

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech I Year I Semester Supplementary Examinations November-2024**

**APPLIED CHEMISTRY**

**(Common to EEE & ECE)**

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a What is a Fuel cell? Describe the Construction and Working of Methanol – Oxygen Fuel cell. CO1 L2 7M  
b Write a short note on Photo Galvanic cell. CO1 L1 5M

**OR**

- 2 Define Conductometric titrations. Discuss all types of Acid-Base Conductometric titrations .Explain the nature of the graphs between conductance and volume of titrant used. CO1 L4 12M

**UNIT-II**

- 3 Derive Schrodinger wave equation? Explain the significance of the  $\Psi$  and  $\Psi^2$ . CO2 L3 12M

**OR**

- 4 a Explain the band theory of solids. CO2 L2 5M  
b What is doping? Explain the role of doping on band structures. CO2 L2 7M

**UNIT-III**

- 5 Write the preparation, properties and application of Buna-S rubber and Buna-N rubber. CO3 L3 12M

**OR**

- 6 a Write a note on Thermoplastic and Thermosetting resin. CO3 L2 6M  
b Describe the preparation, properties and uses of Nylon-6,6. CO3 L3 6M

**UNIT-IV**

- 7 Explain principle and instrumentation of UV-visible spectroscopy with neat diagram. CO4 L2 12M

**OR**

- 8 a Write a short note on Beer-Lambert's Law. CO4 L3 6M  
b Write a note on atomic absorption and molecular absorption. CO4 L2 6M

**UNIT-V**

- 9 a Write an account on Carbon Nano Tubes. CO5 L2 6M  
b Write a note on Fullerenes. CO5 L2 6M

**OR**

- 10 Explain in detail about principle and application of semiconductors. CO5 L2 12M

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
**(AUTONOMOUS)**  
**B.Tech II Year I Semester Supplementary Examinations November-2024**  
**MANAGEMENT SCIENCE**  
**(Open Elective-1)**

**Time: 3 Hours****Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 Mention the elements of Scientific Management outlined by Taylor 's scientific theory. CO1 L6 12M

**OR**

- 2 What do you mean by Departmentation? Evaluate any three methods of Departmentation. CO1 L5 12M

**UNIT-II**

- 3 a Write short notes on "Marketing mix". CO2 L1 6M  
 b Write short notes on "Types of advertising". CO2 L1 6M

**OR**

- 4 Elaborate the ABC analysis and derive algebraic model of EOQ. CO2 L6 12M

**UNIT-III**

- 5 What are the steps involved in setting up grievance redressal machinery? CO3 L2 12M

**OR**

- 6 Explain and evaluate the process of recruitment and employee selection. CO3 L5 12M

**UNIT-IV**

- 7 Discuss about environmental scanning and explain the process in detail. CO4 L6 12M

**OR**

- 8 a Differentiate between PERT and CPM. CO5 L2 6M  
 b Define PERT and importance in Network analysis. CO5 L1 6M

**UNIT-V**

- 9 a Discuss Management Information System (MIS) and How it works in an organisation. CO3 L6 6M

- b State the needs for Supply Chain Management and its potential benefits. CO3 L1 6M

**OR**

- 10 a What is TQM and its importance? CO3 L1 6M  
 b What is balanced score card? How it is useful for a company? CO3 L1 6M

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech. II Year I Semester Supplementary Examinations November-2024**

**RELATIONAL DATABASE MANAGEMENT SYSTEM**

(Open Elective-1)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 1 | a Define Database. Discuss about applications of Database Systems. | CO1 | L1 | 6M |
|   | b Define Data Abstraction and explain about levels of Abstraction. | CO1 | L2 | 6M |

OR

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 2 | Explain about the Architecture of Database system. | CO1 | L2 | 12M |
|---|--|-----|----|-----|

**UNIT-II**

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 3 | Write about relational algebra. Discuss about different operators used in algebra. | CO2 | L2 | 12M |
|---|--|-----|----|-----|

OR

- |   |  |     |    |    |
|---|--|-----|----|----|
| 4 | a Define Join. Explain different types of joins.         | CO2 | L2 | 6M |
|   | b Write about the different symbols used in ER diagrams. | CO2 | L2 | 6M |

**UNIT-III**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 5 | a Discuss about Nested queries with an example.                          | CO3 | L1 | 6M |
|   | b Explain about Expression and string in Select command with an example. | CO3 | L2 | 6M |

OR

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 6 | Discuss about set comparison operators. | CO3 | L1 | 12M |
|---|---|-----|----|-----|

**UNIT-IV**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 7 | a Write short notes on Lossless join Decomposition.           | CO4 | L2 | 6M |
|   | b Write a short notes on Dependency preserving Decomposition. | CO4 | L2 | 6M |

OR

- |   |   |     |    |    |
|---|---|-----|----|----|
| 8 | a Comparison between 1NF, 2NF, and 3NF.                     | CO4 | L2 | 6M |
|   | b Illustrate redundancy and the problems that it can cause. | CO4 | L3 | 6M |

**UNIT-V**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 9 | a Discuss about Times tamp based locking protocols.        | CO5 | L6 | 6M |
|   | b Explain about failure with loss of non-volatile storage. | CO5 | L2 | 6M |

OR

- |    |  |     |    |    |
|----|--|-----|----|----|
| 10 | a Discuss how do you recover from failure. | CO5 | L6 | 6M |
|    | b What are the types of storage devices?   | CO5 | L1 | 6M |

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**

**DATABASE MANAGEMENT SYTEMS**

(Common to CSE & CSIT)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 1 | a Describe about various data models.                               | CO1 | L2 | 6M |
|   | b Enumerate the Data Abstraction and discuss levels of Abstraction. | CO1 | L1 | 6M |

**OR**

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 2 | Design ER Diagram for University using appropriate entities, attributes and relationships. | CO1 | L2 | 12M |
|---|--|-----|----|-----|

**UNIT-II**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 3 | a Illustrate project, join, select and product set operators with examples.               | CO2 | L2 | 6M |
|   | b Distinguish between two set theoretic operations of relational algebra with an example. | CO2 | L3 | 6M |

**OR**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 4 | a Analyze GROUP by and HAVING clauses with examples. | CO2 | L2 | 6M |
|   | b Define Join. Explain different types of joins.     | CO2 | L2 | 6M |

