compare the water leakage detection techniques.	7 Marks	L4	CO2	PO1
	b)	Briefly explain about the coagulation process. The data obtained from the Jar apparatus test is as follows. Obtain the optimum coagulant dose from it.	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO8

Dose of Alum(mg/L)	1	2	3	4	5	6
Turbidity (NTU)	20	10	5	2.5	4	6

(OR)

4.	a)	Analyze the differences between slow and rapid sand gravity filters.	7 Marks	L4	CO2	PO10
	b)	Design a slow sand filter to treat 1 MLD. Assume filtration rate as 200 L/m^2/hr and the maximum size of each filter plan area 10 m x 7 M. Draw a layout of the filtration system by considering one filter standby for maintenance of whole filtration system.	7 Marks	L6	CO2	PO1 PO2 PO3 PO4

UNIT-III

5.	a)	Analyze the self purification of streams with a neat sketch.	7 Marks	L4	CO3	PO1
	b)	Compute the DO concentration at a distance 5 km from the point of discharge of effluent if industrial discharge and the river water has BOD content 500 mg/L and 10 mg/L respectively and DO content 0 mg/L and 7.5 mg/L respectively. Assume suitable data if necessary.	7 Marks	L4	CO3	PO1 PO2 PO4 PO6

(OR)

6.		A combined sewer was designed to serve an area of 60 sq. km with an average population density of 185 persons/hectare. The average rate of sewage flow is 150 LPCD. The maximum flow is 50% in excess of the average sewage flow. The rainfall equivalent of 12 mm in 24 h can be considered for design, all of which is contributing to surface runoff. What will be the discharge in the sewer? Find the diameter of the sewer if running full at maximum discharge.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO10
		UNIT-IV				
7.	a)	Draw a layout of a typical sewage treatment plant showing all necessary treatment units. Compile briefly the purpose of each unit.	7 Marks	L3	CO4	PO1 PO6
	b)	Determine head loss through a bar screen when it is 50% clogged. The approach velocity of wastewater in the channel is 0.7 M/sec, velocity of flow through the clear rack is 0.8 m/sec. Clear opening area in the screen is 0.2 m^2. Consider empirical discharge coefficient (C) for clogged bar rack as 0.6.	7 Marks	L4	CO4	PO1 PO2 PO4 PO6 PO7
		(OR)				
8.		Design a single stage and two stage high rate trickling filters to produce BOD effluent of 20 mg/l, given the following data: Q = 500 m^3/d, Raw sewage BOD = 350 mg/l, Temperature = 23° C. Note that primary sedimentation tank will be used before the trickling filter. Compile the differences in the results obtained.	14 Marks	L6	CO4	PO1 PO2 PO3 PO4 PO5 PO6 PO7
		UNIT-V				
9.	a)	Write the precautions to be taken while disposing sewage into different water bodies by dilution method.	7 Marks	L2	CO5	PO1 PO5
	b)	Analyze the favorable conditions for subsurface irrigation using sewage? An Activated sludge system of volume 5000 m^3 is used to treat 2 millionliterper day wastewater having BOD of 500 mg/l. Calculate hydraulic detention time and F/Mratio assuming the equilibrium volatile suspended solid concentration 0.6 kg/m^3.	7 Marks	L4	CO5	PO1 PO2 PO3 PO4
		(OR)				
10.	a)	List out the types of sewage sludge and analyze the characteristics of each type of sludge.	7 Marks	L4	CO5	PO1 PO2
	b)	Design a septic tank for a community 300 members in the colony. Assume that the water consumed per head per day is 160 liters. Draw a neat sketch of it.	7 Marks	L6	CO5	PO1 PO2 PO3

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

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)	Derive the relation between unit weight (γ), degree of saturation (S), void ratio (e) and unit weight of water (γ_w).	7 Marks	L4	CO1	PO1 PO2
	b)	The mass of a moist sample collected from the field is 645 g, and its oven dry mass is 405.76 g. If G = 2.68 and the void ratio of the soil in the field is 0.83, determine i) moist density in the field, ii) dry density in the field, iii) amount of water to be added per m^3 of soil in the field for saturation, and iv) saturated density.	7 Marks	L4	CO1	PO1 PO2 PO4
		(OR)				
2.	a)	Define and explain: Liquid limit; Plastic limit; Shrinkage limit; and Plasticity index. Briefly describe the procedure to determine the liquid limit of a soil by Casagrande's method.	7 Marks	L3	CO1	PO1 PO5 PO8 PO10
	b)	A soil has a liquid limit of 45%, plastic limit of 20% and flow index of 50%. Determine its toughness index. If the natural water content is 25%, comment on the state of its consistency. Also, classify the soil as per IS Classification if the fraction passing through 75 micron sieve is 60%.	7 Marks	L4	CO1	PO1 PO2 PO4 PO8 PO10

UNIT-II

3.	a)	What is flow net? Explain the properties and uses of flow net.	7 Marks	L1	CO2	PO1
	b)	For a homogeneous earth dam 52 m high and 2 m free board, a flow net was constructed and following results were obtained. No. of potential drops = 25 No. of flow channels = 4 The dam has a horizontal filter of 40 m length at its downstream end. Calculate the discharge per meter length of the dam if the coefficient of permeability of the dam material is 3 x 10^{-3} cm/sec.	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO10
		(OR)				
4.	a)	Illustrate the method of determination of coefficient of permeability for cohesive soils.	7 Marks	L4	CO2	PO8 PO10
	b)	In a falling head permeability test on a soil of length L1, the head of water in the stand pipe takes 5 seconds to fall from 900 to 135 mm above the tail water level. When another soil of length 60 mm is placed on the first soil, the time taken for the head to fall between the same limits is 150 seconds. The permeameter has a cross sectional area of 4560 mm^2 and stand pipe area of 130 mm^2. Calculate the permeability of second soil.	7 Marks	L4	CO2	PO1 PO2 PO4 PO5 PO8

UNIT-III

5.	a)	What are the assumptions and limitations made in Boussinesq's theory?	7 Marks	L1	CO3	PO1
	b)	A circular ring footing for an overhead water tank carries a load	7 Marks	L4	CO3	PO1

		of 1000 kN whose outer diameter is 3 m and inner diameter is 1.5 m. Determine the induced stress at a depth of 3 m from surface below the centre of the loaded area.				PO2 PO4 PO5 PO10
		(OR)				
6.		What are the field methods for compacting soils? Discuss the suitability of different methods with respect to the soil type. Also discuss the latest developments in compaction equipment.	14 Marks	L4	CO3	PO1 PO2 PO5 PO12
		UNIT-IV				
7.	a)	Describe a method to determine the pre-consolidation pressure of soil with a neat sketch and explain its significance.	7 Marks	L3	CO4	PO1 PO10
	b)	A layer of clay 8 m thickness is located between two sand layers. The coefficient of consolidation of the clay is $5x10^{-2}$ nm^2/sec. The fill material was placed over a very large area above the top sand layers. After 3 years, what percentage of the additional pressure due to the fill material will be carried by the soil grains at the middle of the clay layer?	7 Marks	L4	CO4	PO1 PO2 PO4 PO6 PO7
		(OR)				
8.	a)	Distinguish between normally consolidated and over consolidated soil.	7 Marks	L4	CO4	PO1 PO2
	b)	A clay soil, tested in a consolidometer showed a decrease in void ratio from 1.20 to 1.10 when the pressure was increased from 25 kN/m^2 to 50 kN/m^2. Calculate the coefficient of compressibility and the coefficient of volume compressibility. If the coefficient of consolidation determined in the test for the given stress increment was $10m^2$/year, calculate the coefficient of permeability in cm/s. If the sample tested at the site was taken from a clay layer 3.0 m in thickness, determine the consolidation settlement resulting from the given stress increment.	7 Marks	L4	CO4	PO1 PO2 PO4 PO5 PO6 PO7
		UNIT-V				
9.	a)	Discuss the relative advantages and disadvantages of the direct shear test over the triaxial compression test. How are triaxial tests classified based on drainage conditions?	7 Marks	L4	CO5	PO1 PO2 PO8
	b)	The results for triaxial tests conducted on three samples of a soil are given below. Obtain the shear strength parameters of the soil.	7 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO8 PO10

Cell pressure (kN/m^2)	100	200	450
Deviator stress (kN/m^2)	375	575	973

		(OR)				
10.		Un-drained triaxial tests are carried out on four identical specimens of silt clay, and the following results are obtained:	14 Marks	L4	CO5	PO1 PO2 PO4 PO5 PO8 PO10

Cell pressure (kN/m^2)	50	100	150	200
Deviator stress at failure (kN/m^2)	350	440	530	610
Pore pressure (kN/m^2)	5	10	12	18

Determine the value of the effective angles of shearing resistance and the cohesion intercept by plotting i) conventional failure envelope from Mohr circles, ii) modified failure envelope.



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

STRUCTURAL ANALYSIS

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Derive the expression for slope and deflection of a cantilever beam of length 'l' subjected to an uniformly distributed load 'w/m' through the entire span.	7 Marks	L4	CO1	PO1 PO2 PO10
	b)	A beam having cross section 300 mm x 400 mm and length 4 m is subjected to an udl of 5 kN/m throughout. Determine the maximum deflection and slope at the ends.	7 Marks	L4	CO1	PO1 PO2 PO4 PO10

(OR)

2.		A simply supported beam 10 m long is loaded as shown in Fig.1. Determine the deflection under the concentrated load and the maximum deflection using Macaulay's method.	14 Marks	L4	CO1	PO1 PO2 PO4 PO5 PO10

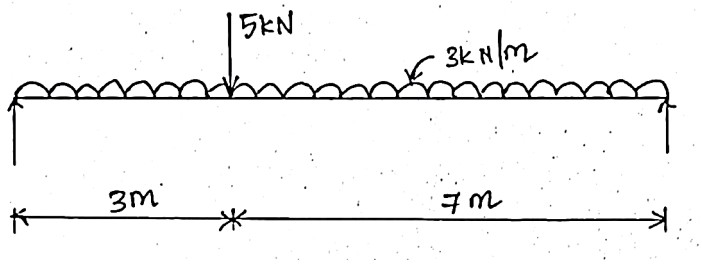


Fig.1

UNIT-II

3.		Determine the vertical deflection of point D in the truss shown in Fig.2. The cross-sectional areas of members AD and DE are 1500 mm^2 while those of other members are 1000 mm^2. Take E = 200 kN/mm^2.	14 Marks	L4	CO1	PO1 PO2 PO4 PO10

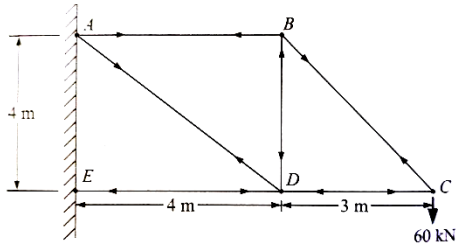


Fig.2

(OR)

4.		A fixed beam of 8 m span carries a uniformly distributed load of 40 kN/m run over 4 m length starting from left end and a concentrated load of 80 kN at a distance of 6 m from the left hand end. Find: i) Moments at the supports ii) Deflection at the center of the beam. Take EI = 15000 $kN\text{-}m^2$.	14 Marks	L4	CO2	PO1 PO2 PO4 PO10

UNIT-III

5.	A continuous beam ABCD of uniform cross – section is loaded as shown in the Fig.3. Find: i) Bending moments at the supports B and C. ii) Reactions at the supports. Draw the B.M. and S.F. diagrams.	14 Marks	L4	CO3	PO1 PO2 PO4 PO10

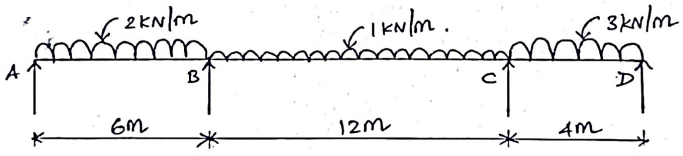


Fig.3

(OR)

6.	Analyse the continuous beam shown in Fig.4 by slope deflection method, if joint B sinks by 10 mm. Given EI = 4000 kNm^2. Draw bending moment and shear force diagrams.	14 Marks	L4	CO3	PO1 PO2 PO4 PO10

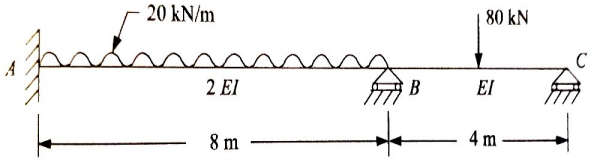


Fig.4

UNIT-IV

7.	Analyse the beam ABCD shown in Fig.5 using moment distribution method.	14 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO10

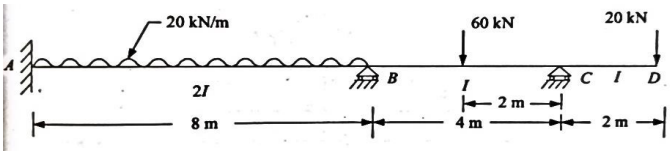


Fig.5

(OR)

8.	Analyse the continuous beam shown in Fig.6 by Kani's method.	14 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO10

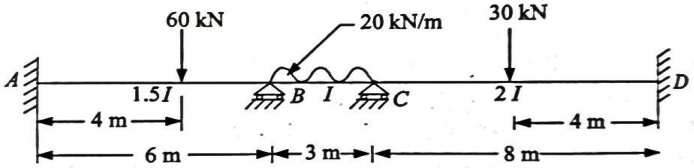


Fig.6

UNIT-V

9.	A system of 5 loads of 80 kN, 160 kN, 160 kN, 60 kN and 40 kN crosses a beam of 20 m span with 80 kN load leading. The distance between the loads are 2.4 m, 3 m, 2.4 m and 1.8 m respectively. Using influence lines, find the maximum bending moment at the centre of the span.	14 Marks	L4	CO4	PO1 PO2 PO4 PO10

(OR)

10.	Calculate the plastic moment capacity required for the continuous beam with working loads shown in Fig 7.	14 Marks	L4	CO5	PO1 PO2 PO4 PO10

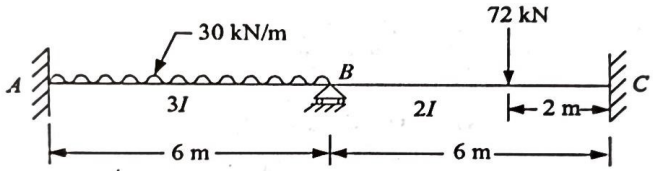


Fig.7

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

ELECTRICAL MACHINES-II

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Justify. "Three phase induction motor slip is not equal to zero".	7 Marks	L2	CO1	PO2
	b)	Discuss the factors that affecting the sustainability of three phase induction machine.	7 Marks	L3	CO1	PO7
		(OR)				
2.	a)	Determine the rotor frequency, emf and reactance of three phase induction motor under standstill and running conditions.	6 Marks	L2	CO1	PO2
	b)	A 3-phase squirrel cage induction motor has a starting torque of 150% and a maximum torque of 300% with respect to rated torque at rated voltage and frequency. Neglect the stator resistance and rotational losses. Calculate the value of slip at maximum torque.	8 Marks	L2	CO1	PO4
		UNIT-II				
3.	a)	Identify the speed control methods used to control three phase induction motor beyond its rated speed and discuss those methods briefly.	7 Marks	L2	CO1	PO5
	b)	Give the applications of both self-excited and external excited induction generators.	7 Marks	L1	CO1	PO6
		(OR)				
4.	a)	Show that the maximum internal torque developed by a poly phase induction motor does not depend on the rotor circuit resistance and explain the torque slip characteristics.	6 Marks	L2	CO1	PO2
	b)	A 3 - ϕ 400v, 4pole, 50Hz, induction motor has a star connected stator and rotor. The rotor resistance and standstill reactance /ph are 0.25 Ω and 1.2 Ω respectively. The ratio of stator to rotor turns is 1.3. The full load slip is 4 %. Calculate: i). The power and torque developed at full load. And ii). Maximum torque and the speed at which it occurs.	8 Marks	L2	CO1	PO4
		UNIT-III				
5.	a)	Explain the effect of armature reaction on the terminal voltage of an alternator at i) UPF ii) ZPF lagging and iii) ZPF leading loads. Draw the relevant phasor diagrams.	7 Marks	L2	CO2	PO1
	b)	A 4 pole synchronous generator has 48 slots in which double layer winding is housed, each coil has 10 turns and is short pitched by an angle of 360 electrical. The fundamental flux/pole is 0.025 wb. Calculate. i) The line-line induced e.m.f. in volts for 3-phase star-connected armature. ii) The line-line induced e.m.f. in volts for a 2-phase connection.	7 Marks	L2	CO2	PO4

(OR)

6.	a)	Give the differences between synchronous impedance and saturated synchronous impedance methods.	7 Marks	L2	CO2	PO2
	b)	A 3 phase star connected salient pole alternator supplies a current of 10A having phase angle of 20^0 lagging at 400V. Find the load angle and components of armature current, if X_d=10 Ω/ph and X_q = 6.5 Ω/ph. Assume armature resistance is negligible.	7 Marks	L3	CO2	PO4

UNIT-IV

7.	a)	Derive an expression for the synchronizing power, synchronizing current and synchronizing torque between the two alternators connected in parallel.	7 Marks	L2	CO3	PO1
	b)	A 3 MVA, 6-pole alternator runs at 1000 rpm in parallel with other machines on 3.3 kV bus bars. The synchronous reactance is 25%. Calculate the synchronizing power per one mechanical degree of displacement and the corresponding synchronizing torque when the alternator as supplying full load at 0.8 pf lag.	7 Marks	L3	CO3	PO4

(OR)

8.	a)	Analyze the influence of varying excitation on the power factor, armature current and load angle of a synchronous generator connected to an infinite bus.	7 Marks	L4	CO3	PO2
	b)	Two identical 2 MVA alternators operate in parallel. The governor of first machine is such that the frequency drops uniformly from 50 Hz on no-load to 47.5 Hz on full-load. The corresponding uniform speed drop of second machine is 50Hz to 48 Hz. How will they share a load of 3 MW.	7 Marks	L3	CO3	PO4

UNIT-V

9.	a)	Explain the different methods of starting 3-phase synchronous motors.	7 Marks	L1	CO4	PO1
	b)	A factory has an average load of 300 kW at a power factor of 0.6 lagging. A synchronous motor with an efficiency of 85% is used to raise the combined power factor to 0.8 lagging and at the same time supply a mechanical load of 60kW. Calculate. i) total load kVA. ii) kVA capacity of the synchronous motor.	7 Marks	L3	CO4	PO4

(OR)

10.	a)	Develop the power circle for a cylindrical rotor synchronous motor. Find the maximum output power at which it occurs?	7 Marks	L2	CO4	PO2
	b)	How the synchronous motor can be used in a cement industry for power factor improvement to avoid penalty factor in their electricity bill.	7 Marks	L3	CO4	PO6