**UNIT-III**

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 5 | What is Normalization? Explain in detail 1NF, 2NF, 3NF, BCNF with example. | CO3 | L2 | 12M |
|---|--|-----|----|-----|

**OR**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 6 | a Outline redundancy and the problems that it can cause.                | CO3 | L2 | 6M |
|   | b Define functional dependencies. How are primary keys related to FD's? | CO3 | L2 | 6M |

**UNIT-IV**

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 7 | Demonstrate ACID properties them through examples. | CO4 | L2 | 12M |
|---|--|-----|----|-----|

**OR**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 8 | Interpret the Tmodifications in Timestamp-Based Concurrency control protocol. | CO4 | L3 | 12M |
|---|---|-----|----|-----|

**UNIT-V**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 9 | a List out classification of storage structure and discuss it. | CO5 | L2 | 6M |
|   | b Explain about the deadlock prevention schemes.               | CO5 | L2 | 6M |

**OR**

- |    |   |     |    |     |
|----|---|-----|----|-----|
| 10 | List out the various levels of RAID and explain with neat diagrams. | CO5 | L3 | 12M |
|----|---|-----|----|-----|

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**

**MICROPROCESSORS & MICROCONTROLLERS**

(Common to CSE & CSIT)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 With a neat sketch explain the operation of Microprocessor Controlled Temperature System (MCTS) CO1 L2 12M

OR

- 2 a Draw and explain the basic architecture of a microprocessor. CO1 L4 6M  
b Write short notes on input devices. CO1 L2 6M

**UNIT-II**

- 3 a Sketch neat block diagram of 8085 microprocessor. CO2 L2 6M  
b Explain the concept of De-multiplexing the Bus AD7-AD0. CO2 L2 6M

OR

- 4 a Explain briefly the control & status signals in 8085 $\mu$ P. CO2 L3 6M  
b Describe how timing and control signals are generated in 8085  $\mu$ P. CO2 L2 6M

**UNIT-III**

- 5 With the help of neat diagrams, Describe the differences between microprocessors and microcontrollers. CO3 L4 12M

OR

- 6 a Define register. Mention the need of registers in  $\mu$ P or  $\mu$ C. CO3 L2 6M  
b Mention the applications of microcontrollers in everyday life. CO3 L3 6M

**UNIT-IV**

- 7 a List various addressing modes of 8051 microcontroller and explain them with an example each. CO4 L2 6M  
b Explain Jump and Call instructions of 8051  $\mu$ C with an example. CO4 L3 6M

OR

- 8 a Describe the operation of return instruction in 8051  $\mu$ C with suitable example. CO4 L3 6M  
b Explain how the 8051  $\mu$ C performs rotate and swap operations with an example. CO4 L3 6M

**UNIT-V**

- 9 a With a neat diagram, show the interfacing of a 4x4 matrix keypad with 8051  $\mu$ C. CO5 L4 6M  
b List instruction command codes for programming an LCD. CO5 L2 6M

OR

- 10 Design and explain any microcontroller-based system. CO5 L5 12M

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**

**FLUID MECHANICS & HYDRAULICS MACHINERY**

(Mechanical Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 1 | a | Define and mention units for the following fluid properties: Density, specific weight, specific volume and specific gravity of a fluid. | CO1 | L1 | 8M |
|   | b | Calculate the density, specific weight and weight of one litre of a petrol of specific gravity is 0.7.                                  | CO1 | L3 | 4M |

OR

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 2 | a | Explain the terms of compressibility and bulk modulus. | CO1 | L2 | 6M |
|   | b | Obtain an expression for capillary rise of a liquid.   | CO1 | L2 | 6M |

**UNIT-II**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 3 | a | Define the terms: Stream line, streak line, path line, stream tube           | CO2 | L1 | 6M |
|   | b | Define rate of flow and derive continuity equation for one dimensional flow. | CO2 | L1 | 6M |

OR

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 4 |  | Explain different types of flow in detail. | CO2 | L2 | 12M |
|---|--|--|-----|----|-----|

**UNIT-III**

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 5 |  | Explain about Venturimeter with neat sketches. Derive expression for rate of flow through Venturimeter | CO3 | L2 | 12M |
|---|--|--|-----|----|-----|

OR

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 6 |  | List out minor losses in pipe flow and write the equations for all minor losses. | CO3 | L1 | 12M |
|---|--|--|-----|----|-----|

**UNIT-IV**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 7 | a | Derive an expression for the force exerted by a jet of water on an inclined fixed plate in the direction of the jet.   | CO4 | L2 | 6M |
|   | b | A jet of water of diameter 50 mm moving with a velocity of 40 m/s, strikes a curved fixed symmetrical plate at the centre. Find the force extracted by Jet of water in the direction of the jet, if the jet is deflected through an angle of 120° at the outlet of the curved plate. | CO4 | L4 | 6M |

OR

- |   |  |   |     |    |     |
|---|--|---|-----|----|-----|
| 8 |  | Derive an expression for the hydraulic efficiency when a liquid jet strikes an unsymmetrical moving curved plate when jet strikes tangentially at one of the tip. | CO4 | L2 | 12M |
|---|--|---|-----|----|-----|

**UNIT-V**

- |   |  |   |     |    |     |
|---|--|---|-----|----|-----|
| 9 |  | Explain the working principle of a Pelton wheel with a neat sketch and also derive equation for hydraulic efficiency. | CO5 | L2 | 12M |
|---|--|---|-----|----|-----|

OR

- |    |  |  |     |    |     |
|----|--|--|-----|----|-----|
| 10 |  | What are the working principle and design specifications of a Kaplan turbine? Explain. | CO5 | L2 | 12M |
|----|--|--|-----|----|-----|

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**

**C AND DATA STRUCTURES**

(Common to CSIT & CSE)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 1 | a | Explain the general form of a C program with an example.            | CO1 | L1 | 6M |
|   | b | What is an expression? Explain different categories of expressions. | CO1 | L2 | 6M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 2 | a | Discuss about multiway selection statement in C with examples.                | CO1 | L6 | 6M |
|   | b | Write a C program to check whether a given number is Armstrong number or not. | CO1 | L3 | 6M |

**UNIT-II**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 3 | a | Define function. List out the advantages of functions.                   | CO2 | L1 | 6M |
|   | b | Write a C program using function to exchange two numbers using pointers. | CO2 | L3 | 6M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 4 | a | Discuss any five string handling functions.                                | CO2 | L6 | 6M |
|   | b | Write a C program to illustrate call-by-value parameter passing technique. | CO2 | L3 | 6M |

**UNIT-III**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 5 | a | Define structure and give the general syntax for structure. Write suitable example program. | CO3 | L1 | 6M |
|   | b | Give difference between the structures and union.   | CO3 | L4 | 6M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 6 | a | What is a pointer? What are the features of pointers? Write a C program to print address of a variable. | CO3 | L1 | 6M |
|   | b | Explain the concept of pointer to pointers with examples.   | CO3 | L5 | 6M |

**UNIT-IV**

- |   |   |   |     |    |     |
|---|---|---|-----|----|-----|
| 7 | a | What are the advantages and disadvantages of stack? Write a program to illustrate stack operations. | CO4 | L3 | 12M |
|---|---|---|-----|----|-----|

**OR**

- |   |   |   |     |    |     |
|---|---|---|-----|----|-----|
| 8 | a | Discuss application of queue. Write a program on queue with array implementation. | CO4 | L5 | 12M |
|---|---|---|-----|----|-----|

**UNIT-V**

- |   |   |   |     |    |     |
|---|---|---|-----|----|-----|
| 9 | a | What do you mean by sorting? Mention different types of sorting. Explain Quicksort in detail. | CO5 | L1 | 12M |
|---|---|---|-----|----|-----|

**OR**

- |    |   |  |     |    |     |
|----|---|--|-----|----|-----|
| 10 | a | Implement the following single linkedlist operations:<br>i) Insertion of a node<br>ii) Deletion of a node<br>iii) Searching an element | CO5 | L3 | 12M |
|----|---|--|-----|----|-----|

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**

**COMPUTER ORGANIZATION & ARCHITECTURE**

(Common to CSE & CSIT)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Sketch the basic functional unit of computer and explain each unit in detail. CO1 L3 6M  
b Explain the Instruction Cycle with neat diagram. CO1 L4 6M

**OR**

- 2 a Summarize the Addressing Modes with neat sketch. CO1 L5 6M  
b Interpret Program Control Instructions. CO1 L3 6M

**UNIT-II**

- 3 a Compare signed number, 1's complement, 2's complement with an example. CO2 L5 4M  
b Illustrate the steps in Booth multiplication algorithm and Draw the flowchart with an example. CO2 L3 8M

**OR**

- 4 a Explain about signed number and fixed point representations. CO2 L2 6M  
b Invent the steps of Division restoring and draw the flow chart with an example. CO2 L6 6M

**UNIT-III**

- 5 a Define register transfer language? Explain in detail. CO3 L4 6M  
b Describe about 4-bit incrementer with suitable example. CO3 L2 6M

**OR**

- 6 a Design the block diagram of the hardware that implements the following register transfer statement P:  $R2 \leftarrow R1$ . CO3 L6 6M  
b Explain in detail about Arithmetic Micro Operations. CO3 L3 6M

**UNIT-IV**

- 7 a Define track and sector. Analyze the importance of auxiliary memory. CO4 L4 6M  
b Assess the Memory Hierarchy with neat sketch. CO4 L5 6M

**OR**

- 8 a What is Virtual Memory? Discuss how paging helps in implementing virtual memory. CO4 L2 6M  
b Describe the use of DMA controllers in a computer system with a neat block diagram. CO4 L2 6M

**UNIT-V**

- 9 a Write the characteristics of Multiprocessor. CO5 L3 6M  
b Describe the Interconnection Structures in detail. CO5 L3 6M

**OR**

- 10 a Categorize and discuss various forms of parallel processing based on Flynn's taxonomy with a neat sketch. CO5 L4 6M  
b Anticipate the conflicts in pipelining and describe about it. CO5 L6 6M

\*\*\* END \*\*\*



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech III Year I Semester Supplementary Examinations November-2024**  
**ELECTRICAL POWER GENERATION & TRANSMISSION SYSTEMS**

(Electrical & Electronics Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |           |  |     |    |     |
|-----------|--|-----|----|-----|
| 1         | Explain the important components of a steam power station.   | CO1 | L2 | 12M |
| <b>OR</b> |  |     |    |     |
| 2         | Draw a neat schematic diagram of a hydro-electric plant and explain the functions of various components. | CO2 | L1 | 12M |

**UNIT-II**

- |           |   |     |    |     |
|-----------|---|-----|----|-----|
| 3         | Draw the schematic diagram of a nuclear power station and discuss its operation.                              | CO2 | L1 | 12M |
| <b>OR</b> |   |     |    |     |
| 4         | Compare thermal, hydro and nuclear power plants on the basis of technical, mechanical and economical aspects. | CO2 | L3 | 12M |

**UNIT-III**

- |           |  |     |    |    |
|-----------|--|-----|----|----|
| 5         | a Derive the expression for the capacitance of a single phase two wire line.   | CO3 | L3 | 6M |
|           | b A single phase transmission line has two parallel conductors 3m apart, radius of each conductor being 1cm. Calculate the capacitance of the line per km.   | CO3 | L3 | 6M |
| <b>OR</b> |  |     |    |    |
| 6         | a What is Skin effect? Explain.  | CO3 | L1 | 6M |
|           | b Determine the inductance/phase/km of a double circuit 3-phase line. The radius of each conductor is 20mm and the conductors are placed on the circumference of an imaginary circle at a distance of 7m forming a regular hexagonal figure. | CO3 | L6 | 6M |

**UNIT-IV**

- |           |  |     |    |     |
|-----------|--|-----|----|-----|
| 7         | Derive expressions for sending end voltage and sending end current for a long transmission line using rigorous method.         | CO4 | L3 | 12M |
| <b>OR</b> |  |     |    |     |
| 8         | Derive equivalent mathematical expression for voltage regulation of a short transmission line with the help of phasor diagram. | CO4 | L2 | 12M |