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

ELECTRICAL MEASUREMENTS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Describe the working of a universal shunt uses for multi range ammeters. Derive expressions for resistances of different sections of a universal shunt used for a 3 range ammeter.	8 Marks	L3	CO1	PO1
	b)	A basic D'Arsonval movement with a full scale reading of 50 μA and an internal resistance of 1800 Ω is available .It is to be converted into a 0-1 V, 0-10 V, 0-50 V, and 0-150 V. Design a multi range voltmeter using individual multipliers for each range. Calculate the value of individual multipliers.	6 Marks	L4	CO1	PO3
		(OR)				
2.	a)	Describe in detail the various errors that occur in the moving coil instruments and suggest the suitable compensation techniques to nullify the errors.	8 Marks	L2	CO1	PO5
	b)	List the advantages and disadvantages of moving iron instruments and also list its applications.	6 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Enumerate the sources of errors in single phase induction type energy meters and suggest the suitable compensations techniques are used to minimize them.	8 Marks	L3	CO2	PO5
	b)	Explain in detail the construction and working principle of Electrodynamometer type power factor meter with a neat sketch.	6 Marks	L2	CO2	PO1
		(OR)				
4.		Describe the construction, working principle of electrodynamometer type wattmeter with neat sketch and also derive the torque equation of wattmeter.	14 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Explain the construction and working principle of current transformer with a neat sketch and also list its advantages over shunt multipliers.	7 Marks	L2	CO3	PO1
	b)	Describe in detail the construction and working principle of Polar type ac potentiometer with neat sketch and also list its applications.	7 Marks	L2	CO3	PO1
		(OR)				
6.		Discuss in detail the following applications of dc potentiometer. i) Measurement of unknown resistance ii) Calibration of MC type ammeter iii) Calibration of MC type Voltmeter	14 marks	L2	CO3	PO1

UNIT-IV

7.	a)	Derive the equation of balance for Maxwell's inductance-capacitance bridge used for measurement of unknown inductance of a coil. Draw the phasor diagram for conditions under balance. List the advantages and disadvantages of the bridge.	7 Marks	L3	CO4	PO1
	b)	Derive the equation of balance for a frequency measuring bridge and also draw the phasor diagram for conditions under balance. List the advantages and disadvantages of the bridge.	7 Marks	L3	CO4	PO1
		(OR)				
8.	a)	Discuss in detail the loss of charge method is used for the measurement of high resistance with a necessary circuit.	7 Marks	L3	CO4	PO1
	b)	List the classification of resistances. Describe in detail the suitable dc bridge used for the measurement of medium resistance and list its limitations.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	Describe in detail the importance of a Lissajous patterns used in the CRO for the measurement of unknown frequency and phase of the electrical quantities.	7 Marks	L2	CO5	PO1
	b)	Draw the block diagram of CRO and write the function of each component with the help of neat sketch.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Describe in detail the working of digital multi-meters with neat block diagram and write the function of each component.	7 Marks	L2	CO5	PO1
	b)	List the different operating techniques of digital voltmeter and explain ramp type digital voltmeter in detail with a neat sketch.	7 Marks	L2	CO5	PO5

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

DYNAMICS OF MACHINERY

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

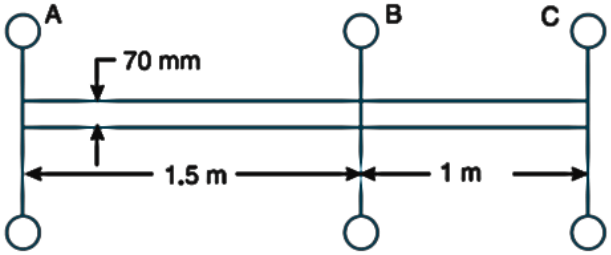
Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	A centrifugal clutch is to transmit 15 kW at 900 r.p.m. The shoes are four in number. The speed at which the engagement begins is $3/4^{th}$ of the running speed. The inside radius of the pulley rim is 150 mm and the centre of gravity of the Shoe lies at 120 mm from the centre of the spider. The shoes are lined with Ferrodo for which the coefficient of friction may be taken as 0.25. Determine : i) Mass of the shoes, and ii) Size of the shoes, if angle subtended by the shoes at the centre of the spider is 60º and the pressure exerted on the shoes is $0.1N/mm^2$	14 Marks	L3	CO1	PO1 PO2 PO4 PO6
	(OR)				
2.	A band brake acts on the $3/4^{th}$ of circumference of a drum of 450 mm diameter which is keyed to the shaft. The band brake provides a braking torque of 225 N-m. One end of the band is attached to a fulcrum pin of the lever and the other end to a pin 100 mm from the fulcrum. If the operating force is applied at 500 mm from the fulcrum and the coefficient of friction is 0.25, find the operating force when the drum rotates in the i) anticlockwise direction, and ii) clockwise direction.	14 Marks	L3	CO1	PO1 PO2 PO6
	UNIT-II				
3.	An aeroplane makes a complete half circle of 50 metres radius, towards left, when flying at 200 km per hr. The rotary engine and the propeller of the plane has a mass of 400 kg and a radius of gyration of 0.3 m. The engine rotates at 2400 r.p.m. clockwise when viewed from the rear. Find the gyroscopic couple on the aircraft and state its effect on it.	14 Marks	L3	CO2	PO1 PO2 PO6
	(OR)				
4.	A single cylinder, single acting, four stroke gas engine develops 20 kW at 300 r.p.m. The work done by the gases during the expansion stroke is three times the work done on the gases during the compression stroke, the work done during the suction and exhaust strokes being negligible. If the total fluctuation of speed is not to exceed ± 2 per cent of the mean speed and the turning moment diagram during compression and expansion is assumed to be triangular in shape, find the moment of inertia of the flywheel.	14 Marks	L3	CO3	PO1 PO2 PO6
	UNIT-III				
5.	The following particulars refer to a Wilson-Hartnell governor: Mass of each ball = 2 kg ; minimum radius = 125 mm ; maximum radius = 175 mm ; minimum speed = 240 rpm ; maximum speed = 250 rpm ; length of the ball arm of each bell crank lever = 150 mm; length of the sleeve arm of each bell crank lever = 100 mm ; combined stiffness of the two ball springs = 0.2 kN/m. Find the equivalent stiffness of the auxiliary spring referred to the sleeve.	14 Marks	L4	CO4	PO1 PO2 PO3
	(OR)				
6.	A Porter governor has arms 250 mm each and four rotating fly balls of mass 0.8 kg each the sleeve movement is restricted to ±20 mm from the height when the mean speed is 100 rpm calculate the central dead load and sensitivity of the governor neglecting friction when the fly ball exerts the centrifugal force of 9.81 N. Determine also the effort and power of the governor for 1% speed change.	14 Marks	L3	CO4	PO1 PO2 PO6

UNIT-IV

7.	A shaft carries four masses A, B, C and D of magnitude 200 kg, 300 kg,400 kg and 200 kg respectively and revolving at radii 80 mm, 70 mm, 60 mm and 80 mm in planes measured from A at 300 mm, 400 mm and 700 mm. The angles between the cranks measured anticlock wise are A to B 45°, B to C 70° and C to D 120°. The balancing masses are to be placed in planes X and Y. The distance between the planes A and X is 100 mm, between X and Y is 400 mm and between Y and D is 200 mm. If the balancing masses revolve at a radius of 100 mm, findtheir magnitudes and angular positions.	14 Marks	L3	CO5	PO1 PO2 PO6
	(OR)				
8.	A, B, C and D are four masses carried by a rotating shaft at radii 100, 125, 200 and 150 mm respectively. The planes in which the masses revolve are spaced 600 mm apart and the mass of B, C and D are 10 kg, 5 kg, and 4 kg respectively. Find the required mass A and the relative angular settings of the four masses so that the shaft shall be in complete balance.	14 Marks	L3	CO5	PO1 PO2 PO6

UNIT-V

9.	A steel shaft ABCD 1.5 m long has flywheel at its ends A and B. The mass of the flywheel A is 600 kg and has a radius of gyration of 0.6 m. the mass of the flywheel D is 800 kg and has radius of gyration of 0.9 m. The connecting shaft has a diameter of 50 mm for the portion AB which is 0.4 m long, and has a diameter of 60 mm for the portion BC which is 0.5 m long and has a diameter of d mm for the portion CD which is 0.6 m long. Determine 1. The diameter d of the portion CD so that the node of the rotational vibration of the system will be at the center of length BC and 2. The natural frequency of the torsional vibrations. G=80 GN/m2.	14 Marks	L3	CO6	PO1 PO2 PO6
	(OR)				
10.	A single cylinder oil engine drives directly a centrifugal pump, The rotating mass of the engine flywheel and the pump with the shaft is equivalent to a three rotor system as shown in fig, The mass moment of inertia of the rotors A, B, C, D are 0.15, 0.3, and 0.09 kg-m2. Find the natural frequency of the torsional vibration; The modulus of rigidity for the shaft materials is 84 kN/mm^2.  	14 Marks	L3	CO6	PO1 PO2 PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

FLUID MECHANICS AND MACHINES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is specific volume and specific gravity? How specific gravity is related to density?	6 Marks	L2	CO1	PO1
	b)	What is the importance of viscosity in fluid motion and how does temperature affect it? Determine the fluid viscosity between the plates when a plate 0.025 mm distant from a fixed plate, moves at 60 cm/s and requires a force of 2 N/m2 to maintain this speed.	8 Marks	L3	CO1	PO1 PO2
		(OR)				
2.	a)	State newton's law of viscosity and explain the classification of fluids based on the newton's law of viscosity?	6 Marks	L2	CO1	PO1
	b)	Describe any five significant properties of fluids with necessary formulae, units and dimensions.	8 Marks	L2	CO1	PO1

UNIT-II

3.	a)	What are various fluid patterns? Explain in detail about what these patterns will indicate.	6 Marks	L3	CO2	PO1 PO2
	b)	A 45^0 reducing bend is connected in a pipe line, the diameters at the inlet and outlet of the bend being 600mm and 300mm respectively. Find the force exerted by water on the bend if the intensity of pressure at inlet to bend is 8.829N/cm2 and rate of flow of water is 600litres/s.	8 Marks	L3	CO2	PO1 PO2
		(OR)				
4.		Derive and express the Bernoulli equation in three different ways using i) energies, ii) pressures, and iii) heads and also state the assumptions used in the derivation of the Bernoulli equation?	14 Marks	L3	CO2	PO1 PO2

UNIT-III

5.	a)	For a linear velocity distribution in the boundary layer on a flat plate show that $(\delta * /\theta) = 3$, and $(\delta E/\delta) = 0.25$.	7 Marks	L2	CO3	PO1
	b)	What are the different methods of preventing the separation of boundary layers?	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Derive an expression for loss of head due to sudden contraction?	7 Marks	L2	CO3	PO1
	b)	A horizontal pipe of diameter 500mm is suddenly contracted to a diameter of 250mm.The pressure intensities in the large and smaller pipe is given as 13.734N/cm^2 and 11.772N/cm^2 respectively. Find the loss of head due to contraction if Cc=0.62. Also determine the rate of flow of water.	7 Marks	L3	CO3	PO1 PO2 PO3

UNIT-IV

7.		Show that force exerted by a jet of water on a inclined fixed plate in the direction of the jet given by: $Fx = \rho AV \sin\alpha$ Where 'V' is the velocity of the jet; 'A' is the area of the jet; 'α' is the inclination of plate to the direction of the jet.	14 Marks	L3	CO4	PO1 PO2

(OR)

8.		A pelton wheel has to be designed for the following data. Power to be developed = 6,000 kW. Net head available=300 m; Speed= 550 r.p.m.; Ratio of jet diameter to wheel diameter = 1/10; and overall efficiency = 85 %. Find the number of jets; diameter of the jet; diameter of the wheel; and the quantity of water required.	14 Marks	L3	CO4	PO1 PO2

UNIT-V

9.		A centrifugal pump discharges 0.18 m3 /sec of water against a head of 15 m, the speed of impeller being 600 r.p.m. The outer and inner diameter of impeller is 450 mm and 250 mm respectively and the vanes are bent back at 350 to the tangent at exit. If the area of flow remains 0.07 m2 from inlet to outlet, calculate. i) Manometric efficiency of pump. ii) Vane angle at inlet. Loss of head at inlet to impeller when the discharge is reduced by 40% without changing the speed.	14 Marks	L3	CO5	PO1 PO2 PO3

(OR)

10.	a)	Define the static and manometric heads of a centrifugal pump. State the different types of head losses which may occur in a pump installation.	7 Marks	L3	CO5	PO1 PO2
	b)	A double-acting reciprocating pump, running at 45 rpm, is discharging 0.009 m^3 /s of water. The pump has a stroke of 40 cm. The diameter of the piston is 20 cm. The suction and delivery heads are 3m and 14m, respectively. Find the slip of the pump and power required to drive the pump. Neglect the effect of piston rod area.	7 Marks	L3	CO5	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

THERMAL ENGINEERING-I

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define the terms and mention the units in which they are normally measured: i) Bore; ii) Stroke; iii) Displacement volume and iv) Compression ratio.	7 Marks	L1	CO1	PO1
	b)	List out the Comparison between two stroke and four stroke engine.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Compare the phenomenon of knock in SI engine with CI engine knock.	7 Marks	L2	CO1	PO1 PO2
	b)	Explain stages of combustion in CI engine with neat sketch.	7 Marks	L2	CO1	PO1 PO2

UNIT-II

3.	a)	List the various methods used available for finding the frictional power of an engine and explain the method of finding the friction power by using motoring test.	7 Marks	L2	CO1	PO1 PO2
	b)	A four - stroke, four cylinder gasoline engine has a bore of 60mm and a stroke of 100 mm. On test it develops a torque of 66.5 Nm when running at 3000 rpm. If the Clearance volume in each cylinder is 60cc the relative efficiency with respect to brake Thermal efficiency is 0.5 and the calorific value of the fuel is 42MJ/kg, determine the fuel consumption in kg/h and the brake mean effective pressure.	7 Marks	L3	CO1	PO1 PO2 PO3
		(OR)				
4.	a)	Define the terms: i) Brake Thermal Efficiency ii) Mechanical Efficiency iii) Volumetric Efficiency iv) Indicated Thermal Efficiency	6 Marks	L2	CO1	PO1
	b)	A four - stroke gas engine has a bore of 20cm and stroke of 30 cm and runs at 300 rpm firing every cycle. If air - fuel ratio is 4:1 by volume and volumetric efficiency on NTP basis is 80%, Determine the volume of gas used per minute. If the calorific value of gas is 8MJ/m^3 at NTP and the brake thermal efficiency is 25%. Determine brake power of the engine.	8 Marks	L3	CO1	PO1 PO2 PO3

UNIT-III

5.	a)	Explain in detail the methods to improve efficiency of gas turbine.	7 Marks	L2	CO2	PO1 PO2
	b)	A gas turbine plant consist of two stage compressor with perfect inter cooler and a single stage turbine ,if the plant works between the temperature limits of 300K and 1000K at the pressure of 1 bar and 16 bar. Find the net power of the plant per kg of air and also draw T-S diagram with neat sketch. Take Cp as1kj/kg K .	7 Marks	L3	CO2	PO1 PO2 PO3

(OR)

6.	a)	Explain the working of turbojet propulsion with neat sketch.	7 Marks	L2	CO2	PO1
	b)	Write the comparison between jet propulsion and rocket propulsion engine.	7 Marks	L2	CO2	PO1

UNIT-IV

7.	a)	What are different types of rotary compressors and explain briefly the working of roots blower.	7 Marks	L2	CO3	PO1
	b)	A compressor compresses air 100 kPa to 700 kPa. The clearance volume is 2.13 liters and compression and expansion are polytrophic with n=1.3 for each. If the volumetric efficiency of compressor be 85 %, determine the swept volume and the diameter of the cylinder. Assume a stroke length of 30 mm.	7 Marks	L3	CO3	PO1 PO2 PO3

(OR)

8.	a)	Explain the effect of inter cooling in a multi stage reciprocating compressor.	7 Marks	L2	CO3	PO1 PO2
	b)	Estimate the minimum work required to compress 2 kg of air from 1 bar 330 K to 18 bar in two stages if the law of compression is $PV^{1.25}$ = constant and inter cooling is perfect.	7 Marks	L3	CO3	PO1 PO2 PO3

UNIT-V

9.	a)	Explain the Modified Rankine Cycle with the help of P-V and T-S diagrams.	7 Marks	L2	CO4	PO1 PO2
	b)	In a Rankine cycle the steam at inlet to the turbine is saturated at a pressure of 20 bar and exhaust pressure is 0.04 bar. Determine: i) Pump Work ii) Turbine Power iii) Rankine Efficiency and iv) Condenser heat flow. Assume the flow rate of steam is 10kg/sec.	7 Marks	L3	CO4	PO1 PO2 PO3

(OR)

10.	a)	Explain the concept of binary vapour cycle with neat sketch	7 Marks	L2	CO4	PO1
	b)	Write short notes on: i) Reheating ii) Regeneration.	7 Marks	L2	CO4	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

LINEAR AND DIGITAL IC APPLICATIONS

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

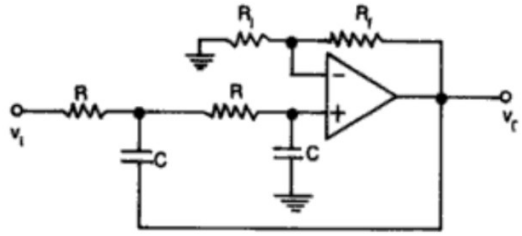
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Develop an instrumentation amplifier for a gain of 100 to amplify a low voltage ECG / EEG signals taken from the patient with a neat circuit diagram and derive the expression for a voltage gain.	7 Marks	L3	CO1	PO6
	b)	Sketch and explain the block diagram and operation of IC 555 timer in Astable mode.	7 Marks	L1	CO1	PO8
		(OR)				
2.	a)	Design a Monostable multivibrator using 555 timer to produce a pulse width of 100 m sec.	7 Marks	L3	CO1	PO3
	b)	A PLL has a free running frequency of 500 KHz, the bandwidth of the LPF=10KHz. Will the PLL lock-in if f_i =60 KHz? What is the frequency of the VCO output?	7 Marks	L4	CO1	PO4

UNIT-II

3.	a)	In the circuit given below, R= 3.3KΩ, C= 0.047μf, Ri= 27KΩ and Rf=20KΩ. Calculate the high frequency cut-off fh and pass band gain A0.	7 Marks	L4	CO2	PO2



	b)	Design a Second order Butter worth LPF and plot the Frequency response?	7 Marks	L3	CO2	PO3
		(OR)				
4.	a)	Explain the operation of a successive approximation type Analog to Digital converter.	7 Marks	L1	CO3	PO8
	b)	Describe in detail the operation of a dual slope Analog to digital converter.	7 Marks	L1	CO3	PO1

UNIT-III

5.	a)	Differentiate initial and always statements.	7 Marks	L1	CO4	PO1
	b)	Explain the structure of various LOOP statements in Verilog HDL with examples.	7 Marks	L1	CO4	PO1
		(OR)				
6.	a)	Discuss system tasks and compiler directives available in Verilog HDL.	7 Marks	L1	CO4	PO1
	b)	Write Verilog HDL code for 4-to-1 Multiplexer Using Conditional Operators.	7 Marks	L2	CO5	PO2