**UNIT-V**

- |           |   |     |        |    |
|-----------|---|-----|--------|----|
| 9         | a Explain various types of insulators with neat diagrams and compare them.  | CO5 | L2     | 6M |
|           | b A three phase overhead line is suspended by a suspension type insulator, which consists of three units. The potential across top unit and middle unit are 12 kv and 18 kv respectively. Calculate: (i) the ratio of capacitance between pin and earth to the self capacitance of each unit (ii) The line voltage and (iii) String efficiency. | CO5 | L5     | 6M |
| <b>OR</b> |   |     |        |    |
| 10        | a What are the factors affecting corona? And derive the expressions for critical disruptive and visual critical voltage.  | CO5 | L1, L2 | 6M |
|           | b Derive the expression for sag and tension when the supports are at unequal heights.   | CO5 | L2     | 6M |

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)**

**B.Tech III Year I Semester Supplementary Examinations November-2024**

**ELECTRICAL MEASUREMENTS  
(Electrical & Electronics Engineering)**

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Derive an expression for the Deflecting torque in MI type instruments **CO1 L3 6M**  
 b List the advantages & disadvantages of MI type instruments. **CO1 L1 6M**  
 OR  
 2 What are the different types of damping systems? Explain them with neat diagram. **CO1 L1 12M**

**UNIT-II**

- 3 a Explain the features of De-Sauty's Bridge with a neat sketch. **CO2 L2 6M**  
 b List the advantages and disadvantages of Maxwell's Bridge. **CO2 L1 6M**  
 OR  
 4 Derive the general balance equation of DC and AC Bridges with suitable diagrams. What are the balance condition equations in polar and Rectangular forms? **CO2 L4 12M**

**UNIT-III**

- 5 a A single phase kilo watt hour meter makes 500 revolutions per kilo watt hour. It is found on testing as making 40 revolutions in 58.1 seconds at 5KW full load. Find the percentage error. **CO3 L4 6M**  
 b Explain driving system , moving system and braking system in a single phase induction type energy meter. **CO3 L2 6M**  
 OR  
 6 Explain with a neat sketch the construction and working of a single-phase Dynamometer type Wattmeter. **CO3 L2 12M**

**UNIT-IV**

- 7 From the fundamentals, derive the expressions for actual transformation ratio and phase angle of the potential transformer. **CO4 L3 12M**  
 OR  
 8 a what is a transducer? Explain classification of transducers. **CO4 L1 6M**  
 b Describe the principle and operation of capacitive transducer for angular displacement measurement. **CO4 L1 6M**

**UNIT-V**

- 9 Explain the determination of B -H loop using method of reversals. **CO5 L2 12M**  
 OR  
 10 Explain the internal structure of CRT with a neat diagram. **CO5 L2 12M**

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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech. III Year I Semester Supplementary Examinations November-2024**

**SOFTWARE ENGINEERING & TESTING**  
(Computer Science & Information Technology)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Compare iterative enhancement model and evolutionary process model. CO1 L2 6M  
b Discuss the prototyping model. What is the effect of designing a prototype on the overall cost of the software project? CO1 L2 6M

**OR**

- 2 a List the process maturity levels in SEI's CMM. Explain each level. CO1 L1 6M  
b Define data structure metrics. How can we calculate amount of data in a program? CO1 L1 6M

**UNIT-II**

- 3 a What is COCOMO Model? Explain Basic COCOMO model in detail. CO2 L2 6M  
b Suppose that a project was estimated to be 400 KLOC. Calculate the effort, development time for each of the three modes (i.e., organic, semidetached and embedded and analyze. CO2 L4 6M

**OR**

- 4 a Explain the Putnam resource allocation model. What are the limitations of this model. CO2 L2 6M  
b A software development project is planned to cost 95 MY in a period of 1 year and 9 months. Calculate the peak manning and average rate of software team build up. CO2 L4 6M

**UNIT-III**

- 5 a What is design? Describe the difference between conceptual design and technical design. CO3 L2 6M  
b What is modularity? List the important properties of a modular system. CO3 L1 6M

**OR**

- 6 a Discuss the objectives of software design. How do we transform an informal design to a detailed design? CO3 L2 6M  
b What is module cohesion? Classify different type of module cohesion. CO3 L2 6M

**UNIT-IV**

- 7 a Explain decision table based testing technique. CO4 L2 6M  
b Simplify data flow testing technique with an example. CO4 L2 6M

**OR**

- 8 a Explain mutation testing technique. CO4 L2 6M  
b Compare various debugging technique. CO4 L2 6M

**UNIT-V**

- 9 a Classify different categories of software documentation. CO5 L2 6M  
b Compare New software development and Re-engineering CO5 L2 6M

**OR**

- 10 Identify various software maintenance models and explain in details. CO5 L1 12M

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech III Year I Semester Supplementary Examinations November-2024**

**DATA WAREHOUSING AND DATA MINING**

(Common to CSIT & CSE)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 1 | a | Define Data mining? Explain about data mining on what kind of data. | CO1 | L1 | 6M |
|   | b | Compare Data Warehousing and Data Mining.                           | CO1 | L5 | 6M |

OR

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 2 | a | What motivated Data mining? Explain.                                 | CO1 | L1 | 6M |
|   | b | Explain Data mining as a step in the process of knowledge discovery. | CO1 | L5 | 6M |

**UNIT-II**

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 3 |  | Explain about OLAP operation in multidimensional data. | CO2 | L1 | 12M |
|---|--|--|-----|----|-----|

OR

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 4 |  | Construct lattice of cuboids given 4 dimensions: time, location, product and supplies. | CO2 | L2 | 12M |
|---|--|--|-----|----|-----|

**UNIT-III**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 5 | a | Explain about market basket Association mining.                                       | CO3 | L3 | 6M |
|   | b | Explain support, confidence and lift measure with respect to association rule mining. | CO3 | L3 | 6M |

OR

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 6 |  | Explain Multilevel Association rules and Multidimensional association rules for mining data. | CO3 | L5 | 12M |
|---|--|--|-----|----|-----|

**UNIT-IV**

- |   |  |   |     |    |     |
|---|--|---|-----|----|-----|
| 7 |  | What are the Issues regarding Classification and Prediction? Explain. | CO4 | L1 | 12M |
|---|--|---|-----|----|-----|

OR

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 8 |  | Define Bayes theorem. Explain the Naïve Bayesian Classification with an example. | CO4 | L1 | 12M |
|---|--|--|-----|----|-----|

**UNIT-V**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 9 | a | Define Clustering. List basic requirements of cluster analysis.    | CO5 | L1 | 6M |
|   | b | What is outlier analysis? Name the methods for detecting outliers, | CO5 | L1 | 6M |
- OR
- |    |   |   |     |    |    |
|----|---|---|-----|----|----|
| 10 | a | Inference the working of k-means clustering.                | CO5 | L4 | 6M |
|    | b | Compare Agglomerative and Divisive hierarchical clustering. | CO5 | L5 | 6M |

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)  
**B.Tech IV Year I Semester Supplementary Examinations November-2024**  
**FOUNDATION ENGINEERING**  
(Civil Engineering)

**Time: 3 Hours****Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

1 Explain various types of retaining walls with neat sketch. CO1 L2 12M

**OR**

2 Explain various requirements of stability analysis of Gravity retaining walls. CO1 L2 12M

**UNIT-II**

3 Discuss effect of water table on the bearing capacity of the soil with neat sketch? CO2 L2 12M

**OR**

4 What are different types of settlements that occur in a foundation? CO2 L2 12M

**UNIT-III**

5 Explain in detail In-situ penetration tests for pile capacity. CO3 L1 12M

**OR**

6 How would you estimate the load carrying capacity of a pile in  
(a) cohesion less soils CO3 L2 12M  
(b) cohesive soils by using static methods?

**UNIT-IV**

7 Discuss various forces acting on well foundation. CO4 L1 12M

**OR**

8 What are the advantages and disadvantages of pneumatic caisson over open caisson? CO4 L1 12M

**UNIT-V**

9 What are different types of sheet pile walls? Explain with neat sketch. CO5 L1 12M

**OR**

10 Explain in detail the pressure distribution of cantilever sheet pile in cohesion less soils with neat sketch. CO5 L3 12M

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**CONCRETE TECHNOLOGY**

(Civil Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 1 | a | Discuss about the chemical composition of Ordinary Portland cement. | CO1 | L2 | 6M |
|   | b | What are the different grades of cement and explain each.           | CO1 | L1 | 6M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 2 | a | What do you mean by soundness of aggregate? Explain.                               | CO1 | L1 | 6M |
|   | b | What is alkali-aggregate reaction? And how will it affect the concrete properties. | CO1 | L1 | 6M |

**UNIT-II**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 3 | a | Explain the Maturity concept for strength development of concrete.                  | CO2 | L2 | 6M |
|   | b | Explain the relation between compression strength and tensile strength of concrete. | CO2 | L2 | 6M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 4 | a | What is curing? What are the different methods of curing?                           | CO2 | L1 | 6M |
|   | b | Explain the relation between compression strength and tensile strength of concrete. | CO2 | L2 | 6M |

**UNIT-III**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 5 | a | What is shrinkage of concrete?                               | CO3 | L1 | 6M |
|   | b | Explain the various factors affecting shrinkage of concrete. | CO3 | L2 | 6M |

**OR**

- |   |  |   |     |    |     |
|---|--|---|-----|----|-----|
| 6 |  | Explain in detail about the rebound hammer test (NDT) that is conducted on existing structure to assess its strength with a neat diagram. | CO4 | L2 | 12M |
|---|--|---|-----|----|-----|

**UNIT-IV**

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 7 |  | Explain the phenomenon of corrosion in steel. Suggest the methods for corrosion control. | CO5 | L2 | 12M |
|---|--|--|-----|----|-----|

**OR**

- |   |  |  |     |    |    |
|---|--|--|-----|----|----|
| 8 |  | How would you improve the quality of concrete by doing surface treatment. Explain with appropriate examples. | CO5 | L2 | 6M |
|---|--|--|-----|----|----|

**UNIT-V**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 9 | a | Define the term "Mix Design of Concrete" and explain its significance.     | CO6 | L1 | 6M |
|   | b | Briefly discuss various methods of the mix design available in literature. | CO6 | L2 | 6M |

**OR**

- |    |  |   |     |    |     |
|----|--|---|-----|----|-----|
| 10 |  | Design a M30 concrete mix using IS method of Mix Design for the following data: | CO6 | L3 | 12M |
|    |  | i) Maximum size of aggregate - 20mm (Angular).                                  |     |    |     |
|    |  | ii) Degree of workability - 0.90 compaction factor.                             |     |    |     |
|    |  | iii) Quality control - good   |     |    |     |
|    |  | iv) Type of exposure - severe   |     |    |     |
|    |  | v) Specific Gravity: A. Cement-3.10 B. Sand -2.68 C. Coarse aggregate 2.69      |     |    |     |
|    |  | vi) Water absorption: A. Coarse aggregate -1.0% B. Fine aggregate - 2.0%        |     |    |     |
|    |  | vii) Free surface moisture: A. Coarse aggregate- Nil B. Fine aggregate-2.0%     |     |    |     |
|    |  | viii) Sand conforms to zone III grading.  |     |    |     |

Assume any other data required suitably

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**  
**ENVIRONMENTAL IMPACT ASSESSMENT & MANAGEMENT**

(Civil Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

1 a Explain about the identification of impacts on the environment by preliminary assessment. CO1 L2 6M

b List out the classification of environmental parameters in EIA. CO1 L1 6M

**OR**

2 a Mention any four types of events in cumulative impacts. CO1 L1 6M

b Give a detail note on preparation of EBM. CO1 L3 6M

**UNIT-II**

3 Discuss in detail about the criteria for the selection of EIA methodology. CO2 L3 12M

**OR**

4 a Write short notes on matrix method. CO2 L3 6M

b Make a note on impact interpretation and evaluation. CO2 L4 6M

**UNIT-III**

5 Explain about the environmental impact on soil and groundwater for a road construction project. CO2 L5 12M

**OR**

6 a List the conceptual approach to study surface water environment impacts. CO3 L1 6M

b What are the physical and chemical characteristics of water? Brief it. CO3 L1 6M

**UNIT-IV**

7 Give and explain the main causes for depletion of natural vegetation or biodiversity in India. CO4 L3 12M

**OR**

8 a Define noise, equivalent sound level and SENEL. CO4 L1 6M

b Write short notes on basic information on noise. CO4 L3 6M

**UNIT-V**

9 Discuss about the Environment protection act and its functions. CO5 L3 12M

**OR**

10 a Briefly explain about the factors to be considered in making assessment decisions. CO5 L2 6M

b What are the management requirements for the preparation of EIA for industrial projects? CO5 L1 6M