UNIT-IV

7.	a)	Design a Priority encoder circuit and which 74XX series IC is used for it.	7 Marks	L1	CO5	PO3
	b)	With neat circuit diagram explain the working of a 4-bit odd parity generator.	7 Marks	L1	CO5	PO1
		(OR)				
8.	a)	Explain about Comparator and design a 16-bit comparator using 74 X 85IC's.Write Verilog HDL program.	7 Marks	L2	CO5	PO6
	b)	Write the Verilog HDL code for a dual priority encoder.	7 Marks	L2	CO5	PO2

UNIT-V

9.	a)	Sketch the logic diagram of 74x194 4-bit universal shift register and develop a Verilog HDL module for the same.	7 Marks	L2	CO5	PO2
	b)	Show the circuit of MOD-16 Down ripple counter with D-flip-flops and explain its operation.	7 Marks	L1	CO5	PO6
		(OR)				
10.	a)	Model the MIS device IC 74x163 in free running mode. Analyze with the help of functional table. Develop VHDL program for a 74x163 like 4-bit binary counter.	7 Marks	L3	CO5	PO4
	b)	Write a Verilog HDL code for a 4-bit up counter with enable and clear inputs.	7 Marks	L2	CO5	PO3



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

PROBABILITY AND STOCHASTIC PROCESSES

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define probability based on set theory and fundamental axioms.	6 Marks	L1	CO1	PO1
	b)	An experiment consists of tossing two dice. i) Find the sample space S. ii) Find the event A that the sum of the dots on the dice equals 7. iii) Find the event B that the sum of the dots on the dice is greater than 10.	8 Marks	L2	CO1	PO4
		(OR)				
2.	a)	Define and explain the following with an example: i) Equally likely events. ii) Exhaustive events. iii) Mutually exclusive events.	8 Marks	L1	CO1	PO1
	b)	A bag contains twelve balls numbered from 1 to 12. A ball is taken at random, what is the probability of having a ball with number which is a multiple of either two or three.	6 Marks	L2	CO1	PO2

UNIT-II

3.	a)	A random variable X has the following probability distribution. Find: i) The value of k ii) P(X<4)	8 Marks	L4	CO2	PO4
	b)	List the properties of conditional distribution and density functions.	6 Marks	L1	CO2	PO1

x:	0	1	2	3	4	5	6	7	8
p(x):	K	3K	5K	7K	9K	11K	13K	15K	17K

(OR)

4.	a)	Explain the Gaussian random variable with neat sketches.	6 Marks	L2	CO2	PO1
	b)	Let X be random variable defined by the density function. $f_x(x) = \left(\frac{5}{4}\right)\left(1 - X^4\right)$ for $0 < x \leq 2$ $= 0$ elsewhere. Find E[X], E[X^2] and variance.	8 Marks	L3	CO2	PO4

UNIT-III

5.	a)	State the basic properties of joint distribution of (X, Y) when X and Y are random variables.	7 Marks	L2	CO2	PO2
	b)	The joint distribution function of a bivariate random variable (X, Y) is given by $F(x,y) = \begin{cases} (1 - e^{-ax})(1 - e^{-by}) & X \geq 0, Y \geq 0, a > 0, b > 0 \\ 0 & Otherwise \end{cases}$ i) Find the conditional density functions of X and Y. ii) Show that X and Y are independent. iii) Find P(X ≤1, Y≤1), P(X≤1), P(Y >1), and P(X >x, Y > y).	7 Marks	L4	CO2	PO4

(OR)

6.	a)	Discuss about Joint central Moments.	7 Marks	L2	CO2	PO1
	b)	The random variable X and Y have the joint characteristic function. $\Phi\ (w_1, w_2) = \exp\ (-2W_1^2 - 9W_2^2)$. Show that X and Y both are zero means and that they are uncorrelated random variables.	7 Marks	L4	CO2	PO2

UNIT-IV

7.	a)	State all the properties of power spectral density and cross power spectral density.	7 Marks	L2	CO3	PO1
	b)	A random process is defined by Y(t)= X(t) cos(ω_ot+θ) where X(t) is WSS random process that amplitude modulates a carrier of constant angular frequency ω_o with a random phase θ independent of X(t) and uniformly distributed on (-π,π). Is Y(t) a WSS random process? If so, find the autocorrelation function of Y(t).	7 Marks	L4	CO3	PO2

(OR)

8.	a)	Derive the relation between input and output PSDs of an LTI system.	7 Marks	L2	CO3	PO2
	b)	Explain the conditions to be satisfied by an ergodic random process.	7 Marks	L2	CO3	PO1

UNIT-V

9.		Given three cascaded amplifiers in which there is impedance matching between the stages having an overall system noise figure of 5.6Db. Stage 1: $SNR_{OUT} = 120, P_{ni} = 0.01x10^{-6}W, G = 20$. Stage 2: F=12, G = 30. Stage 3: F=9.3dB, G = 35. Find i) Noise factor and Noise Figure of Stage 1. ii) Input signal power of Stage 1. iii) Noise added by the Stage 1 amplifier.	14 Marks	L2	CO4	PO4

(OR)

10.	a)	List different types of noise.	7 Marks	L1	CO4	PO1
	b)	For a radio operating at a temperature of 19 degree centigrade with a bandwidth of 12 kHz, determine the thermal noise in dB. If the load resistance is 125ohms, calculate the r.m.s voltage.	7 Marks	L3	CO4	PO4



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

DATABASE MANAGEMENT SYSTEMS

[Computer Science and Engineering, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss in detail about the role of Database Administrator and Explain the difference between logical and physical data independence.	7 Marks	L2	CO1	PO1
	b)	Draw an ER diagram for university. A University registrar office maintains the data about the following entities. i) Courses including number, title, credits, syllabus and pre requisites. ii) Course Offerings including course number, year, semester, section number, instructor's timings and class room. iii) Students including student id, name and program. iv) Instructors including identification number, name, department and title.	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	Explain in detail about the three-schema architecture of DBMS and analyze, correlate every layer with certain example.	7 Marks	L2	CO1	PO2
	b)	Draw an ER diagram for Core Banking enterprise system and identify the derived and composite attributes, the string and weak entity sets and relationships**.**	7 Marks	L3	CO1	PO3

UNIT-II

3.	a)	Discuss about the logical database design.	7 Marks	L2	CO2	PO1
	b)	What is relational algebra? List all relational algebra operators. Explain following Operations: SELECT, PROJECTION, JOIN and DIVISION with examples.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Explain in detail about various key constraints used in database system.	7 Marks	L2	CO2	PO1
	b)	List the basic Relational Algebra operations with the symbol used and an example for each.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Describe active databases in detail with an example.	7 Marks	L2	CO3	PO1
	b)	Implement PL/SQL program to find factorial of a given number using function.	7 Marks	L3	CO3	PO2
		(OR)				
6.	a)	Explain complex integrity constraints in SQL?	7 Marks	L2	CO3	PO1
	b)	Write a structure of PL/SQL and also explain various data types.	7 Marks	L2	CO3	PO2

UNIT-IV

7.	a)	Consider the universal relation R(A,B,C,D,E,F,G,H,I,J) and the set of FD's. G=({A,B}->{C}, {B,D}->{E,F}, {A,D}->{G,H}, {A}->{I}, {H}->{J}) what is the key of R? Decompose R into 2NF, then 3NF relations.	7 Marks	L3	CO4	PO4
	b)	Describe Concurrent execution of Transactions in detail.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Explain about Schema refinement in Database design.	7 Marks	L2	CO4	PO1
	b)	Explain the following terms with neat diagram in detail: i) Recoverability. ii) Serializability.	7 Marks	L2	CO4	PO3

UNIT-V

9.	a)	Explain in detail about various concurrency control mechanisms.	7 Marks	L2	CO5	PO1
	b)	Describe any one Index data structure with figures.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Discuss in detail about validation-based protocols.	7 Marks	L2	CO5	PO2
	b)	Explain in detail about the following. i) Hash-based Indexing. ii) Tree-based Indexing.	7 Marks	L2	CO5	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

THEORY OF COMPUTATION

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering,]

Time: 3 hours **Max. Marks: 70**

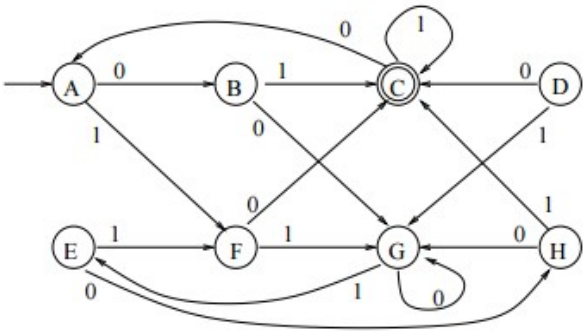
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	If L is accepted by an NFA with ε-transition then show that L is accepted by an NFA without ε-transition with an example.	7 Marks	L3	CO2	PO2
	b)	Design a Moore machine to determine the residue of mod 3 of binary string.	7 Marks	L3	CO1	PO3
		(OR)				
2.	a)	Prove that a language L is accepted by some ε–NFA if and only if L is accepted by some DFA.	8 Marks	L4	CO2	PO3
	b)	Define ε-closure(q) with an example.	6 Marks	L3	CO1	PO2

UNIT-II

3.	a)	The set L= $\{a^n b^n \mid n \geq 1\}$ is not a regular. Justify.	7 Marks	L4	CO2	PO2
	b)	List and explain the applications of regular expressions.	7 Marks	L2	CO3	PO1
		(OR)				
4.	a)	Minimize the following automata.	8 Marks	L4	CO2	PO2



	b)	Write regular expressions for the following: i) Binary numbers that are multiple of 2 ii) Strings of a's and b's with no consecutive a's iii) Strings of a's and b's containing consecutive a's	6 Marks	L3	CO2	PO3

UNIT-III

5.	a)	Construct a grammar in GNF which is equivalent to the following grammar. S→ AA | a A→ SS | b	7 Marks	L4	CO4	PO5
	b)	Differentiate regular expression and regular language.	7 Marks	L4	CO3	PO2

(OR)

6.	a)	Let G be the grammar S->aB|Ba A->a|aS|bAA B->b|bS|aBB Construct the parse tree and left most and right most derivations for the string aaabbabbba.	7 Marks	L4	CO3	PO3
	b)	Convert the following grammar to Greibach normal form S→ABA→BS|b B→SB|a	7 Marks	L4	CO3	PO3

UNIT-IV

7.	a)	What are the different types of language accepted by a PDA and define them?	7 Marks	L2	CO3	PO2
	b)	Analyze the following PDA acceptance methods: i) From empty Stack to final state. ii) From Final state to Empty Stack.	7 Marks	L4	CO4	PO2
		(OR)				
8.	a)	Construct the grammar for the following PDA: M=({q0, q1},{0,1},{X,z0},δ,q0,Z0,Φ) where δ is given by δ(q0,0,z0)={(q0,XZ0)}, δ(q0,0,X)={(q0,XX)}, δ(q0,1,X)={(q1, ε)}, δ(q1,1,X)={(q1, ε)}, δ(q1, ε, X)={(q1, ε)}, δ(q1, ε, Z0)={(q1, ε)}	7 Marks	L4	CO4	PO2
	b)	Define Turing machine and explain its model.	7 Marks	L2	CO5	PO1

UNIT-V

9.	a)	Design a TM to accept the language L={$a^n b^n c^n$ | n > 1 }.	7 Marks	L3	CO5	PO3
	b)	Briefly explain variants of Turing machine.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Design a Turing Machine M to implement the function 'multiplication' using the subroutine 'copy'.	10 Marks	L4	CO5	PO3
	b)	List the primary objectives of Turing Machine.	4 Marks	L2	CO5	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

COMPUTER NETWORKS

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

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	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



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

DESIGN AND ANALYSIS OF ALGORITHMS

[Information Technology, Computer Science and Systems Engineering, Computer Science and Engineering (IoT), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

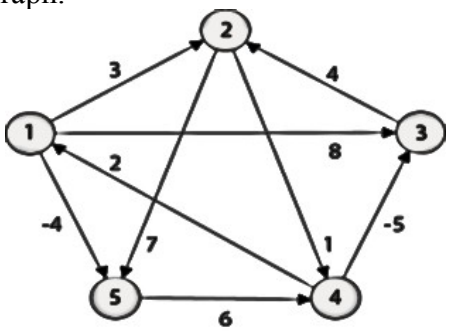
1.	a)	Define Algorithm and Pseudo code. Compare and contrast their properties and characteristics.	7 Marks	L2	CO1	PO1
	b)	Solve the recurrence relation by Substitution Method. $T(n)= T(n/2)+n$ Show that it is asymptotically bounded by O(log n).	7 Marks	L3	CO1	PO1
		(OR)				
2.	a)	Arrange the following functions in increasing order of complexity. Justify your answer. n, log n, n^2 ,n^3 , n log n, 2^n	4 Marks	L2	CO1	PO2
	b)	Apply Master's theorem to solve the following recurrence relations and find its complexity. i) $T(n) = a\ T(n/b) + f(n)$, $a = 8$, $b=2$, $f(n) = 1000\ n^2$ ii) $T(n) = 2\ T(n/2) + 10n$	10 Marks	L4	CO2	PO2

UNIT-II

3.	a)	Illustrate Simple Find() and collapsing Find() algorithms with an example.	6 Marks	L2	CO2	PO2
	b)	Outline an algorithm to detect defective chess board using trionimos.	8 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Demonstrate iterative version of MaxMin algorithm with suitable example.	7 Marks	L1	CO2	PO1
	b)	Place the following elements in a[1:14] and simulate the steps of Binary Search for different values of x. -15,-6,0,7, 9, 23,54, 82,101,112,125,131,142,151	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	Apply Floyd-Warshall algorithm and find the shortest path for the following graph.	7 Marks	L2	CO3	PO3



	b)	Analyze various complexities of Optimal Binary Search Tree by taking suitable example.	7 Marks	L4	CO3	PO2

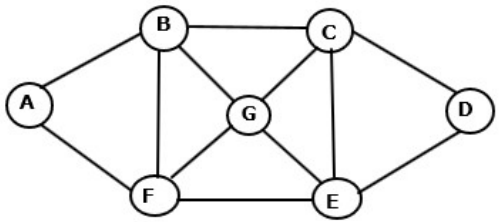
(OR)

6.	a)	Schedule two jobs on 4 machine using flow shop scheduling technique. The time required by each operation of these jobs is given by following matrix. $J = \begin{matrix} 3 & 0 \\ 0 & 3 \\ 4 & 2 \\ 5 & 2 \end{matrix}$	7 Marks	L2	CO2	PO2
	b)	Apply 0/1 knapsack method for the case in which n = 3,m= 20, (p1,p2,P3)=(25,24,15), (w1,w2,w3)= (18,15,10), find all feasible solutions and compute the maximum profit.	7 Marks	L3	CO3	PO3

UNIT-IV

7.	a)	Explain the Graph–Coloring problem and draw the state space tree for m= 3 colors and n=4 vertices graph. Discuss the time and space complexity.	7 Marks	L3	CO2	PO2
	b)	Explain knapsack problem by taking suitable knapsack instance using greedy approach.	7 Marks	L2	CO2	PO2

(OR)

8.	a)	Demonstrate 4-Queens problem by placing 4-queens in such a manner on an n x n chessboard that no queens attack each other by being in the same row, column or diagonal, by taking suitable example.	7 Marks	L2	CO2	PO2
	b)	Identify Hamiltonian cycle from the following graph. 	7 Marks	L3	CO2	PO2

UNIT-V

9.	a)	State the cook's theorem. Demonstrate the significance of this theorem?	7 Marks	L2	CO4	PO1
	b)	Show that the Hamiltonian cycle problem on directed graphs is NP-complete.	7 Marks	L2	CO4	PO2

(OR)

10.		Consider the knapsack instance n = 4, (P1,P2,P3,P4) = (10,10,12,18), (w1,w2,w3,w4) = (2, 4, 6,9), and m = 15. Trace the working of the following techniques. i) LC branch-and-bound and. ii) FIFO branch-and-bound.	14 Marks	L3	CO3	PO3

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-16) Supplementary Examinations, April - 2025

GAS TURBINES AND JET PROPULSION

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What are the advantages or an open cycle gas turbine as compared to reciprocating internal combustion engines? What are the disadvantages?	CO1	6 Marks
	b)	Discuss the following: i) Air-fuel ratios used in gas turbines and the reasons behind those chosen ratios. ii) The function of secondary air and its necessity.	CO2	8 Marks
		(OR)		
2.		Describe with neat sketches the working of a simple constant pressure open cycle gas turbine and enumerate the various uses of gas turbine.	CO1	14 Marks

UNIT-II

3.	a)	In what way the analysis of fans differs from that of blowers and compressors?	CO2	6 Marks
	b)	Describe the working of a Root's blower by the help of a neat sketch and pressure volume diagram.	CO2	8 Marks
		(OR)		
4.		Explain the working of Centrifugal compressor with the aid velocity diagrams	CO1, CO2	14 Marks

UNIT-III

5.	a)	List the main requirements of a gas turbine combustion chamber.	CO2	7 Marks
	b)	Sketch a tubular or can type combustion chamber and explain its construction.	CO2	7 Marks
		(OR)		
6.		Discuss in brief the main performance and operating characteristics of a gas turbine combustion system. Illustrate your answer by suitable performance curves.	CO2	14 Marks

UNIT-IV

7.	a)	Classify the air-breathing engines and list the main components of each engine. Which are the suitable fuels for each one of them?	CO5	6 Marks
	b)	Define ram efficiency and derive an expression for the same.	CO4	8 Marks
		(OR)		
8.	a)	What are the advantages and disadvantages of pulse jet engine?	CO2	7 Marks

	b)	Explain the working of Ram jet and discuss the advantages and disadvantages.	CO4	7 Marks

UNIT-V

9.	a)	How rockets can be classified? What is the stage of development of each type?	CO2	7 Marks
	b)	Draw a schematic diagram of a solid propellant rocket and explain its working.	CO2	7 Marks

(OR)

10.	a)	What are the desirable requirements of a liquid propellant for rockets?	CO1	7 Marks
	b)	What are the advantages and disadvantages of rocket engines?	CO1	7 Marks

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	"Demand for diamonds is exceptional and violates the law of demand," discuss.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Inspect and suggest a suitable demand forecasting technique for a new and highly technical product being launched by a company.	14 Marks	L4	CO1	PO2
	UNIT-II				
3.	Describe the isoquants and isocosts.	14 Marks	L2	CO2	PO2
	(OR)				
4.	Summarize the following: i) opportunity costs ii) outlay costs iii) separable costs vs joint costs	14 Marks	L2	CO2	PO2
	UNIT-III				
5.	Recall the pricing method? Discuss the different types of pricing methods.	14 Marks	L2	CO2	PO2
	(OR)				
6.	What is monopoly? Describe the Price and output under monopoly.	14 Marks	L2	CO3	PO10
	UNIT-IV				
7.	From the following transactions pass the necessary journal entries in the books of Meghana. 2021 Jan.1 Meghana commenced a business with Rs.5, 00, 000. Jan. 6 Goods sold to Varma for cash Rs. 98,500/-. Jan. 17 Bought goods by Suresh Rs. 85,700/-. Jan. 21 Commission received from Ramu Rs. 2,700/-. Jan. 31 Salaries paid through cheque Rs. 21, 800.	14 Marks	L4	CO4	PO11
	(OR)				
8.	Demonstrate the trial balance with neat proforma.	14 Marks	L3	CO4	PO2

UNIT-V

9. From the following Trail Balance of Shukla prepare trading and profit and loss a/c for the year ending 31st March, 2021 and The balance sheet on the date. — 14 Marks L4 CO5 PO11

Particulars	Debit(Rs)	Credit(Rs)
Buildings	10,000	
Capital a/c		50,000
Purchases & Sales	10,000	30,000
Stock on 1-04-2020	5,000	
Debtors & Creditors	10,000	5,000
Drawings	4,000	
Sales returns & purchase Returns	2,000	500
Freight	2,500	
Office Salaries	8,000	
Wages	1,500	
Postage and Telegrams	1,000	
Machinery	15,000	
bills Receivable, Bills Payable	7,000	1,000
Advertisement	2,000	
Cash in hand	3,500	
Loose Tools	5,000	
Total	**86,500**	**86,500**

Adjustments:

i) Closing Stock was valued at Rs 5,000/-
ii) Depreciation Buildings by 10% and Loose Tools are revalued at Rs 3,500/-
iii) Interest on Capital at 10% and on Drawings at 5%

(OR)

10. The trial balance of a firm on 31.12.2019 is as follows. Prepare final accounts of this firm. — 14 Marks L4 CO5 PO11

Particulars	Debit (Rs)	Credit (Rs)
Capital		1,00,000
Plant and Machinery	1,60,000	
Sales		3,04,000
Returns	2,000	1,500
Opening Stock	700	
Bank charges	150	
Sundry Debtors	80,000	
Sundry Creditors		41,600
Furniture	60,000	
Wages	20,000	
Salaries	13,600	
Carriage inwards	1,500	
Carriage outwards	2,400	
bad debts provision		1,050
rent, rates, taxes	20,000	
Advertisements	4,000	
cash in hand	1,800	
cash at bank	12,000	
Purchases	70,000	

Adjustments:

i) Closing stock Rs.20,000/-
ii) Depreciate plant 6% p.a
iii) Interest on capital to be allowed @ 5% p.a.

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

PRINCIPLES OF BUSINESS ECONOMICS AND ACCOUNTANCY

[Computer Science and Engineering, Information Technology, Computer Science and Systems Engineering, Computer Science and Business Systems, Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Data Science), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Computer Science and Engineering (IoT)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

	UNIT-I				
1.	"Demand for diamonds is exceptional and violates the law of demand," discuss.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Inspect and suggest a suitable demand forecasting technique for a new and highly technical product being launched by a company.	14 Marks	L4	CO1	PO2
	UNIT-II				
3.	Describe the isoquants and isocosts.	14 Marks	L2	CO2	PO2
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4.	Summarize the following: i) opportunity costs ii) outlay costs iii) separable costs vs joint costs	14 Marks	L2	CO2	PO2
	UNIT-III				
5.	Recall the pricing method? Discuss the different types of pricing methods.	14 Marks	L2	CO2	PO2
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6.	What is monopoly? Describe the Price and output under monopoly.	14 Marks	L2	CO3	PO10
	UNIT-IV				
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Particulars	Debit(Rs)	Credit(Rs)
Buildings	10,000	
Capital a/c		50,000
Purchases & Sales	10,000	30,000
Stock on 1-04-2020	5,000	
Debtors & Creditors	10,000	5,000
Drawings	4,000	
Sales returns & purchase Returns	2,000	500
Freight	2,500	
Office Salaries	8,000	
Wages	1,500	
Postage and Telegrams	1,000	
Machinery	15,000	
bills Receivable, Bills Payable	7,000	1,000
Advertisement	2,000	
Cash in hand	3,500	
Loose Tools	5,000	
Total	**86,500**	**86,500**

Adjustments:

i) Closing Stock was valued at Rs 5,000/-
ii) Depreciation Buildings by 10% and Loose Tools are revalued at Rs 3,500/-
iii) Interest on Capital at 10% and on Drawings at 5%

(OR)

10. The trial balance of a firm on 31.12.2019 is as follows. Prepare final accounts of this firm. — 14 Marks L4 CO5 PO11

Particulars	Debit (Rs)	Credit (Rs)
Capital		1,00,000
Plant and Machinery	1,60,000	
Sales		3,04,000
Returns	2,000	1,500
Opening Stock	700	
Bank charges	150	
Sundry Debtors	80,000	
Sundry Creditors		41,600
Furniture	60,000	
Wages	20,000	
Salaries	13,600	
Carriage inwards	1,500	
Carriage outwards	2,400	
bad debts provision		1,050
rent, rates, taxes	20,000	
Advertisements	4,000	
cash in hand	1,800	
cash at bank	12,000	
Purchases	70,000	

Adjustments:

i) Closing stock Rs.20,000/-
ii) Depreciate plant 6% p.a
iii) Interest on capital to be allowed @ 5% p.a.

CODE No.: 20BT50441 SVEC-20

Roll No. | | | | | | | | | | |

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

PRINCIPLES OF COMMUNICATIONS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Derive the relations between power and current equations of AM.	6 Marks	L3	CO2	PO1 PO2
	b)	Draw the block diagram of filter method for suppressing unwanted sideband. What are the frequency requirements of the filter?	6 Marks	L2	CO1	PO1 PO2
		(OR)				
2.		Differentiate the techniques of AM, DSB-SC and SSB-SC with the power on carrier power utilization and also draw the spectrum of each technique.	14 Marks	L2	CO2	PO1 PO2
		UNIT-II				
3.	a)	Use appropriate method for generation of FM signal.	7 Marks	L3	CO5	PO1
	b)	Give the types of FM demodulators and explain the operation of each with circuits.	7 Marks	L2	CO3	PO1
		(OR)				
4.	a)	Derive an equation for wide band FM and Narrow band FM and draw their spectrum.	10 Marks	L3	CO1	PO1 PO2
	b)	Give the advantages of FM over AM.	4 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Justify how PWM signals are generated from PAM.	7 Marks	L4	CO2	PO1
	b)	Explain Asynchronous multiplexing and its advantages.	7 Marks	L1	CO1	PO1
		(OR)				
6.		Design and Explain the circuits for transmission of PAM signals and also methods for its demodulation.	14 Marks	L1	CO5	PO1
		UNIT-IV				
7.	a)	What do you mean by coherent and non-coherent detection? Discuss them with suitable examples.	14 Marks	L1	CO3	PO1
		(OR)				
8.		Differentiate different digital modulation techniques ASK, FSK, PSK, QPSK and DPSK.	14 Marks	L2	CO2	PO1 PO2
		UNIT-V				
9.	a)	The generator polynomial of (15,11) hamming code is defined by g(x)=1+x+x4. Develop the encoder and syndrome calculator for this code.	7 Marks	L3	CO4	PO1
	b)	The generator matrix for a (6,3) block code is given below. Find all the code vectors of this code. G = [100, 011, 010, 101, 001, 110].	7 Marks	L3	CO4	PO1
		(OR)				
10.	a)	State and explain Huffman theorem with a suitable example.	7 Marks	L3	CO4	PO1
	b)	Derive an expression for entropy function and also the relationship between marginal, joint and conditional entropies.	7 Marks	L3	CO2	PO1 PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

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)	With a neat diagram explain Internet architecture.	7 Marks	L2	CO1	PO1
	b)	Compare 4-Layer TCP/IP Model and 7-Layer OSI Model.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Summarize the features of wired transmission media.	7 Marks	L2	CO1	PO2
	b)	Assess the impact of wireless transmission media in the context of network applications.	7 Marks	L4	CO4	PO6
		UNIT-II				
3.	a)	What is the remainder obtained by dividing x^7+x^5+1 by the generator Polynomial X^3+1?	7 Marks	L3	CO3	PO3
	b)	Write short notes on Utopian simplex Protocol in data link layer.	7 Marks	L2	CO1	PO1
		(OR)				
4.	a)	Describe one-bit sliding window protocol with an example.	7 Marks	L2	CO3	PO4
	b)	Briefly describe the differences between store-and-forward and cut-through switches.	7 Marks	L3	CO1	PO2
		UNIT-III				
5.	a)	Suppose all of the interfaces in each of three subnets are required to have the prefix 223.1.17/24. Also suppose that Subnet 1 is required to support at least 60 interfaces, Subnet 2 is to support at least 90 interfaces, and Subnet 3 is to support at least 12 interfaces. Provide three network addresses that satisfy these constraints.	7 Marks	L3	CO2	PO2
	b)	Compare IPV4 and IPV6 protocols.	7 Marks	L3	CO5	PO8
		(OR)				
6.	a)	Apply distance vector routing algorithm to compute shortest path routing.	7 Marks	L3	CO2	PO2
	b)	Write short notes on OSPF and BGP protocols.	7 Marks	L1	CO1	PO1
		UNIT-IV				
7.	a)	Explain why the client issues an active open for the control connection and a passive open for the data connection.	7 Marks	L2	CO3	PO2
	b)	Elaborate TCP Congestion Control mechanisms. Differentiate these mechanisms.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Sketch the state transition diagram of TCP connection establishment, data transfer and termination and explain it.	7 Marks	L2	CO3	PO2
	b)	Summarize the functions of Real-time Transport control protocol.	7 Marks	L1	CO1	PO1
		UNIT-V				
9.	a)	Tabulate the various HTTP request operations.	7 Marks	L2	CO4	PO6
	b)	Discuss the working of email in detail with an example.	7 Marks	L1	CO4	PO6
		(OR)				
10.	a)	Briefly explain the Domain Name Service protocol with an example.	7 Marks	L4	CO4	PO6

b) When user clicks a hyperlink, what are the steps that occur between the user's click and the page being displayed? 7 Marks L1 CO1 PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

WEB TECHNOLOGIES

[Computer Science and Engineering,
Computer Science and Engineering (Artificial Intelligence),
Computer Science and Engineering (Data Science),
Computer Science and Systems Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the creation of "Mouseovers" in JavaScript. Give examples to change the Size and Color of the Text in a Web Page.	7 Marks	L2	CO1	PO2
	b)	Explain the following suitable example. i) Spell-check ii) Content Editable iii) Custom data attributes iv) Offline web applications	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain the frames and table tags of HTML with suitable example.	7 Marks	L2	CO1	PO2
	b)	Design a web page to drag and drop an object on a web browser using a mouse.	7 Marks	L3	CO1	PO3
		UNIT-II				
3.	a)	Design a web page to enroll student details including Name, Id, Address, Mobile No. and e-Mail id.	7 Marks	L3	CO2	PO3
	b)	Compare and contrast JavaScript and JQuery features.	7 Marks	L1	CO2	PO2
		(OR)				
4.	a)	Design a web page that display credit card type and then validate the entered card number according to the card type.	7 Marks	L3	CO2	PO3
	b)	Summarize the properties and methods of JavaScript String object.	7 Marks	L1	CO2	PO1
		UNIT-III				
5.		Create a grid system for mobile, tablet and desktop with bootstrap.	14 Marks	L3	CO3	PO5
		(OR)				
6.	a)	Develop a mobile optimized webpage using the following : i) Alerts ii) Tool bars and button group	7 Marks	L3	CO3	PO5
	b)	Develop a web page using nested grid column layout.	7 Marks	L3	CO3	PO5
		UNIT-IV				
7.	a)	Build a PHP code to retrieve variables passed using GET and POST super global variables.	7 Marks	L4	CO4	PO4
	b)	Explain the PHP code embedding procedure into web pages.	7 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Build a PHP Page to read User Name and Favorite Programming language from the html form.	7 Marks	L3	CO4	PO4
	b)	Explain the various methods offered by PHP to output data into browser. Write a PHP code to demonstrate each method	7 Marks	L2	CO5	PO2

UNIT-V

9.	a)	Develop a PHP code to perform the following: i) To fetch employee records from MySQL database. ii) To update employee salary by 10% whose experience greater than 15 years.	7 Marks	L3	CO5	PO6
	b)	List and explain transaction methods of MySQL.	7 Marks	L1	CO5	PO1
		(OR)				
10.	a)	Explain the following using PHP and MySQL. i) Database Creation ii) Table Creation iii) Query Execution	7 Marks	L2	CO6	PO2
	b)	Develop a PHP code for transaction support in MySQL.	7 Marks	L3	CO6	PO3



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

IRRIGATION ENGINEERING AND HYDRAULIC STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

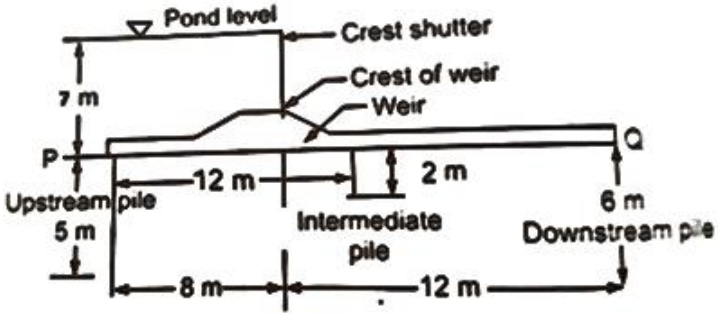
Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Classify crops and state different soil moisture constants.	7 Marks	L4	CO1	PO1
	b)	Determine the field capacity of soil for the following data. Depth of root zone = 1.80 m Existing moisture = 8% Dry density of soil = 1450 kg/m^3 Quantity of water applied to soil = 650 m^3 Water lost due to deep percolation and Evaporation=10% Plot area =1000 m^2	7 Marks	L4	CO1	PO1
		(OR)				
2.	a)	What is the classification of irrigation water having the following characteristics: Concentration of Na, Ca & Mg are 24, 3.1& 1.4 milli-equvalent per litter respectively and the electrical conductivity is 180 micro mhos per cm at 25^0 C.	7 Marks	L4	CO1	PO1
	b)	Sketch and explain the relationship between soil, water and plant	7 Marks	L4	CO1	PO1

UNIT-II

3.	a)	Explain Khosla's theory of flow net.	7 Marks	L4	CO2	PO1
	b)	For the sketch shown below calculate: i) Hydraulic gradient and ii) Uplift at a distance of 10 m from the u/s of weir.	7 Marks	L4	CO2	PO1



(OR)

4.	a)	Explain the functions of silt excluder with a neat sketch.	7 Marks	L2	CO2	PO1
	b)	State and discuss the constraints of Bligh's theory.	7 Marks	L4	CO2	PO1

UNIT-III

5.	a)	Classify spillways with neat sketches.	6 Marks	L4	CO3	PO1
	b)	Design the practice profile of a gravity dam of stone masonry given the following data: RL of base of dam = 1400 m RL of FRL = 1450.5 m Specific gravity of the masonry = 2.3 Safe compressive stress for masonry = 1210 kN/m^2 Height of waves = 1.1 m.	8 Marks	L6	CO3	PO1

(OR)

6.	a)	List out and brief various measures of seepage control through earth dam.	6 Marks	L4	CO3	PO1
	b)	Design a suitable section for the overflow portion of a concrete gravity dam having the downstream face sloping 0.8H:1V. the design discharge for the spillway is 7000 cumecs. The height of the spillway crest is kept at RL 203.0 m. the spillway length consists of 6 spans having clear width of 9 m each. Thickness of each pier may be taken as 2.4 m.	8 Marks	L6	CO3	PO1

UNIT-IV

7.	a)	Describe the procedure to determine the dimensions of a canal using Lacey's theory.	6 Marks	L2	CO4	PO1
	b)	Design a 1.6 m Sarda type fall for a canal having a discharge of 12 cumecs with following data: Bed level upstream = 102.5 m Side slope of channel = 1:1 Bed level downstream = 100.5 m Full supply level = 104.8 Bed level with u/s and d/s soil = 1.0 m Assume Bligh's Coefficient = 5.8	8 Marks	L6	CO4	PO1

(OR)

8.	a)	Explain the steps involved in design of Sarda type fall?	6 Marks	L2	CO4	PO1
	b)	Using Kennedy's theory, design an irrigation canal for a discharge of 6 cumecs, assume N= 0.0235, m= 1.2 and B/D = 3.20. Also find the bed slope of the channel.	8 Marks	L6	CO4	PO1

UNIT-V

9.	a)	Differentiate between Syphon aqueduct and super passage	6 Marks	L4	CO5	PO1
	b)	Design a drainage waterway, canal waterway and bed levels at any two sections for a cross drainage work with given the following data: Full supply discharge = 30 cumecs Full supply level = R.L. 214.5 m Canal bed level = R.L. 212.0 m Canal bed width = 20 Trapezoidal canal section with $1\frac{1}{2}$H:1V slopes. Canal water depth = 1.4 m High flood discharge = 280 cumecs High flood level = 210.0 m High flood depth = 2.5 m General ground level = 211.5 m.	8 Marks	L6	CO5	PO1

(OR)

10.		What are cross drainage works? Explain the necessity of such work in a canal project.	14 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

STEEL STRUCTURES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Design a bracket connection to transfer an end reaction of 225 kN as shown in Fig.1. The end-reaction from the girder acts at an eccentricity of 300 mm from the face of the column flange. Design bolted joint connecting the tee-flange with the column flange. Steel is of grade E250 and bolts of grade 4.6.	14 Marks	L6	CO1	PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO10

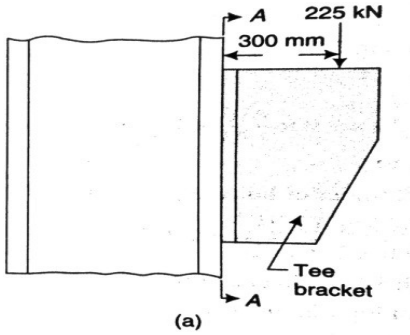


Fig.1

(OR)

2.	Determine the design strength of the welded joints, if two plates of 16 mm and 14 mm thickness are to be joined in the workshop by i) a single V-groove weld ii) a double V-groove weld The effective length of the weld is 175 mm.	14 Marks	L4	CO1	PO1 PO2 PO5 PO6 PO8

UNIT-II

3.	Design a simply supported beam of span 4m to carry a factored udl of 30 kN/m.	14 Marks	L6	CO2	PO1 PO2

(OR)

4.	A beam is simply supported over a span of 6m. It supports one iron beam at mid span exerting 90 kN. Design the beam with ISWB section with flange plates. Assume the beam is not supported laterally.	14 Marks	L6	CO2	PO1 PO10

UNIT-III

5.	A diagonal member of a roof truss carries a maximum pull of 300 kN. Design the section and its connection with a 16 mm thick gusset plate. The length of the connection is limited to 340 mm. Design the lug angles also if required. The steel of grade E 250 and bolts of grade 4.6 are to be used.	14 Marks	L6	CO3	PO1 PO2 PO3 PO4 PO5