\*\*\* END \*\*\*



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**ELECTRICAL DISTRIBUTION SYSTEMS**

(Electrical & Electronics Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 Draw a schematic single line diagram of an electrical distribution system and explain its typical parts in detail. CO1 L3 12M

OR

- 2 a What is Load curve ? what is the importance of load curve? CO1 L2 6M  
b Define and explain the terms feeder, distributor & service mains with diagram. CO1 L2 6M

**UNIT-II**

- 3 a Explain with neat sketches radial type and loop type primary feeders. CO2 L3 6M  
b What are the advantages and disadvantages of AC distribution System. CO2 L2 6M

OR

- 4 A single phase distributor one km long has resistance and reactance per conductor of  $0.1 \Omega$  and  $0.15 \Omega$  respectively. At the far end, the voltage  $V_B = 200 \text{ V}$  and the current is  $100 \text{ A}$  at a p.f. of  $0.8$  lagging. At the mid-point M of the distributor, a current of  $100 \text{ A}$  is tapped at a p.f. of  $0.6$  lagging with reference to the voltage  $V_M$  at the mid-point. Calculate: (i) voltage at mid-point (ii) sending end voltage  $V_A$  (iii) phase angle between  $V_A$  and  $V_B$ . CO2 L4 12M

**UNIT-III**

- 5 a What is Neutral grounding? What are the advantages of neutral grounding. CO3 L2 6M

- b Explain Indoor and outdoor substation. CO3 L3 6M

OR

- 6 Draw the layout and schematic connection Pole-Mounted Sub-Station? Give the advantages and disadvantages. CO3 L3 12M

**UNIT-IV**

- 7 a Define power factor ? explain voltage and current relationship for different loads. CO4 L2 6M

- b How do you justify economically the connection of capacitors for the improvement of P.F? CO4 L4 6M

OR

- 8 How we can improve the power factor and explain different types of Power Factor Improvement Equipment. CO4 L4 12M

**UNIT-V**

- 9 Explain distribution automation? Give the various functions of distribution automation. CO5 L3 12M

OR

- 10 a What is communication ? Give Methods of Communication. CO5 L2 6M  
b Explain about Information technology and LAN. CO5 L3 6M

\*\*\* END \*\*\*



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**EMBEDDED SYSTEMS AND IOT**

(Electronics & Communications Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 1 | a | Define embedded system and various processors types of embedded processors. | CO1 | L1 | 6M |
|   | b | Distinguish between Von-Neumann and Harvard architecture.                   | CO1 | L2 | 6M |

**OR**

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 2 |  | With a neat diagram, explain the design process of an embedded system. | CO1 | L2 | 12M |
|---|--|--|-----|----|-----|

**UNIT-II**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 3 | a | Classify the protocols associated with network/internet layer of IoT. | CO3 | L2 | 6M |
|   | b | Explain the various link layer protocols of IoT.                      | CO3 | L2 | 6M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 4 | a | With the help of following sectors explain how IoT technology is impacting on the end-to-end value chain in the logistics sector:<br>(i)Route generation & scheduling (ii)Remote vehicle diagnostics. | CO2 | L2 | 6M |
|   | b | With the help of following sectors explain how IoT technology is impacting on the agriculture sector: (i) Smart Irrigation (ii) Green house control.  | CO2 | L2 | 6M |

**UNIT-III**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 5 | a | Explain the differences between Machines in M2M and Things in IoT.    | CO3 | L2 | 6M |
|   | b | Mention the communication protocols used for M2M local area networks. | CO3 | L1 | 6M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 6 | a | Develop a program for LCD and Keyboard programming interface for an Arduino. | CO3 | L3 | 6M |
|   | b | Construct a program in Arduino to work as a counter.                         | CO3 | L3 | 6M |

**UNIT-IV**

- |   |  |   |     |    |     |
|---|--|---|-----|----|-----|
| 7 |  | Describe the following steps involved in IoT system design methodology:<br>(i)Purpose & Requirements Specification (ii)Process Specification. | CO4 | L2 | 12M |
|---|--|---|-----|----|-----|

**OR**

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 8 |  | Explain the control flow statements such as if ,for,while and Range with an example. | CO4 | L2 | 12M |
|---|--|--|-----|----|-----|

**UNIT-V**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 9 | a | Write a short note on various raspberry pi interfaces used for data transfer.      | CO5 | L1 | 6M |
|   | b | Compare the various single board computers which are alternatives to Raspberry pi. | CO5 | L4 | 6M |

**OR**

- |    |   |  |     |    |    |
|----|---|--|-----|----|----|
| 10 | a | Illustrate how to interface a LED to raspberry pi and write a program to blink.  | CO6 | L3 | 6M |
|    | b | Design an automatic lightening system with LDR, Light and raspberry pi and Write a python program to support the working of that design. | CO6 | L3 | 6M |

\*\*\* END \*\*\*

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR 9  
(AUTONOMOUS)

B.Tech IV Year I Semester Supplementary Examinations November-2024

**SOFTWARE PROJECT MANAGEMENT**

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Describe Project Portfolio Management in brief with suitable examples CO1 L1 6M  
b Explain briefly strategic program management. CO1 L2 6M

OR

- 2 a Draw the architecture of SDLC explain it in detail. CO1 L3 6M  
b Outline the Evaluation of the Risk Process in detail. CO1 L2 6M

**UNIT-II**

- 3 a Explain various approaches involved in Agile Methods of process model. CO2 L2 6M  
b What is software prototyping and explain it detail with suitable eamples. CO2 L1 6M

OR

- 4 a Describe various software effort and cost estimation techniques including examples. CO2 L3 6M  
b Describe incremental delivery Plan model along with iterative process model. CO2 L3 6M

**UNIT-III**

- 5 a Explain various activities involved in creating critical paths or critical patterns. CO2 L2 6M  
b Describe Two Network Planning models in Activity Planning in brief. CO2 L3 6M

OR

- 6 a Illustrate different activity based approaches involved in Activity Planning. CO3 L2 6M  
b Explain in brief a framework for dealing with risk. CO3 L2 6M