(OR)

6.	Calculate the design compressive load for a stanchion 350 @ 710.2 N/m, 3.5 m high. The column is restrained in direction and position at both the ends. It is to be used as an uncased column in a single-storey building. Use steel of grade E 250.	14 Marks	L4	CO3	PO1 PO2 PO6 PO8

UNIT-IV

7.		Design a laced column 8 m long with two channels placed toe-to-toe to carry factored axial load of 1300 kN. The column may be assumed to have restrained in position but not in direction at both ends. Assume steel of grade E 250 and bolts of grade 4.6.	14 Marks	L6	CO4	PO1 PO2 PO8 PO10
		(OR)				
8.		A column ISHB 350 @ 661.2 N/m carries an axial compressive factored load of 1700 kN. Design a suitable gusset base. The base rests on M20 grade concrete pedestal.	14 Marks	L6	CO4	PO6 PO8 PO10

UNIT-V

9.		Determine the basic wind pressure to be considered for a shed in the outskirts of Bangalore. Given Structure : General purpose with probable life of 50 years Terrain category: 1, Building class B. Eye board height : 11 m, Topography : Plain area	14 Marks	L4	CO5	PO1 PO2 PO4 PO6 PO8 PO10
		(OR)				
10.	a)	Why it is necessary to design truss member for both compression and tension forces?	4 Marks	L2	CO5	PO1
	b)	A tie member in a roof truss is connected to the principal rafter at an angle of 90^0. Design the members and the connections for the following data. Use grade Yst=240 tubes	10 Marks	L6	CO5	PO1 PO2 PO3 PO4 PO6 PO8 PO10

S.No.	Member	Length	Force
1	Principal rafter panel	2.8 m	100 kN
2	Tie member	2.2 m	45 kN



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

GROUND IMPROVEMENT TECHNIQUES

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain in detail the role of ground improvement in foundation engineering.	7 Marks	L2	CO1	PO1
	b)	Explain the suitability of ground improvement techniques for different types of soils.	7 Marks	L2	CO1	PO1
		(OR)				
2.		Explain mechanical and hydraulic methods of ground improvement. Discuss the effect of each method on environment.	14 Marks	L2	CO1	PO1 PO5 PO7
		UNIT-II				
3.		Drainage or dewatering is the popular technique for consolidating saturated cohesive soils in–situ. Comment on the statement and discuss the difficulties in designing a drainage system. Show how a well–point system works with the help of a sketch.	14 Marks	L4	CO2	PO1 PO2 PO4
		(OR)				
4.	a)	State the working principle of vacuum well point system? Explain with neat sketch the process of dewatering carried out in-situ by vacuum well point system.	7 Marks	L2	CO2	PO1 PO5 PO10
	b)	Describe the electro kinetic dewatering system for ground improvement.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Describe the blasting technique of densifying the soil with consequential problems	6 Marks	L2	CO3	PO1
	b)	It is proposed to construct large oil tanks for storage of oil at Vizag port in the water area by filling with soft reclaimed soil. From the SPT data available at the reclaimed soil site, it is noticed that the top 12 m soil is soft clay (SPT 'N'= 2 to 4) and below this upto a depth of 20 m there is a (SPT 'N'= 22 to 28). For the above soil conditions, suggest whether soil improvement is required or not. If required what extent the soil is required to improve? Explain any one of the suitable ground improvement techniques with neat sketches. The required safe bearing capacity is 175 kPa.	8 Marks	L4	CO3	PO1 PO2 PO4 PO5 PO6 PO7 PO8 PO10
		(OR)				
6.	a)	Explain the method of construction of stone columns and state its advantages over lime column.	7 Marks	L4	CO3	PO1
	b)	Are sand drains, sand wicks and geo–drains used under similar soil conditions for ground improvement? Compare their relative merits and demerits. Which do you prefer?	7 Marks	L4	CO3	PO1

UNIT-IV

7.	a)	How effective is lime stabilization in stabilizing the clay soils? Discuss the chemical reactions that take place in lime treated soils. Is this method environmental friendly? Comment.	7 Marks	L4	CO4	PO1 PO2
	b)	Review the applicability of grouting equipment and machinery.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Discuss the importance of grout monitoring and the methods of grout control.	7 Marks	L2	CO4	PO1 PO5
	b)	Explain in brief about shotcreting and guniting technology.	7 Marks	L2	CO4	PO1

UNIT-V

9.	a)	What are the materials used for soil nailing? List the latest developments in earth reinforcement techniques	6 Marks	L2	CO5	PO1 PO5
	b)	A retaining wall with geotextile reinforcement is 6 m high. The following data is given as; Backfill: γ_1 =18 kN/m^3, ϕ_1' =32º; Reinforcement: Ultimate tensile strength of geotextile is 60 kN/m. For the design of the wall, determine vertical spacing, number of layers, total length and lap length of the geotextiles. Use FS (Breaking) = FS (Pullout) = 1.5.	8 Marks	L6	CO6	PO1 PO2 PO3 PO4 PO5 PO6
		(OR)				
10		An 8 m high wall is to be built using sand fill and polymer-grid reinforcement. The sand has φ'= 30^0, γ = 18 kN/m^3 and is to be used for the wall and the backfill. A surcharge loading of 15 kPa is to be allowed for, and the maximum safe bearing pressure for the foundation soil is 300 kPa. Two grids of different design strength are available: grid A at 20 kN/m and grid B at 40 kN/m (both have a bond coefficient fb of 0.9). The fill will be compacted in layers 250 mm thick. Find the vertical spacing of reinforcement and perform stability checks. Draw the final diagram.	14 Marks	L6	CO6	PO1 PO2 PO3 PO4 PO5 PO6

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III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

SOLID AND HAZARDOUS WASTE MANAGEMENT

[Civil Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Classify solid waste based on its composition and characteristics.	7 Marks	L4	CO1	PO1
	b)	Analyze the significance of public participation in solid waste management	7 Marks	L4	CO1	PO1
		(OR)				
2.	a)	Explain the goals and objectives of solid waste management.	7 Marks	L2	CO1	PO1
	b)	Explain about the methods of sampling and characterization of solid waste.	7 Marks	L2	CO1	PO1 PO6
		UNIT-II				
3.	a)	Describe the methods of on-site segregation and storage of municipal solid waste for aesthetical handling and protection of public health.	7 Marks	L2	CO2	PO1
	b)	Discuss various types of materials of dustbins and community containers used in solid waste management in India.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Discuss the selection criteria used in selection of different containers in residential and commercial buildings.	7 Marks	L2	CO2	PO1
	b)	List out the factors influencing equipment selection for on-site processing of solid waste.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	Distinguish between hauled container system and stationary container system with a schematic diagram.	7 Marks	L4	CO3	PO1
	b)	Explain different types of transfer stations.	7 Marks	L2	CO3	PO1
		(OR)				
6.		Analyze various types of vehicles used for transportation of solid waste. Give their advantages and disadvantages.	14 Marks	L4	CO3	PO1
		UNIT-IV				
7.	a)	Write short note on vermi-composting.	7 Marks	L2	CO4	PO1
	b)	What are the various waste processing systems? Give their suitability for processing of different types of waste components.	7 Marks	L4	CO4	PO1
		(OR)				
8.	a)	Assume you were engineer responsible for disposal of municipal solid waste of 50 tons per day. Discuss in brief the design considerations for constructing a sanitary landfill considering environmental safety and sustainability.	7 Marks	L6	CO5	PO1 PO2 PO3 PO4
	b)	Describe suitable techniques for separation of paper, glass, metals and inert materials.	7 Marks	L2	CO4	PO1 PO6

UNIT-V

9.	a)	Discuss methods adopted for Bio-medical waste treatment and give which act should be followed for a safe disposal of Bio-medical waste.	7 Marks	L4	CO5	PO1 PO2
	b)	Describe the difference between Incineration and pyrolysis processes.	7 Marks	L4	CO5	PO1
		(OR)				
10.	a)	Discuss about the critical points on disposal of hazardous waste.	7 Marks	L4	CO5	PO1
	b)	Explain waste minimization techniques and resource recovery of municipal and hazardous solid waste.	7 Marks	L4	CO5	PO1



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III B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

POWER ELECTRONICS

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Explain the basic theory of operation of SCR and sketch its static V-I characteristics. Also define the terms latching current and holding current.	7 Marks	L2	CO1	PO1
	b)	Discuss various turn-on methods of SCR.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	List the differences between SCR and GTO. Also sketch and explain the switching characteristics of GTO.	7 Marks	L2	CO1	PO1
	b)	Explain how dv/dt and di/dt protection is provided in a SCR?	7 Marks	L2	CO1	PO7

UNIT-II

3.		Analyze the performance of three-phase semi-converter with RL-load for delay angles, α=30° and 120° and elucidate the gating sequence and relevant waveforms and compare.	14 Marks	L4	CO3	PO2
		(OR)				
4.	a)	Analyze the operation of single phase fully controlled bridge rectifier with RL load and freewheeling diode for a firing angle delay of 100^{O}.	7 Marks	L4	CO3	PO2
	b)	A single phase fully controlled rectifier is supplied at 220V, 50Hz. Determine the average load voltage for purely resistive load when firing angle α= 45°.	7 Marks	L3	CO3	PO2

UNIT-III

5.	a)	With a neat circuit diagram, waveforms and expressions, explain the operation of load commutated chopper.	7 Marks	L1	CO2	PO1
	b)	A DC chopper has an input voltage of 200 V and a load of 15 Ohms resistance. When the chopper is on, its voltage drop is 1.5 V and the chopping frequency is 10 KHz. If the duty cycle is 80%. Find average, RMS output voltage and chopper on time.	7 Marks	L2	CO2	PO4
		(OR)				
6.	a)	Discuss various control strategies of a DC chopper.	7 Marks	L2	CO2	PO1
	b)	A step-down chopper has input voltage of 230V and load resistance is 10 Ω. Consider the voltage drop of 2 V across when it is ON for a duty cycle of 0.4. Calculate the following parameters: i) Average and RMS output voltage ii) Chopper efficiency.	7 Marks	L3	CO2	PO4

UNIT-IV

7.	a)	Explain the operation of a single phase AC voltage controller (employing SCRs) feeding resistive load with the help of neat output wave forms for firing angle $\alpha = 45^o$.	7 Marks	L3	CO3	PO1
	b)	A single phase 230 V, 50 Hz source is connected to an anti-parallel connected thyristor circuit for controlling power flow to RL-load. When firing angle $\alpha = 90^o$, calculate the output voltage, output current and load power factor for R= 10 Ω and L=0 H.	7 Marks	L3	CO3	PO4
		(OR)				
8.		Explain the possible operating modes of a single phase mid-point type cycloconverter with RL-load to produce an output frequency as 3 and 0.33 times that of source frequency. Recommend appropriate power switch and develop the gating sequence for performing respective operating mode. Also sketch the relevant output waveforms.	14 Marks	L3	CO3	PO4
		UNIT-V				
9.	a)	What is meant by pulse width modulation? Discuss in detail about sinusoidal PWM technique with suitable waveforms and expressions.	7 Marks	L3	CO4	PO5
	b)	A single phase full bridge inverter with a resistive load of 5 Ω is supplied by a 50 V DC source. Determine the RMS output voltage at fundamental frequency, the output power and the peak reverse blocking voltage of each thyristor.	7 Marks	L3	CO4	PO2
		(OR)				
10.		With the help of neat circuit diagram and relevant waveforms, analyze 180^o mode of operation of a three phase full bridge inverter with resistive load.	14 Marks	L4	CO4	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

POWER SYSTEM OPERATION AND CONTROL

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1. a) Define the following: 7 Marks L1 CO1 PO1
   i) Connected and Maximum load, ii) Load factor,
   iii) Demand factor, iv) Diversity factor,
   v) Plant capacity factor, vi) Utilization factor.

   b) The load on a generating plant observed over a period of time is as follows: 7 Marks L3 CO1 PO5

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Load	251	198	200	226	274	282	265	258	246

Estimate the load for the month of October using the method of least squares and determine the absolute errors to quantify the forecast accuracy.

(OR)

2. a) Describe the direct method of obtaining the solution for economic dispatch with transmission losses. 7 Marks L2 CO1 PO1

   b) A constant load of 300 MW is supplied by two 200 MW generators 1 and 2, for which the respective incremental fuel costs are: 7 Marks L3 CO1 PO11

$$\frac{\partial F_1}{\partial P_1} = 0.10P_1 + 20 \qquad Rs/MWhr$$

$$\frac{\partial F_2}{\partial P_2} = 0.12P_1 + 15 \qquad Rs/MWhr$$

Determine:
   i) The most economical division of load between the generators.
   ii) The saving in Rs./ day there by obtained compared to equal load sharing between two generators.

UNIT-II

3. a) What is hydro scheduling? Describe the problem of long range hydro scheduling with necessary expressions. 7 Marks L2 CO2 PO1

   b) A hydro and thermal plant supply a connected load of 100 MW for one week. The characteristics of the units are as follows: 7 Marks L3 CO2 PO4

$Q = 110 + 5.1P_{hy}^2 \; m^3/Sec.$ and

$F(P_{th}) = 55 + 11.5 + P_{th} + 0.022P_{th}^2 \; Rs/MWh.$,

Determine the scheduling
   i) If the hydro plant energy is limited to 12000 MWh.
   ii) The volume of water drawn is limited to 3.2 X 10^8 m^3.

(OR)

4.	a)	Derive the co-ordination equations for the optimal scheduling of hydro-thermal interconnected power plants neglecting the transmission losses.	6 Marks	L3	CO2	PO2
	b)	The fuel inputs to a hydro thermal plant are given by: $F_{th} = 0.015P_{th}^2 + 16P_{th} + 50 \quad Rs/hr;$ $W_{hy} = 0.025P_{hy}^2 + 12P_{hy} + 30 \quad m^3/Sec.$ The loss coefficients of the system are given by $B_{11} = 0.005$, $B_{12} = 0$ and $B_{22} = 0.002$. The load to be met is 150 MW, determine the economic operating schedule and the corresponding cost of generation, if the transmission line losses are coordinated.	8 Marks	L3	CO2	PO4

UNIT-III

5.	a)	Describe the Lagrange relaxation technique of unit commitment solution. Write its merits & demerits.	7 Marks	L2	CO3	PO5
	b)	Enumerate the various constraints imposed for the unit commitment of thermal plants.	7 Marks	L2	CO3	PO1

(OR)

6.	a)	Explain the priority list method of solving unit commitment problem. Write its merits & demerits.	7 Marks	L2	CO3	PO5
	b)	State the unit commitment problem. With the help of block diagram, describe the dynamic programming solution applied to unit commitment problem.	7 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Derive the transfer function model for typical generator load model.	6 Marks	L2	CO4	PO2
	b)	Two synchronous generators operate in parallel and supply and supply a total load of 400MW, the capacities of machines are 200MW and 500Mw and both have generator drooping characteristics of 4% from no load to full load. Calculate the load taken by the each machine. Assuming free governor operation also find the frequency at this load.	8 Marks	L3	CO4	PO2

(OR)

8.		With neat diagram, describe the functioning of speed governing system and obtain its necessary mathematical modeling.	14 Marks	L3	CO4	PO2

UNIT-V

9.	a)	Explain the tie line bias control of two area power system.	6 Marks	L2	CO5	PO2
	b)	A single area controlled system has the following data Area capacity =3000MW Operating Load=1500MW R=3%, H=5 sec and frequency=50Hz. Compute the steady state drop in frequency in Hz for a step load changing of 25 MW.	8 Marks	L4	CO5	PO2

(OR)

10.	a)	Explain how the tie-line power deviation can be incorporated in two-area system with a block diagram.	6 Marks	L2	CO5	PO1
	b)	Two 50 Hz power stations are connected by means of an interconnected cable of negligible impedance, so that the stations work in parallel. Station A has a full load capacity of 15 MW and uniform speed regulation of 3%. Station B has a capacity of 4 MW and uniform speed regulation of 4%. The load on the bus bars of station of station B is 4 MW and of station A is 10 MW. Calculate the generated output of each station ,power transmitted by interconnected cable and operating frequency assuming free governor action and that the speed changer of generators were set to have a 50 Hz at no-load.	8 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

HIGH VOLTAGE ENGINEERING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Enumerate the different types of electric field and justify the factors that influence the field strength between the electrodes.	7 Marks	L2	CO1	PO1
	b)	What are the various reasons for over voltages and enumerate the adverse effects of over voltages in power system?	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Define the term degree of uniformity of electric fields and explain its significance in determining the nature of field.	7 Marks	L2	CO1	PO1
	b)	What is a surge absorber? Write a short note on functionality of a surge absorber.	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	State and explain Paschen's law. How do you account for the minimum voltage for breakdown under a given pd condition?	7 Marks	L2	CO1	PO1
	b)	What will the breakdown strength of air be for small gaps (1 mm) and large gaps (20 cm) under uniform field conditions and standard atmospheric conditions?	7 Marks	L3	CO1	PO2
		(OR)				
4.	a)	Justify, how the breakdown in non-uniform fields is different from the breakdown in uniform fields?	7 Marks	L2	CO1	PO1
	b)	In an experiment for determining the breakdown strength of transformer oil, the following observations are made. Determine the power law dependence between the gap spacing and the applied voltage of the oil.	7 Marks	L3	CO1	PO2

Gap Spacing(mm)	4	6	10	12
Voltage at Breakdown(kV)	90	140	210	255

UNIT-III

5.	a)	Explain the different schemes for cascade connection of transformers for producing very high AC. voltages.	7 Marks	L3	CO2	PO5
	b)	Determine the ripple voltage and regulation of a 10 stage Cockcroft-Walton type DC voltage multiplier circuit having a stage capacitance = 0.01 μF, supply voltage =100 kV at a frequency of 400 Hz and a load current = 10 mA.	7 Marks	L3	CO2	PO2
		(OR)				
6.	a)	Describe the construction, principle of operation and application of a multistage Marx's Surge Generator.	7 Marks	L2	CO2	PO1
	b)	An impulse generator has eight stages with each condenser rated for 0.12 μ F and 125 kV. The load capacitor available is 1000 pf. Find the series resistance and the damping resistance needed to produce 1.2/50 μ s impulse wave. What is the maximum output voltage of the generator, if the charging voltage is 120 kV?	7 Marks	L3	CO2	PO4

UNIT-IV

7.	a)	Compare the relative advantages and disadvantages of using a series resistance microammeter and a potential divider with an electrostatic voltmeter for measuring high DCvoltages?	7 Marks	L2	CO3	PO1
	b)	A generating voltmeter is required to measure voltage between 15 kV to 250 kV. If the indicating meter reads a minimum current of 2 μA and maximum of 35 μA, determine the capacitance of the generating voltmeter. Assume that the speed of driving synchronous motor is 1500 rpm.	7 Marks	L3	CO3	PO2
		(OR)				
8.	a)	Explain how a sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influence such voltage measurement?	7 Marks	L2	CO3	PO5
	b)	A peak reading voltmeter is required to measure voltage upto 150 kV. The peak voltmeter uses an RC circuit, a microammeter and a capacitance potential divider. The potential divider has a ratio of 1200 : 1 and the micrometer can read upto 10 μA. Determine the value of R and C if the time constant of RC circuit is 8 secs.	7 Marks	L3	CO3	PO2
		UNIT-V				
9.	a)	What is meant by non-destructive testing? Explain the construction and working of a transformer ratio arms bridge for the measurement of loss factor and capacitance.	7 Marks	L2	CO4	PO5
	b)	The capacitance and loss angle of the above specimen were measured using the same electrode set-up. The capacitance and tanδ with the specimen are 147 *p*F and 0.0012 respectively. The air capacitance of the electrode system was 35 *p*F. What is the dielectric constant and complex permittivity of bakelite?	7 Marks	L3	CO4	PO2
		(OR)				
10.		Describe the different electrical tests done on isolators and circuit breakers.	14 Marks	L2	CO4	PO5



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

SPECIAL ELECTRICAL MACHINES

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Discuss the static and dynamic characteristics of stepper motor with neat diagrams.	7 Marks	L2	CO1	PO1
	b)	With a neat diagram, explain the construction and working of permanent magnet stepper motor.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	A five-phase stepper motor has 40 rotor teeth. It drives a lead screw having a pitch of 10 threads per cm. the lead screw, in turn, produces a linear motion of a cutting tool. The input pulse is applied 10 times. Find the distance covered by cutting tool.	7 Marks	L4	CO1	PO4
	b)	With neat diagram, explain the unipolar and bifilar winding technique associate with stepper motor. Also mention its advantages and demerits.	7 Marks	L2	CO1	PO1

UNIT-II

3.	a)	With neat diagram, explain the working principle of switched reluctance motor.	7 Marks	L2	CO2	PO1
	b)	Derive the torque equation of switched reluctance motor and mention its significance.	7 Marks	L3	CO2	PO1
		(OR)				
4.	a)	With neat block diagram, explain the concepts of sensorless control technique of switched reluctance motor and also plot the characteristics between flux linkage and current.	7 Marks	L2	CO2	PO5
	b)	Draw a suitable zone for stator and rotor pole arcs and design a suitable pole arc and rotor tooth arc for a five-phase SRM with ten stator poles and twelve rotor tooth. Draw the inductance and rotor angle profile.	7 Marks	L4	CO2	PO3

UNIT-III

5.	a)	With neat diagram and necessary equation, derive the torque equation and obtain its optimum torque angle for synchronous reluctance motor.	7 Marks	L2	CO3	PO1
	b)	With neat diagram, explain the construction and working of synchronous reluctance motor.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Draw the speed-torque characteristics of synchronous reluctance motor and also indicate the applications related to industrial needs.	7 Marks	L2	CO3	PO6
	b)	A 3-phase, 4 pole, 50 Hz, 400 V, star connected synchronous reluctance motor has direct axis and quadrature axis synchronous reactance's of 8 Ohm and 2 Ohm respectively. For a load torque of 80 nm, find load angle, line current and power factor. Neglect armature resistance and mechanical losses.	7 Marks	L3	CO3	PO2

UNIT-IV

7.	a)	Derive the voltage equation of PMBLDC motor. Also analyze it under starting, no load and on load condition.	7 Marks	L2	CO4	PO1
	b)	With neat diagram, explain the types of configurations associated with PMSM.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	With neat diagram and necessary equations, explain the magnetic circuits of PM motors and derive the EMF equation for sine wave motor with practical windings.	7 Marks	L2	CO4	PO5
	b)	A BLDC motor has no load speed of 6000 RPM when connected to 120 V DC source. Armature resistance is 2.5 Ohm. Find the speed when it is supplied with 60 V and developing a torque of 0.5 Nm. Neglect constant losses. The no load current is 1 A.	7 Marks	L3	CO4	PO4

UNIT-V

9.	a)	Develop an equivalent circuit for linear induction motor. Also draw its performance characteristics.	7 Marks	L2	CO5	PO1
	b)	With necessary equation, derive the force equation of LIM.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	With neat diagram, explain the construction of LSM with electromagnetic and super conducting excitation systems.	7 Marks	L2	CO5	PO1
	b)	The thrust developed by a three phase linear induction motor is 100 kW when running at 200 kmph. The supply frequency is 50 Hz and the pole pitch is 0.5 m. find the power developed and copper loss in the secondary.	7 Marks	L3	CO5	PO4



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

SMART GRID TECHNOLOGY

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.		Discuss the roles and responsibilities of Operations and market domains in conceptual model of smart grid.	14 Marks	L4	CO1	PO1
		(OR)				
2.		Discuss the roles and responsibilities of Transmission and Distribution domains in conceptual model of smart grid.	14 Marks	L4	CO1	PO1
		UNIT-II				
3.	a)	What is AMI? "AMI will improve the key features of Indian Grid systems". Justify the statement.	7 Marks	L2	CO2	PO1
	b)	With neat block diagram, List out the various electrical parameters that can be obtained from Smart metering devices.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	What is PMU? Why PMU are installed in transmission line? Explain in detail.	7 Marks	L2	CO2	PO5
	b)	What is multi agent technique? State the attributes of common multi agent systems.	7 Marks	L2	CO2	PO5
		UNIT-III				
5.		List the Demand Response Issues in smart grid. Discuss the Demand Response issues with its technology tree.	14 Marks	L3	CO3	PO1
		(OR)				
6.	a)	Explain the concept of Plug in Hybrid Electric vehicles.	7 Marks	L2	CO3	PO1
	b)	Describe the need of storage technology with a sample topology.	7 Marks	L2	CO3	PO5
		UNIT-IV				
7.	a)	With neat block diagram, Explain in detail about the LAN communication used in the distribution system.	7 Marks	L2	CO4	PO1
	b)	What is the significance of communication system used in the distribution feeder? Discuss with neat block diagram any one type of communication system used in the feeder.	7 Marks	L2	CO4	PO1
		(OR)				
8.		Compare the following communication technologies used in smart grid: i) LAN with NAN ii) LAN with WAN.	14 Marks	L3	CO4	PO5
		UNIT-V				
9.	a)	Describe the Smart Grid Cyber Security with neat block diagram.	7 Marks	L3	CO5	PO1
	b)	Explain the Cyber Security State of the Art facilities for destruction feeder.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	What is Cyber risk? Explain the Cyber Security Risks that are generated in smart grid.	7 Marks	L3	CO5	PO1
	b)	List cyber security concerns associated with Advanced Metering Infrastructure. Mention how to mitigate the risks.	7 Marks	L2	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations April – 2025

HEAT TRANSFER

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Obtain an general heat conduction equation in cylindrical coordinates.	14 Marks	L2	CO1	PO1 PO2
		(OR)				
2.		A hot cylinder ingot of 50mm diameter and 200mm long is taken out from the furnace at 800^0C and dipped in water till its temperature falls to 100^0C. Find the total time required for the ingot to reach the temperature from 800^0C to 100^0C. Take the following: K= 60 W/m ^{O}C, C_p = 200 J/kg^{0}C, ρ=800kg/m^3, h [water] = 200 W/m^{20}C h[air] = 20 W/m^{20}C. Temperature of air or water = 30^0C.	14 Marks	L3	CO1	PO1 PO2 PO3 PO4

UNIT-II

3.		The door of a cold storage plant is made from two 6mm thick glass sheets separated by a uniform air gap of 2mm. The temperature of the air inside the room is -20^0C and the ambient air temperature is 30^0C. Assuming the heat transfer coefficient between glass and air to be 23.26 W/m^2 K, determine the rate of heat leaking into the room per unit area of the door. Neglect convection effects in the air gap. K_{glass} = 0.75 W/m K; K_{air}= 0.02 W/m K.	14 Marks	L3	CO2	PO1 PO2 PO3 PO4
		(OR)				
4.		Obtain an expression of Temperature distribution through a short rectangular fin with its tip insulated. Also state the assumptions.	14 Marks	L2	CO2	PO1 PO2

UNIT-III

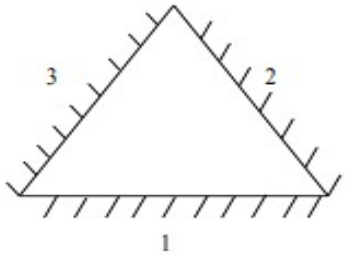
5.	a)	Develop a relationship between Nusselt, Prandtl and Reynolds Numbers in forced convection using dimensional analysis.	7 Marks	L1	CO3	PO1 PO2 PO3
	b)	Estimate the heat transfer from a 40 W incandescent bulb at 127^{o}C to 27^{o}C quiescent air. Approximate the bulb as a 50mm diameter sphere. What percentage of the power is lost by free convection?	7 Marks	L3	CO3	PO1 PO2 PO4
		(OR)				
6.	a)	What is the boundary layer thickness? What do you mean by laminar and turbulent boundary layers? What is laminar sublayer?	7 Marks	L3	CO3	PO1 PO2
	b)	Water is heated while flowing through 1.5 cm x 3.5 cm rectangular cross section tube a velocity of 1.2 m/s. The entering temperature of water is 40^0C and the tube wall is maintained at 85^0C. Determine the length of tube required to raise the temperature to 70^0C.	7 Marks	L3	CO3	PO1 PO2 PO3

UNIT-IV

7.		Saturated steam at 54 ^{0}C condenses as a film on the outside surface of a 25mm OD, 3.66m long vertical tube. The tube surface is maintained at a temperature of 43 ^{0}C. Calculate the average condensation heat transfer coefficient and the rate of steam condensation at the bottom of the tube.	14 Marks	L3	CO4	PO1 PO2 PO3
		(OR)				
8.	a)	Oil with a specific heat of 2 KJ/ kg K is cooled from 110^{0}C to 70^{0}C by a flow of water flow in a counter flow heat exchanger. Water flows at the rate of 2 kg/sec and is heated from 35^{0}C to 65^{0}C. The overall heat transfer coefficient is estimated to be 0.37 KW/ m^{2}K. Determine the exit temperatures of oil and water, if the water flow rate drops to 1.5 kg / sec at the same oil flow rate.	7 Marks	L3	CO4	PO1 PO2 PO3 PO4
	b)	Hot gases enter a finned tube heat exchanger at 300^0 and leave at 100^0. It is used to heat water at a flow rate of 1 kg/s from 35^0 to 125^{0}C. The specific heat of exhaust hot gas is 1000 J/kg. k and the overall heat transfer coefficient based on the gas side is U_h = 100 W/m^{2}K. Determine the required gas surface area using the NTU method.	7 Marks	L3	CO4	PO1 PO2 PO3 PO4

UNIT-V

9.	a)	Distinguish between specular and diffuse surfaces.	7 Marks	L3	CO5	PO1
	b)	Two large parallel planes with emissivity's of 0.3 and 0.5 are maintained at temperatures of 800^{0}C and 300^{0}C respectively. Determine the net radiant heat exchange per unit area between the planes. If a radiation shield having an emissivity of 0.05 on both sides is placed between the two planes, calculate the temperature of the shield and the heat transfer rate per unit area.	7 Marks	L3	CO5	PO1 PO2 PO3 PO4
		(OR)				
10.	a)	What is intensity of radiation? Prove that total emissive power is times the intensity of radiation.	7 Marks	L3	CO5	PO1 PO2
	b)	Determine the shape factor between different surfaces of an equilateral triangle duct of side 'a' as shown in figure.	7 Marks	L3	CO5	PO1 PO2 PO3



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

INDUSTRIAL ENGINEERING AND MANAGEMENT

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	Describe in detail the decision making procedure.	14 Marks	L2	CO1	PO1
	(OR)				
2.	Explain the functions of management in detail.	14 Marks	L2	CO1	PO1 PO6

UNIT-II

3.	Briefly discuss effective communication.	14 Marks	L2	CO2	PO1 PO2
	(OR)				
4.	Explain the strategies of leadership for organizational transformation.	14 Marks	L2	CO2	PO1 PO2

UNIT-III

5.	Explain in detail human factors and ergonomics.	14 Marks	L2	CO3	PO1 PO2 PO3
	(OR)				
6.	Seventy-five samples of a production cycle gave an average time of 5.28 min/piece. The performance rating was estimated as 110% and allowances are 25% of the total standard time available. What is the standard time in min/piece?	14 Marks	L3	CO3	PO1 PO2 PO3

UNIT-IV

7.	Describe in detail the various sections of bath-tub curve with an illustration.	14 Marks	L2	CO4	PO1 PO2
	(OR)				
8.	There are five devices in a system connected in series to produce the expected output. The reliability values of the devices are given below:	14 Marks	L3	CO4	PO1 PO2 PO3

Device	A	B	C	D	E
Reliability (%)	94	99	72	78	91

Determine the reliability of the system and find a suitable system configuration to produce at least 85 percent reliability.

UNIT-V

9.	Discuss workmen compensation act and industrial disputes act.	14 Marks	L2	CO5	PO1 PO2 PO3
	(OR)				
10.	The following table gives a number of missing rivets noted in a newly fabricated bus. Construct a 'c' chart.	14 Marks	L4	CO5	PO1 PO2 PO3

Bus No	1	2	3	4	5	6	7	8	9	10
No of missing rivets	14	13	26	20	9	25	15	11	14	13

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

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III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

GAS TURBINES AND JET PROPULSION

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		The air enters the compressor of an open cycle gas turbine at a constant pressure at 1bar and 20 degC. The pressure of air after compression is 4bar. The isentropic efficiency of compressor and turbine are 80 % and 85 %. The air fuel ratio is 90:1. If the flow rate is 3 kg/sec; i) Evaluate the power developed. ii) Thermal Efficiency of the cycle.Cp=1kJ/kg, Cv= 41800 kJ/kg and γ=1.4.	14 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	Explain Back work Ratio in Gas turbines.	7 Marks	L2	CO1	PO1
	b)	Illustrate the effect of regeneration on gas turbine power plant with PV and TS diagrams.	7 Marks	L2	CO1	PO1 PO6 PO8

UNIT-II

3.		A centrifugal compressor running at 7000 r.p.m delivers 500 m^3/min of free air. The air is compressed from 1 bar and 20°C. To a pressure ratio of 4 with an isentropic efficiency of 0.85. Blades are radial at outlet of impeller and the flow velocity of 60 m/s may be assumed constant .The outer radius of the impeller is twice the inner and slip factor may be assume as 0.9. Evaluate the: i) Final temperature of air. ii) The theoretical power. iii) Inner diameter at inlet and outlet. iv) Breadth of the impeller at inlet. v) Impeller blade angle at inlet. vi) Diffuser blade angle at outlet.	14 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Illustrate the working of centrifugal compressor with neat sketch.	7 Marks	L2	CO2	PO1
	b)	Explain the how a centrifugal compressor impeller is designed.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	What are the basic requirements of a combustion chamber? Explain.	7 Marks	L2	CO3	PO1
	b)	Explain the process of combustion in gas turbine combustion chambers.	7 Marks	L1	CO3	PO1
		(OR)				
6.		Explain the combustion chamber geometry bringing out the various zones that play a part in the process of combustion with a neat sketch.	14 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Explain the working of Turbo Propulsive Jet engine with neat sketch.	7 Marks	L1	CO4	PO1 PO2
	b)	Discuss the terms propulsive efficiency and overall efficiency.	7 Marks	L1	CO4	PO1 PO2
		(OR)				

8.		What are the advantages and disadvantages of ram jet engine and what are its applications? Also outline the Basic cycle for Turbo Jet engine with TS Chart.	14 Marks	L2	CO4	PO1
		UNIT-V				
9.		Draw a schematic diagram of a liquid propellant rocket. What are thedifferent systems of injecting liquid propellant into the combustionchamber?	14 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Draw a schematic diagram of a liquid propellant rocket and explain its working. What are the applications of this type of rocket?	7 Marks	L2	CO5	PO1 PO5
	b)	Briefly describe the two types of solid propellant rocket.	7 Marks	L2	CO5	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

OPTIMIZATION TECHNIQUES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	State the characteristics and functionalities of objective function in Optimization Technique with suitable example.	8 Marks	L2	CO1	PO1
	b)	Classify the Optimization problem based on the existence of constraints.	6 Marks	L2	CO1	PO1
		(OR)				
2.		Consider the problem: Minimize $f(x_1, x_2) = (x_1 - 1)^2 + x_2^2$ subject to $g_1(x_1,x_2) = x_1^3 - 2x_2 \leq 0$ $g_2(x_1,x_2) = x_1^3 + 2x_2 \leq 0$ Determine whether the constraint qualification and the Kuhn-Tucker conditions are satisfied at the optimum point.	14 Marks	L3	CO1	PO1 PO2
		UNIT-II				
3.		Solve the following LPP using Simplex method Maximize $Z = 5x_1 + 3x_2 + 7x_3$ Subject to $x_1 + x_2 + 2x_3 \leq 26$, $3x_1 + 2x_2 + x_3 \leq 26$, $x_1 + x_2 + x_3 \leq 18$, Where $x_1, x_2, x_3 \geq 0$	14 Marks	L3	CO2	PO2 PO3
		(OR)				
4.		A company wants to produce three products A, B and C for which the mathematical model is given below. The profit/ unit is Rs.4, Rs.6 and Rs. 2 for the product A, B and C respectively under the optimal product mix. Find the optimal solution if the objective function revised to $Z = 2x_1 + 8x_2 + 4x_3$ on the current optimal product mix. Mathematical Model Maximize $Z = 4x_1 + 6x_2 + 2x_3$ Subject to $x_1 + x_2 + x_3 \leq 3$, (Manpower) $x_1 + 4x_2 + 7x_3 \leq 9$, (Material) Where $x_1, x_2, x_3 \geq 0$	14 Marks	L3	CO2	PO2 PO3

UNIT-III

5.	a)	What is a one-dimensional minimization problem? state the limitations of classical methods in solving a one-dimensional minimization problem.	8 Marks	L3	CO3	PO1 PO2 PO3
	b)	Define Fibonacci numbers.	6 Marks	L3	CO3	PO1 PO2 PO3

(OR)

6.		Using **Powel's method,** Minimize $f(X_1, X_2) = X_1 - X_2 + 2X_1^2 + + 2X_1X_2 + X_2^2$ with starting point $X_1 = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$.	14 Marks	L3	CO3	PO1 PO2

UNIT-IV

7.		Use Dynamic Programing to solve the following LPP. Maximize $f(x_1,x_2) = 10X_1+8X_2$ Subject to $2X_1 + X_2 \leq 25$ $3X_1 + 2X_2 \leq 45$ $X_2 \leq 10$ $X_1, X_2 \geq 0$	14 Marks	L2	CO4	PO1 PO2

(OR)

8.		Define the following terms. i) Principle of optimality ii) Boundary value problem iii) Monotonic function iv) Separable function	14 Marks	L4	CO4	PO1 PO2 PO3 PO4

UNIT-V

9.	a)	State the significanct importance of Genetic Algorithm.	7 Marks	L2	CO5	PO1
	b)	Explain the Markov Models of Genetic Algorithm in detail.	7 Marks	L2	CO5	PO1

(OR)