**UNIT-IV**

- 7 a Explain Creation of Framework for Project Management and Control. CO5 L2 6M  
b Illustrate the visualizing progress in Project Management and Control. CO5 L2 6M

OR

- 8 a Explain about Software Configuration Management Control in detail. CO5 L2 6M  
b What is meant by project Monitoring explain it in detail? CO5 L1 6M

**UNIT-V**

- 9 a Describe in detail about Managing People in Software Environment. CO6 L3 6M  
b Discuss Ethical and Programmed concerns in briefly. CO6 L6 6M

OR

- 10 a Explain the organizational Behavior of staffing in software projects? CO6 L2 6M  
b What is the role of decision making in software projects and explain in detail? CO6 L1 6M

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**SOFT COMPUTING**

(Common to CSIT & CSE)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 1 | a | Explain the working of Artificial Neuron.              | CO1 | L2 | 8M |
|   | b | Differentiate Biological Neuron and Artificial Neuron. | CO1 | L4 | 4M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 2 | a | Explain McCulloch and Pitts Neuron Model.                        | CO1 | L2 | 6M |
|   | b | Demonstrate how AND function is implemented in M-P Neuron Model. | CO1 | L3 | 6M |

**UNIT-II**

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 3 |  | Explain the Back propagation of Neural Network with neat diagram and flochart. | CO2 | L2 | 12M |
|---|--|--|-----|----|-----|

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 4 | a | Generalize the Adaptive Resonance Theory Neural Network. | CO2 | L6 | 6M |
|   | b | Identify some applications of ART Model.                 | CO2 | L2 | 6M |

**UNIT-III**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 5 | a | Discuss the various operations on Classical Sets with simple Examples. | CO3 | L2 | 6M |
|   | b | List out the various relations on Classical Sets.                      | CO3 | L1 | 6M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 6 | a | Compare Mamdani FIS and Sugeno FIS.            | CO3 | L5 | 8M |
|   | b | Demonstrate the Fuzzy Decision Making briefly. | CO3 | L3 | 4M |

**UNIT-IV**

- |   |  |   |     |    |     |
|---|--|---|-----|----|-----|
| 7 |  | Explain the Various Operators in genetic algorithm. | CO4 | L2 | 12M |
|---|--|---|-----|----|-----|

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 8 | a | Explain the various cross over operations performed in GA. | CO4 | L2 | 6M |
|   | b | Illustrate the different bitwise operators in GA.          | CO4 | L3 | 6M |

**UNIT-V**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 9 | a | Infer the characteristics of Neuro-fuzzy Hybrid System.     | CO5 | L4 | 6M |
|   | b | Describe the working principle of Neuro-fuzzy system learn. | CO5 | L2 | 6M |

**OR**

- |    |  |   |     |    |     |
|----|--|---|-----|----|-----|
| 10 |  | Explain the operational features and working principle of fuzzy ARTMAP. | CO6 | L2 | 12M |
|----|--|---|-----|----|-----|

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**HUMAN COMPUTER INTERACTION**

(Common to CSE & CSIT)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |           |   |   |     |    |     |
|-----------|---|---|-----|----|-----|
| 1         | a | Explain in detail the concept of direct Manipulation. | CO1 | L2 | 6M  |
|           | b | Examine the importance of good design.                | CO1 | L3 | 6M  |
| <b>OR</b> |   |   |     |    |     |
| 2         |   | Analyze Xerox STAR's general principle.               | CO1 | L4 | 12M |

**UNIT-II**

- |           |   |  |     |    |     |
|-----------|---|--|-----|----|-----|
| 3         | a | Explain about business definition and requirement analysis.                      | CO2 | L2 | 6M  |
|           | b | Illustrate in detail User's knowledge and experience.                            | CO2 | L3 | 6M  |
| <b>OR</b> |   |  |     |    |     |
| 4         |   | Discuss various technological considerations involved in designing an interface. | CO2 | L2 | 12M |

**UNIT-III**

- |           |   |  |     |    |    |
|-----------|---|--|-----|----|----|
| 5         | a | What is a Menu? Why menus are important? Explain the functions of menus. | CO3 | L1 | 6M |
|           | b | Discuss about various operable controls in HCI.                          | CO3 | L2 | 6M |
| <b>OR</b> |   |  |     |    |    |
| 6         | a | Construct various structures of menus with diagrams.                     | CO4 | L6 | 6M |
|           | b | What are the various components of windows in HCI? Explain it.           | CO4 | L2 | 6M |

**UNIT-IV**

- |           |   |  |     |    |     |
|-----------|---|--|-----|----|-----|
| 7         |   | Discuss about components of Multimedia.                        | CO5 | L2 | 12M |
| <b>OR</b> |   |  |     |    |     |
| 8         | a | Compile different Guidelines for scope of testing              | CO5 | L6 | 6M  |
|           | b | Illustrate with necessary examples, the prototypes in testing. | CO5 | L3 | 6M  |

**UNIT-V**

- |           |   |   |     |    |     |
|-----------|---|---|-----|----|-----|
| 9         |   | Examine the following term<br>i) Indirect pointing devices<br>ii) Function keys of Keyboard | CO6 | L3 | 12M |
| <b>OR</b> |   |   |     |    |     |
| 10        | a | Write about the Borland J Builder interface building tool.                                  | CO6 | L1 | 6M  |
|           | b | Discuss about Microsoft Visual Studio.  | CO6 | L2 | 6M  |

\*\*\* END \*\*\*

4

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**SOFTWARE PROCESS & PROJECT MANAGEMENT**

(Computer Scienc & Information Technology)

**Time: 3 Hours**

(Answer all Five Units 5 x 12 = 60 Marks)

**Max. Marks: 60**

**UNIT-I**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 1 | a Define the Software Process Assessment with its levels in detail. | CO1 | L6 | 6M |
|   | b Distinguish between software process and software project.        | CO1 | L2 | 6M |

OR

- |   |  |     |    |    |
|---|--|-----|----|----|
| 2 | a Explain about the PCMM Process Reference Model in details.           | CO1 | L2 | 6M |
|   | b Explain different principles covered by Software maturity Framework. | CO1 | L2 | 6M |