10.	a)	Describe the Basic Differential Evolution algorithm.	7 Marks	L2	CO5	PO1 PO2
	b)	Validate the Ant Colony Optimization algorithm against other evolutionary optimization algorithms.	7 Marks	L2	CO5	PO1 PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

REFRIGERATION AND AIR CONDITIONING

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Define BEE star rating. How it is applicable for refrigeration systems.	7 Marks	L2	CO1	PO1
	b)	An air craft moving with speed of 1000 km/h uses simple gas refrigeration cycle for air conditioning. The ambient pressure and temperature are 0.35 bar and -10^0C respectively. The pressure ratio of compressor is 4.5. The heat exchanger effectiveness is 0.95. The isentropic efficiencies of compressor and expander are 0.8 each. The cabin pressure and temperature are 1.06 bar and 25^0C. Determine temperature and pressures at all points of the cycle. Also find the volume flow rate through compressor inlet and expander outlet for 100 TR. Take CP=1.005 kJ/kg K; R=0.287 kJ/kg K and CP/CV=1.4 for air.	7 Marks	L3	CO1	PO1 PO2
		(OR)				
2.	a)	What do you understand the term air refrigeration? Why it is used in aircrafts.	7 Marks	L1	CO2	PO1
	b)	Illustrate the working principle of cascade Refrigeration system with a neat sketch.	7 Marks	L2	CO2	PO1

UNIT-II

3.	a)	Discuss the working principle of reciprocating compressor with a brief sketch.	7 Marks	L2	CO2	PO1
	b)	Explain construction and working of finned tube evaporator with neat sketch.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Discuss selection of refrigerants for a particular application considering environmental aspects.	7 Marks	L2	CO2	PO1 PO2 PO3
	b)	Give classification of refrigerants with some examples.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	What is the function of the following components in an absorption system: i) Absorber ii) Rectifier iii) Analyzer iv) Heat exchangers	7 Marks	L2	CO3	PO1
	b)	Describe the construction of Li-Br water two shell and four shell vapor absorption refrigeration systems with a neat sketch.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Discuss applications of steam jet refrigeration with suitable examples.	7 Marks	L2	CO3	PO1
	b)	Differentiate Thermoacoustic and thermo electric Refrigeration system with suitable sketch.	7 Marks	L2	CO3	PO1

UNIT-IV

7.		In a laboratory test a psychrometer recorded 36 ° C DBT and 30 ° C WBT calculate i) vapor pressure ii) relative humidity iii) specific humidity iv) degree of saturation v) dew point temperature vi) enthalpy of the mixture	14 Marks	L4	CO4	PO1 PO2 PO3

(OR)

8.	a)	Represent the following process in a skeleton psychrometric chart. i) Sensible cooling ii) Cooling and humidification iii) Adiabatic mixing of air streams	7 Marks	L1	CO4	PO1
	b)	Explain how does the body attempt to compensate for a cool environment which tends to lower the internal temperature?	7 Marks	L4	CO4	PO1

UNIT-V

9.	a)	Discuss the common considerations for humidification of air in air conditioning.	7 Marks	L2	CO5	PO1
	b)	Describe the following types of air filters for cleaning air with simple sketches. i) Viscous filter ii) Wet filter.	7 Marks	L2	CO5	PO1

(OR)

10.	a)	Explain the features required for the proper selection of a fan for a given application?	7 Marks	L2	CO5	PO1
	b)	Write notes on Grills and Registers.	7 Marks	L2	CO5	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

ARTIFICIAL INTELLIGENCE AND ROBOTICS

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		Discuss in detail about the following: i) Nature of Environments in AI ii) State of the Art of AI applications.	14 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	Explain in detail about the significance of image processing and analysis in machine vision.	7 Marks	L2	CO1	PO1
	b)	How can we ensure that the integration of AI and robotics in various industries prioritizes ethical considerations, minimizes biases, and fosters accountability, while also maximizing benefits for society as a whole?	7 Marks	L2	CO1	PO1 PO6 PO8

UNIT-II

3.		Explain the following: i) Factors to be considered when determining the best setup for robots in workplaces ii) Robot work envelope	14 Marks	L2	CO2	PO1
		(OR)				
4.	a)	How would you classify different types of robot grippers based on their design and functionality, and what criteria could be used to evaluate their effectiveness in handling various objects in industrial applications?	7 Marks	L2	CO2	PO1
	b)	Describe different types of robot joints with neat sketches.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Explain homogenous transformation matrices for rotation in 3D.	7 Marks	L2	CO3	PO1
	b)	Explain the steps involved in implementation of DH notation for a links coordinate system and joint parameters for a manipulator with 2 DOF.	7 Marks	L1	CO3	PO1
		(OR)				
6.		Discuss any one approach to compute the dynamics of a robot arm with suitable example and neat sketches.	14 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Explain how joint interpolated motion enables a robot move smoothly from one pose to another with smooth and coordinated motion of all the joints. What are the limitations?	7 Marks	L1	CO4	PO1 PO2
	b)	Explain the following: i) Compliance mechanism ii) Machine vision sensors	7 Marks	L1	CO4	PO1 PO2
		(OR)				
8.		Discuss the following with suitable sketches: i) Position sensors ii) Fail safe hazard sensor systems.	14 Marks	L2	CO4	PO1

UNIT-V

9.		Explain the following with suitable illustrations Robot intelligence. Robot task planning.	14 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Describe features of any one robotic programming language.	7 Marks	L2	CO5	PO1 PO5
	b)	Explain the future applications and challenges in robotics domain.	7 Marks	L2	CO5	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

NON-CONVENTIONAL ENERGY SOURCES

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What are the forms and sources of energy? List the reasons, why nonconventional sources are preferred.	7 Marks	L2	CO1	PO1
	b)	Explain the solar radiation geometry for flat plate and inclined surface.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Justify the need of energy alternative and explain any two alternative energy sources.	10 Marks	L2	CO1	PO1
	b)	Determine the hour angle for 9:00 AM, 11:00 AM, 2:00 PM, 4:30 PM.	4 Marks	L3	CO1	PO1
		UNIT-II				
3.	a)	Explain briefly the effects of losses and discuss about the various losses in flat plate collectors.	10 Marks	L2	CO2	PO1 PO2
	b)	How the concentrating collectors are classified? Explain.	4 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Explain the Parameters affecting the collector performance.	7 Marks	L2	CO2	PO1 PO2 PO3
	b)	Discuss Air collectors and their types.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	With a help of neat sketch, explain the working of solar water heating.	7 Marks	L2	CO3	PO1
	b)	Explain Solar thermal power generation.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Discuss the principle of power generation through thermo electric and thermionic systems with neat sketches.	7 Marks	L2	CO3	PO1
	b)	Explain Solar distillation.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Explain Wind energy conversion systems, environmental consideration.	7 Marks	L2	CO4	PO1 PO2 PO3
	b)	Compare horizontal axis and vertical axis Wind turbines .	7 Marks	L3	CO4	PO1 PO2 PO3
		(OR)				
8.	a)	What are the factors affecting the performance of bio-gas digester?	7 Marks	L2	CO4	PO1
	b)	What are main advantages and disadvantages of biomass energy and impact on environment?	7 Marks	L2	CO4	PO1 PO7

UNIT-V

9.	a)	Explain the terms Hydro thermal resources, geo pressurized resources, hot dry rocks.	7 Marks	L3	CO5	PO1 PO2 PO3
	b)	Discuss in detail the generation of power through a liquid dominated system with a neat sketch.	7 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Discuss the environmental impacts of OTEC.	7 Marks	L2	CO5	PO1 PO7
	b)	What are the difficulties in tidal power generation?	7 Marks	L1	CO5	PO1

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

MICROELECTROMECHANICAL SYSTEMS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Elaborate the working of various actuators used in MEMS.	7 Marks	L2	CO1	PO1
	b)	"The size of sensors has been reduced to micrometer scale using MEMS" Justify the statement with necessary requirements.	7 Marks	L3	CO1	PO2
		(OR)				
2.	a)	Illustrate different stages of development of MEMS devices in detail.	7 Marks	L2	CO1	PO1
	b)	Interpret the interconnection between the sub systems of microsystems and explain how microsystem differ from MEMS.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.	a)	Develop an integrated sensor system using three sensor and explain its working in detail.	7 Marks	L2	CO1	PO1
	b)	Describe the working of thermal sensors with neat construction.	7 Marks	L4	CO1	PO3
		(OR)				
4.	a)	Explain the mechanical concepts involved in the design of micro actuators.	7 Marks	L4	CO1	PO3
	b)	With a neat sketch explain the working of micro pressure sensors with its applications.	7 Marks	L3	CO1	PO2
		UNIT-III				
5.	a)	Illustrate the instrumentation involved in the design of piezoresistive accelerometers and explain the need of each component in detail.	7 Marks	L3	CO2	PO3
	b)	Interpret the effects of temperature and damping on the performance of the accelerometer with necessary derivations.	7 Marks	L2	CO2	PO2
		(OR)				
6.	a)	Develop a piezoelectric micro accelerometer and explain the need of each component in detail with neat sketch.	7 Marks	L3	CO2	PO3
	b)	Construct a capacitive micro accelerometer and explain its working in detail with neat sketch.	7 Marks	L4	CO2	PO2
		UNIT-IV				
7.	a)	Elaborate the step-by-step process of stereolithography to fabricate 3D devices with neat sketch.	7 Marks	L2	CO3	PO5
	b)	Elaborate the necessity of packaging techniques in MEMS and describe the objectives and goals of packaging techniques.	7 Marks	L2	CO3	PO2
		(OR)				
8.	a)	Illustrate the process of diffusion and oxidization during fabrication process with neat sketch.	7 Marks	L3	CO3	PO1
	b)	Interpret the step-by-step process of micromachining in detail with neat sketch.	7 Marks	L2	CO3	PO1

UNIT-V

9.	a)	Illustrate the applications of MEMS sensors in biomedical field with neat sketch.	7 Marks	L3	CO4	PO1
	b)	Describe the implementation of RF MEMS with its applications with neat construction.	7 Marks	L2	CO4	PO1
		(OR)				
10.	a)	Discuss the importance of MEMS sensors in real time space applications.	7 Marks	L2	CO4	PO1
	b)	Describe working of microfluidic sensors in detail with neat sketch.	7 Marks	L2	CO4	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

PIC MICROCONTROLLERS

[Electronics and Communication Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Present the map of Access bank in PIC18F452 and its constituents.	7 Marks	L1	CO1	PO2
	b)	Illustrate the purpose and sizes of Working Register and Bank Selection Registers in PIC18F452.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	PIC18F452 has multiple on-chip resources. List them and illustrate their usage in a typical system design.	7 Marks	L2	CO1	PO1
	b)	Sketch the memory space of program memory in PIC18F452.	7 Marks	L3	CO1	PO1

UNIT-II

3.	a)	Calculate the delay offered by the following routine when PIC18F452 is working with 4MHz crystal. REPEATOR SET 0X08 DELAY MOVLW 0X0A MOVWF REPEATOR BK: NOP NOP NOP DECF REPEATOR,F BNZ BK	7 Marks	L6	CO2	PO2
	b)	Interpret the following instructions using suitable examples. i) BTFSC ii)BTFSS	7 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Trace what the following code snippet written for PIC18 does: CLRF TRISC SETF TRISB R: MOVF PORTB,W ADDLW D,'10' MOVWF PORTC BRA R	7 Marks	L2	CO2	PO2
	b)	Compute Instruction cycle for PIC18 if it is being driven by a crystal of 4MHz.	7 Marks	L3	CO2	PO2

UNIT-III

5.	a)	Code PIC18F452 to generate a square wave of 25% duty cycle on PORTB.5 – use Timer0 for delay generation.	7 Marks	L6	CO3	PO2
	b)	Identify the need to program TRISX SFR in parallel port programming. Investigate how the following code snippet customizes the Parallel Ports: **CLRF TRISB** **BSF TRISD,2**	7 Marks	L4	CO3	PO3

(OR)

6.	a)	Analyze the scope for delay generation using Timer0 in 16 bit compared to same being operated in 8 bit mode.	7 Marks	L4	CO3	PO3
	b)	Code a MACRO to generate delay using a nested loop structure.	7 Marks	L6	CO3	PO6

UNIT-IV

7.	a)	Model the sequence of steps to receive serially using PIC18 Serial port.	7 Marks	L6	CO3	PO2
	b)	Sketch PIC18 Timer Interrupt structure.	7 Marks	L4	CO3	PO1

(OR)

8.	a)	Program PIC18 sourced by crystal of 10MHz to transmit a character "G" serially at 9600 Baud rate.	8 Marks	L6	CO3	PO2
	b)	Mention the importance of BRGH bit in TXSTA SFR in PIC18.	4 Marks	L2	CO3	PO2
	c)	Mention how the baud rate in PIC18F452 serial port can be quadrupled.	2 Marks	L3	CO3	PO2

UNIT-V

9.	a)	Design and present the interfacing circuitry to interface PIC18 to an uni-polar stepper motor.	7 Marks	L6	CO4	PO8
	b)	A switch is connected at RD.7 of PIC18. Derive Code for PIC18 to Scan the switch and run motor with 25% and 50% PWM if RD.7==1 & 0 respectively.	7 Marks	L6	CO4	PO6

(OR)

10.	a)	Program PIC18 on-chip ADC to get data on RA0 (CH0) and to display the digital value on PORTC and PORTD Respectively.	7 Marks	L6	CO4	PO3
	b)	Model how DAC0808 can be interfaced to PIC18 – sketch the setup.	7 Marks	L6	CO4	PO3



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

MACHINE LEARNING

[Computer Science and Engineering,
Computer Science and Systems Engineering, Computer Science and Business Systems,
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)	Tabulate the List-Then-Eliminate algorithm and explain in detail.	7 Marks	L2	CO1	PO1
	b)	Discuss in detail about inductive bias.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	What if the target concept is not contained in the hypothesis space? Investigate.	7 Marks	L4	CO1	PO1
	b)	Illustrate the List-Then-Eliminate algorithm with an example.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	How to prevent over fitting using validation set? Explain.	7 Marks	L4	CO2	PO2
	b)	Define over fitting and explain the ways to avoid over fitting in decision tree learning.	7 Marks	L3	CO2	PO2
		(OR)				
4.	a)	Explain the classification process in a Support Vector Learning with necessary mathematical equations.	7 Marks	L2	CO2	PO2
	b)	Illustrate the impact of overfitting in a typical application of decision tree learning and explain.	7 Marks	L4	CO2	PO2
		UNIT-III				
5.	a)	Tabulate the stochastic gradient descent version of the back propagation algorithm for feed forward network.	7 Marks	L2	CO2	PO1
	b)	Analyze the advantage of adding momentum to the training rule in Back propagation algorithm.	7 Marks	L4	CO2	PO2
		(OR)				
6.	a)	Explain the derivation of the BACKPROPAGATION weight-tuning rule.	7 Marks	L2	CO2	PO2
	b)	What is an appropriate condition for terminating the weight update loop? Analyze	7 Marks	L4	CO2	PO2
		UNIT-IV				
7.	a)	Explain the bayesian approach for classifying the new instance using Naive Bayes Classifier.	7 Marks	L2	CO3	PO2
	b)	Illustrate the naive bayes classification for a concept learning task.	7 Marks	L2	CO2	PO2
		(OR)				
8.	a)	Explain the Bayesian belief network which represents the joint probability distribution for a set of variables.	7 Marks	L2	CO2	PO2
	b)	Explain the two steps of the EM algorithm and describe its general statement.	7 Marks	L2	CO2	PO2

UNIT-V

9.	a)	Illustrates the operation of the k-NEAREST NEIGHBOR algorithm with an example.	7 Marks	L2	CO2	PO2
	b)	Explain the architecture of the radial basis function network.	7 Marks	L2	CO2	PO2
		(OR)				
10.	a)	Describe the operations of the Q learning algorithm with necessary explanations.	7 Marks	L2	CO2	PO1
	b)	How can an agent learn an optimal policy n* for an arbitrary environment?	7 Marks	L3	CO3	PO3



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

COMPILER DESIGN

[Computer Science and Engineering,
Computer Science and Engineering (Artificial Intelligence),
Computer Science and Engineering (Artificial Intelligence and Machine learning),
Computer Science and Engineering (Data Science)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	With a neat sketch, explain the phases of compiler	7 Marks	L2	CO1	PO2
	b)	Give the parse tree for the following while statement. while A>B&A<=2*B-5 do A:=A+B.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Explain Input buffering with example.	7 Marks	L2	CO1	PO2
	b)	Give the Specification of Tokens.	7 Marks	L3	CO1	PO2
		UNIT-II				
3.		Form ACTION/GOTO table for the following grammar S → L=R |R L → *R |id R → L Justify whether the grammar is LR(0) or not.	14 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Find the First and Follow sets for the following grammar. E→TA E→ +TA / ∈ T→FB B→ *FB / ∈ F→ (E) / id	7 Marks	L3	CO2	PO5
	b)	Give the limitations of Recursive descent parser.	7 Marks	L3	CO2	PO5
		UNIT-III				
5.	a)	Explain any two syntax directed translation. Explain applications of SDT's	7 Marks	L3	CO3	PO4
	b)	if (C) S1 else S2 to an SDT.◊Convert S.	7 Marks	L3	CO3	PO4
		(OR)				
6.	a)	Explain the rules for type checking with an example.	7 Marks	L1	CO3	PO1
	b)	Explain overloading of functions and operators.	7 Marks	L1	CO3	PO1

UNIT-IV

7.	a)	Compare various forms of three address code.	7 Marks	L2	CO4	PO2
	b)	Convert the following arithmetic expression into syntax tree and three address code b* – (a + b).	7 Marks	L1	CO4	PO1
		(OR)				
8.	a)	Explain the usage of search tree in implementing symbol table	7 Marks	L1	CO4	PO1
	b)	What are the various machine dependent code optimization techniques?	7 Marks	L2	CO4	PO2

UNIT-V

9.	a)	What are the advantages of DAG representation? Give example.	7 Marks	L1	CO5	PO1
	b)	What is next use information? Write an algorithm to determine the liveness and next use information for each statement in a basic block	7 Marks	L2	CO5	PO2
		(OR)				
10.	a)	With an example, explain peephole optimization	7 Marks	L2	CO5	PO2
	b)	Explain code generation algorithm with the function GETREG.	7 Marks	L2	CO5	PO2



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

CRYPTOGRAPHY AND NETWORK SECURITY

[Computer Science and Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the Importance of Information security in real life scenario with suitable example in Internet world.	7 Marks	L2	CO1	PO2
	b)	Contrast the functional differences between Passive and Active security attacks.	7 Marks	L2	CO1	PO2
		(OR)				
2.	a)	Explain briefly about the substitution techniques i) Caesar Cipher ii) Monoalphabetic Cipher iii) Playfair Cipher	7 Marks	L2	CO1	PO1
	b)	Discuss the functional analysis of symmetric cipher model with neat sketch.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.	a)	Explain the concept of Data Encryption Standard (DES) algorithm step by step procedure with neat flow diagrams.	7 Marks	L2	CO1	PO2
	b)	Interpret the contrasts between Stream ciphers, Block ciphers and Feistel ciphers.	7 Marks	L3	CO1	PO1
		(OR)				
4.	a)	Interpret the Cipher Block Chaining Mode (CBC) methodology with neat sketch.	7 Marks	L3	CO1	PO1
	b)	Explain the functional differences between AES and DES Algorithms.	7 Marks	L2	CO1	PO1
		UNIT-III				
5.	a)	Write short notes on ingredients of Public Key Cryptography.	7 Marks	L3	CO1	PO2
	b)	Explain the step-by-step process of Elgamal cryptographic system Algorithm and its mathematical models.	7 Marks	L2	CO1	PO3
		(OR)				
6.	a)	Interpret the mathematical models involved in SHA Algorithm.	7 Marks	L3	CO1	PO2
	b)	Illustrate the behavioral objectives of HMAC and its structure.	7 Marks	L2	CO1	PO2
		UNIT-IV				
7.	a)	Discuss about the distribution of public keys in the process of key management system.	7 Marks	L2	CO2	PO1
	b)	Interpret the Hierarchical model of X.509 service and Revocation of certificates.	7 Marks	L3	CO2	PO1
		(OR)				
8.	a)	Illustrate the architectural features variations in Kerberos 4 and Kerberos 5 versions.	7 Marks	L3	CO3	PO1
	b)	Explain the mechanism involved in the biometric authentication process and its functional barriers.	7 Marks	L2	CO3	PO1

UNIT-V

9.	a)	Explain the functional characteristics and features of Secure/Multi-purpose Internet Mail Extension (S/MIME).	7 Marks	L2	CO4	PO1
	b)	Write short notes on Web security considerations and its sub modules in real time integration environment.	7 Marks	L3	CO4	PO1
		(OR)				
10.	a)	Discuss about Security interactions in Domain Name System Security (DNSSEC) module and its role in present internet world.	7 Marks	L2	CO4	PO1
	b)	Interpret the concept of various IPSec services and Security parameters.	7 Marks	L3	CO4	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

AD HOC AND WIRLESS SENSOR NETWORKS

[Computer Science and Systems Engineering, Computer Science and Engineering (Cyber Security)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Provide examples of applications that heavily rely on wireless communication technology, and how do they benefit from its flexibility and mobility.	7 Marks	L3	CO1	PO3
	b)	Differentiate cellular and Ad-hoc wireless networks.	7 Marks	L4	CO1	PO2
		(OR)				
2.	a)	Explain any five major issues to be considered for a successful Ad-hoc wireless network.	7 Marks	L2	CO1	PO1
	b)	Outline the importance of power management for ad hoc wireless networks.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	With a neat sketch, Explain the MARCH Protocol.	7 Marks	L2	CO2	PO1
	b)	List the advantages of reservation-based MAC protocols over contention-based MAC protocols.	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	With a neat sketch, Explain Distributed Packet Reservation Multiple Access Protocol.	7 Marks	L1	CO2	PO1
	b)	How do MAC protocols typically differ in their classification, and what factors contribute to categorizing them into different classes?	7 Marks	L4	CO2	PO2
		UNIT-III				
5.		With a neat sketch, Explain Flow-oriented routing protocol (FORP).	14 Marks	L2	CO2	PO1
		(OR)				
6.		With a neat sketch, Explain Signal stability-based adaptive routing protocol (SSA).	14 Marks	L2	CO2	PO1
		UNIT-IV				
7.	a)	Write a short note on the vision of Ambient Intelligence.	7 Marks	L2	CO1	PO1
	b)	Describe the essential hardware components typically found in a sensor node within a Wireless Sensor Network (WSN).	7 Marks	L2	CO1	PO1
		(OR)				
8.		Provide real-world examples of applications where Wireless Sensor Networks (WSNs) are employed.	14 Marks	L3	CO4	PO3
		UNIT-V				
9.		Explain the IEEE 802.15.4 MAC protocol, including its key features, functions, and its role in enabling communication in low-power wireless networks.	14 Marks	L2	CO3	PO1
		(OR)				
10.		Discuss the hardware design considerations for a Medical Ad-hoc Sensor Network (MASN).	14 Marks	L3	CO4	PO6

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations,April – 2025

SENSORS AND SIGNAL CONDITIONING

[Electrical and Electronics Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	Justify the following transducer as active and passive with suitable explanation : i) Thermocouple ii) LDR iii) LVDT iv) RTD	7 Marks	L2	CO1	PO1
	b)	Apply the conceptual knowledge for the measurement of relative humidity present in surrounding environment	7 Marks	L2	CO1	PO6
		(OR)				
2.	a)	Explain with diagrams, the bonded and unbounded types of strain gauges.	7 Marks	L2	CO1	PO1
	b)	A thermistor has a resistance temperature co-efficient of -5% over a temperature change of 25ºC to 50ºC.If the resistance of the thermistor is 100Ω at 25ºC,what is the resistance at 25ºC.	7 Marks	L2	CO1	PO2

UNIT-II

3.	a)	Derive the expressions for voltages in the three phases of a synchro transmitter.	7 Marks	L2	CO1	PO2
	b)	State and prove what happens to the sensitivity of a capacitive transducer i) When area between the plates of the capacitor changes ii)When the distance between the plates of the capacitor changes	7 Marks	L2	CO1	PO2
		(OR)				
4.	a)	Explain principle and working of Electromagnetic sensor with neat sketch.	7 Marks	L2	CO1	PO1
	b)	Elaborate the measurement of linear displacement with a reluctance sensor with neat sketch.	7 Marks	L2	CO1	PO6

UNIT-III

5.	a)	Describe the construction, theory and working of thermocouples.	7 Marks	L2	CO2	PO1
	b)	A barium titanate pickup has the dimensions of 5 mm*5mm*1.25mm.The force acting on it is 5N.The charge sensitivity of barium titanate is 150pC/N and its permittivity is $12.5*10^{-9}$ F/m.If the modulus of elasticity of barium titanate is $12*10^{6}$ N/m^2,calculate the strain. Also calculate the charge and the capacitance.	7 Marks	L3	CO2	PO2
		(OR)				
6.	a)	Describe the construction, theory and working of thermocouples.	7 Marks	L2	CO2	PO1
	b)	Compare a total radiation pyrometer with an optical pyrometer in terms of operation and construction details.	7 Marks	L2	CO2	PO2

UNIT-IV

7.	a)	Select an appropriate non contact sensor to measure liquid level. Justify your sensor selection and explain its principle using a neat sketch.	7 Marks	L2	CO3	PO5
	b)	Describe how fibre optic transducers are used for measurement of liquid level.	7 Marks	L2	CO3	PO6
		(OR)				
8.	a)	Select a suitable transducer for measurement of speed and explain its operation.	7 Marks	L2	CO3	PO5
	b)	Analyze in detail the fibre optic sensors and its applications	7 Marks	L2	CO3	PO6

UNIT-V

9.	a)	A signal conditioning circuit has R_1=120.4Ω,R_2=119.0Ω and R_3=119.7Ω a) What resistance must R_4 have for resistance balance? b)If R_4 has a value of 121.2Ω, and if the input voltage is 12 V d.c .What is the output voltage of the bridge, assuming it to be voltage sensitive bridge?	7 Marks	L3	CO4	PO3
	b)	Describe the functioning of a chopper amplifier using an operational amplifier. Derive the expression for transfer function and draw its curve showing its frequency response.	7 Marks	L2	CO4	PO2
		(OR)				
10.	a)	Derive the expressions for bridge sensitivity factor for Blumlein bridge having capacitors in push pull configuration.	7 Marks	L2	CO4	PO2
	b)	Describe the functioning of a low drift amplifier using an operational amplifier.	7 Marks	L2	CO4	PO1



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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

IOT ARCHITECTURE AND PROTOCOLS

[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)	Explain about Distributed Business Processes in IoT.	7 Marks	L2	CO1	PO1
	b)	Explain about Knowledge Reference Architecture for M2M and IoT.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Explain the following: i. Staged Data ii. Strong Type Data iii. Weak Type Data	7 Marks	L1	CO1	PO1
	b)	Explain the several properties used for device characterizations.	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Illustrate how information flow utilizes the IoT Service Resolution FC.	7 Marks	L4	CO2	PO2
	b)	Explain the following: i) End-to-End Communication ii) Network Communication	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Explain about IoT-A Functional Model.	7 Marks	L2	CO2	PO1
	b)	Explain in detail about IoT Reference Model.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	"6LoWPAN standards enable the efficient use of IPv6 over low-power wireless networks on simple embedded devices" – Justify the statement.	7 Marks	L4	CO3	PO2
	b)	Compare and Contrast 6LoWPAN, 6TiSCH and 6Lo.	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Compare and contrast IoT protocol stack utilizing 6LoWPAN and IP Protocol stack.	7 Marks	L2	CO3	PO1
	b)	Write short notes on ZigBee smart energy.	7 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	Explain in detail about XMPP.	7 Marks	L1	CO4	PO1
	b)	With a neat sketch explain MQTT message format.	7 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Illustrate three levels of MQTT QoS.	7 Marks	L4	CO4	PO2
	b)	List the benefits of Data Distribution Service (DDS) and explain.	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Illustrate security functions of RPL.	7 Marks	L4	CO5	PO3
	b)	Analyze the role of cloud architecture for smart metering applications.	7 Marks	L4	CO5	PO2
		(OR)				
10.	a)	Explain in detail about IoT Challenges.	7 Marks	L2	CO5	PO3
	b)	Illustrate the functioning of Smart House integration with enterprise services.	7 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

EMBEDDED SYSTEM DESIGN AND ARCHITECTURE

[Computer Science and Engineering (Internet of Things)]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	What role did the miniaturization of components play in the history of embedded systems?	7 Marks	L2	CO1	PO1
	b)	What are some future trends and challenges in the development and deployment of complex systems with microprocessor integration?	7 Marks	L4	CO1	PO2
		(OR)				
2.	a)	What role do embedded systems play in industrial needs?	7 Marks	L1	CO1	PO1
	b)	What is meant by a formalism in the context of system design?	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	How is external memory interfaced with the 8051 microcontrollers?	7 Marks	L3	CO2	PO2
	b)	What is an interrupt, and how does it relate to the operation of the 8051 microcontrollers?	7 Marks	L4	CO2	PO2
		(OR)				
4.	a)	Explain briefly about addressing mode in microcontroller.	7 Marks	L4	CO2	PO2
	b)	Explain in detail about Instruction set in assembly Language Program.	7 Marks	L2	CO2	PO2
		UNIT-III				
5.	a)	Briefly explain LED interfacing with the 8051 microcontrollers?	7 Marks	L4	CO3	PO1
	b)	explain the basic principle behind keyboard operation and how it relates to interfacing with the 8051 microcontrollers?	7 Marks	L4	CO3	PO2
		(OR)				
6.	a)	Explain about reading and writing in I/O port in microcontroller.	6 Marks	L2	CO3	PO1
	b)	Explain about A/D and D/A Conversion.	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	What is a task control block (TCB), and what role does it play in managing tasks and their states?	7 Marks	L4	CO4	PO4
	b)	Write short notes on Events in RTOS.	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Explain about Interrupt Routine in RTOS.	7 Marks	L2	CO4	PO1
	b)	Explain in detail about techniques in debugging.	7 Marks	L1	CO4	PO2
		UNIT-V				
9.	a)	What is ARM architecture, and what makes it popular in the field of embedded systems?	7 Marks	L2	CO5	PO1
	b)	Illustrate the SHARC architecture for embedded application.	7 Marks	L4	CO5	PO2
		(OR)				
10.	a)	Explain about challenges in CAN protocol.	7 Marks	L2	CO5	PO5
	b)	Explain the Instructions of ARM Architecture.	7 Marks	L4	CO5	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

MOBILE APPLICATION DEVELOPMENT

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

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain the content structure and usage of mobile apps.	7 Marks	L2	CO1	PO1
	b)	Compare and contrast the different mobile platforms.	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Discuss the mobile interface design tools briefly.	7 Marks	L3	CO1	PO2
	b)	Explain the android versions and key changes.	7 Marks	L1	CO1	PO1
		UNIT-II				
3.		List the layouts available in android and discuss them briefly.	14 Marks	L2	CO2	PO2
		(OR)				
4.	a)	Discuss the techniques to adapt the changes in display orientation.	7 Marks	L3	CO2	PO3
	b)	List and discuss the different units of measurements for size of an element on an Android User Interface.	7 Marks	L3	CO2	PO3
		UNIT-III				
5.	a)	Develop an android program to customize the progress bar view.	7 Marks	L4	CO3	PO4
	b)	Develop an Android program to save the data to external storage.	7 Marks	L3	CO3	PO3
		(OR)				
6.	a)	Develop an android program to customize the AutoComplete Text View.	7 Marks	L4	CO3	PO3 PO5
	b)	Develop an Android program to retrieve all contacts from a table using DBAdapter.	7 Marks	L4	CO3	PO3 PO5
		UNIT-IV				
7.	a)	Develop an Android program to send SMS message.	8 Marks	L3	CO3	PO3
	b)	Illustrate the procedure to obtain HTTP connection in an Android activity.	6 Marks	L2	CO3	PO2
		(OR)				
8.		Develop an Android program to receive SMS messages using Broad cast Receiver.	14 Marks	L3	CO3	PO4
		UNIT-V				
9.	a)	Develop an Android application to invoke an Activity from a Service.	7 Marks	L3	CO4	PO4
	b)	Illustrate the steps to develop a Derby App in iOS.	7 Marks	L3	CO4	PO4
		(OR)				
10.		Discuss the procedure to binding the activities to services with a suitable example program.	14 Marks	L2	CO4	PO2

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

BIG DATA TECHNOLOGIES

[Computer Science and Engineering (IOT), Computer Science and Design]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Illustrate the structure and Characteristics of Big Data.	7 Marks	L3	CO1	PO1
	b)	List out the applications and Tools of Big Data.	7 Marks	L1	CO1	PO2
		(OR)				
2.	a)	Differentiate between Hadoop and RDBMS.	7 Marks	L4	CO1	PO2
	b)	Explain about Hadoop latest Five Releases.	7 Marks	L4	CO1	PO5
		UNIT-II				
3.	a)	Explain data Flow and Hadoop Archives in HDFS.	7 Marks	L2	CO1	PO1
	b)	Explain Serialization, File-Based Data Structures in Hadoop I/O.	7 Marks	L4	CO1	PO2
		(OR)				
4.	a)	Explain Building Blocks of HDFS.	7 Marks	L2	CO1	PO2
	b)	List out the Concept in Hadoop I/O and HDFS.	7 Marks	L1	CO1	PO1
		UNIT-III				
5.	a)	Explain counters and joins in MapReduce features.	7 Marks	L4	CO2	PO1
	b)	List out different types Input and output formats of Map Reduce.	7 Marks	L1	CO2	PO2
		(OR)				
6.	a)	Discuss Scaling out and Hadoop pipes in Map Reduce.	7 Marks	L3	CO2	PO2
	b)	Explain Map Reduce Architecture and Demonstrate MapReduce word count Process with an example.	7 Marks	L3	CO3	PO3 PO4
		UNIT-IV				
7.	a)	Distinguish between HBase vs. RDBMS.	7 Marks	L4	CO3	PO2
	b)	Explain User-defined functions in HIVE with Examples.	7 Marks	L4	CO3	PO1
		(OR)				
8.	a)	Demonstrate the basic concepts of Praxis.	7 Marks	L2	CO3	PO2
	b)	Explain Data processing Operators of PIG with an Example.	7 Marks	L4	CO3	PO4
		UNIT-V				
9.	a)	Describe SQOOP working with Database Imports, working with Imported Data, Importing Large Objects.	7 Marks	L1	CO4	PO5
	b)	Explain Building applications with Zookeeper.	7 Marks	L4	CO4	PO8
		(OR)				
10.	a)	Write Hive steps for creating whatsapp Database.	7 Marks	L4	CO3	PO8
	b)	Elaborate procedure of Face book data processing in PIG Environment.	7 Marks	L4	CO3	PO8

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SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

III B.Tech II Semester (SVEC-20) Supplementary Examinations, April – 2025

GAS TURBINES AND JET PROPULSION

[Mechanical Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.		The air enters the compressor of an open cycle gas turbine at a constant pressure at 1bar and 20 degC. The pressure of air after compression is 4bar. The isentropic efficiency of compressor and turbine are 80 % and 85 %. The air fuel ratio is 90:1. If the flow rate is 3 kg/sec; i) Evaluate the power developed. ii) Thermal Efficiency of the cycle.Cp=1kJ/kg, Cv= 41800 kJ/kg and γ=1.4.	14 Marks	L2	CO1	PO1 PO2
		(OR)				
2.	a)	Explain Back work Ratio in Gas turbines.	7 Marks	L2	CO1	PO1
	b)	Illustrate the effect of regeneration on gas turbine power plant with PV and TS diagrams.	7 Marks	L2	CO1	PO1 PO6 PO8

UNIT-II

3.		A centrifugal compressor running at 7000 r.p.m delivers 500 m^3/min of free air. The air is compressed from 1 bar and 20°C. To a pressure ratio of 4 with an isentropic efficiency of 0.85. Blades are radial at outlet of impeller and the flow velocity of 60 m/s may be assumed constant .The outer radius of the impeller is twice the inner and slip factor may be assume as 0.9. Evaluate the: i) Final temperature of air. ii) The theoretical power. iii) Inner diameter at inlet and outlet. iv) Breadth of the impeller at inlet. v) Impeller blade angle at inlet. vi) Diffuser blade angle at outlet.	14 Marks	L2	CO2	PO1
		(OR)				
4.	a)	Illustrate the working of centrifugal compressor with neat sketch.	7 Marks	L2	CO2	PO1
	b)	Explain the how a centrifugal compressor impeller is designed.	7 Marks	L2	CO2	PO1

UNIT-III

5.	a)	What are the basic requirements of a combustion chamber? Explain.	7 Marks	L2	CO3	PO1
	b)	Explain the process of combustion in gas turbine combustion chambers.	7 Marks	L1	CO3	PO1
		(OR)				
6.		Explain the combustion chamber geometry bringing out the various zones that play a part in the process of combustion with a neat sketch.	14 Marks	L2	CO3	PO1

UNIT-IV

7.	a)	Explain the working of Turbo Propulsive Jet engine with neat sketch.	7 Marks	L1	CO4	PO1 PO2
	b)	Discuss the terms propulsive efficiency and overall efficiency.	7 Marks	L1	CO4	PO1 PO2
		(OR)				

8.		What are the advantages and disadvantages of ram jet engine and what are its applications? Also outline the Basic cycle for Turbo Jet engine with TS Chart.	14 Marks	L2	CO4	PO1
		UNIT-V				
9.		Draw a schematic diagram of a liquid propellant rocket. What are thedifferent systems of injecting liquid propellant into the combustionchamber?	14 Marks	L2	CO5	PO1
		(OR)				
10.	a)	Draw a schematic diagram of a liquid propellant rocket and explain its working. What are the applications of this type of rocket?	7 Marks	L2	CO5	PO1 PO5
	b)	Briefly describe the two types of solid propellant rocket.	7 Marks	L2	CO5	PO1