**UNIT-II**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 3 | a Explain Conventional Software Management.   | CO2 | L2 | 6M |
|   | b Examine pragmatic software cost estimation. | CO2 | L4 | 6M |

OR

- |   |   |     |    |    |
|---|---|-----|----|----|
| 4 | a Outline the principles of modern software management. | CO2 | L2 | 6M |
|   | b Explain the elaboration phase in life cycle process.  | CO2 | L4 | 6M |

**UNIT-III**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 5 | a Explain an iteration workflow in details.                              | CO3 | L2 | 6M |
|   | b Name the different types of joint management reviews and explain each. | CO3 | L1 | 6M |

OR

- |   |  |     |    |    |
|---|--|-----|----|----|
| 6 | a Define conventional work breakdown structures in detail.             | CO3 | L1 | 6M |
|   | b Demonstrate the iteration planning places throughout the life cycle. | CO3 | L2 | 6M |

**UNIT-IV**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 7 | a Identify software management team activities. | CO4 | L3 | 6M |
|   | b List down Quality indicator and explain each. | CO4 | L1 | 6M |

OR

- |   |  |     |    |    |
|---|--|-----|----|----|
| 8 | a Discuss software project team evolution over the life cycle. | CO4 | L2 | 6M |
|   | b Explain management indicators.                               | CO4 | L2 | 6M |

**UNIT-V**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 9 | a Define Modern Process Transitions in detail.  | CO5 | L1 | 6M |
|   | b Explain about the incremental design process. | CO5 | L2 | 6M |

OR

- |    |   |     |    |    |
|----|---|-----|----|----|
| 10 | a Explain about the Next-Generation Software Economics in detail.           | CO5 | L2 | 6M |
|    | b Illustrates the software organization evolution and FSD responsibilities. | CO5 | L2 | 6M |

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)**

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**CYBER SECURITY**

**(Computer Science and Engineering)**

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

1 What is cybercrime? Explain the classification of cybercrimes. [L2][CO1] 12M

**OR**

2 a Summarize about cybercrime in “the legal perspective” [L2] [CO4] 6M

b Summarize about cybercrime in “the Indian perspective” [L2] [CO4] 6M

**UNIT-II**

3 a Discuss about Social Engineering. [L2][CO2] 6M

b Explain each type of Social Engineering in detail. [L2][CO2] 6M

**OR**

4 a Write importance of BOTNETS. [L1][CO2] 6M

b Discuss about how the BOTNETS are acts as Fuel for Cybercrime in detail. [L2][CO4] 6M

**UNIT-III**

5 a Compare Mobile Computing Vs Wireless Computing. [L5][CO3] 6M

b Distinguish Malwares, viruses and worms. [L4][CO3] 6M

**OR**

6 Express the steps used in authentication service security. [L6] [CO5] 12M

**UNIT-IV**

7 a Explain in detail about Spywares and How it harms our machine. [L2][CO4] 6M

b Distinguish Virus and Worms? How it harms our machine. [L5][CO4] 6M

**OR**

8 a Define DOS and DDOS. [L1][CO4] 6M

b Apply the concept of Daniel of Service with an example and Explain. [L3] [CO4] 6M

**UNIT-V**

9 a Examine Web threats for organization in detail [L4][CO6] 6M

b List the security and privacy implications in detail [L1][CO5] 6M

**OR**

10 Explain in detail about security risks and perils for organizations. [L2][CO5] 12M

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**CRYPTOGRAPHY & NETWORK SECURITY**

(Computer Science & Information Technology)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 1 | a Demonstrate the OSI security architecture. | CO1 | L3 | 6M |
|   | b Explain about symmetric key cryptography.  | CO1 | L2 | 6M |

OR

- |   |  |     |    |    |
|---|--|-----|----|----|
| 2 | a List and briefly define categories of passive and active security attacks. | CO1 | L2 | 6M |
|   | b Describe the various security mechanisms.                                  | CO1 | L2 | 6M |

**UNIT-II**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 3 | a Consider and Evaluate a Diffie-Hellman scheme with a common prime $q=11$ and a primitive root $\alpha=2$ . a. Show that 2 is a primitive root of 11. b. If user A has public key $Y_a = 9$ , what is A's private key $X_a$ ? c. If user B has public key $Y_b = 3$ , what is the secret key $K$ shared with A? | CO2 | L4 | 6M |
|   | b Design principles of block cipher.   | CO2 | L3 | 6M |

OR

- |   |   |     |    |    |
|---|---|-----|----|----|
| 4 | a Analyze the Blowfish algorithm with a neat diagram                          | CO2 | L3 | 6M |
|   | b Encrypt the message $M=4$ for $p=3$ , $q=5$ when $e=3$ using RSA Algorithm. | CO2 | L3 | 6M |

**UNIT-III**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 5 | a Describe any one method of efficient implementation of HMAC.         | CO3 | L2 | 6M |
|   | b Explain about symmetric key distribution using symmetric encryption. | CO3 | L2 | 6M |

OR

- |   |  |     |    |    |
|---|--|-----|----|----|
| 6 | a Define digital signature and discuss its role in network security.     | CO3 | L2 | 6M |
|   | b Why Kerberos is needed? What problem was Kerberos designed to address? | CO3 | L2 | 6M |

**UNIT-IV**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 7 | a Evaluate the different protocols of SSL. Explain Handshake protocol in detail. | CO4 | L3 | 6M |
|   | b List out the wireless network threats and discuss it.                          | CO4 | L2 | 6M |

OR

- |   |   |     |    |    |
|---|---|-----|----|----|
| 8 | a Discuss about transport layer security.                 | CO4 | L2 | 6M |
|   | b Specify the security threats related to mobile devices. | CO4 | L2 | 6M |

**UNIT-V**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 9 | a Draw and explain PGP Cryptographic function for Authentication. | CO5 | L2 | 6M |
|   | b Explain about authentication header.                            | CO5 | L2 | 6M |

OR

- |    |  |     |    |    |
|----|--|-----|----|----|
| 10 | a List out the four principal services provided by S/MIME. | CO5 | L2 | 6M |
|    | b Elaborate different categories of IPsec documents.       | CO5 | L2 | 6M |

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)  
**B.Tech IV Year I Semester Supplementary Examinations November-2024**  
**CLOUD COMPUTING**  
(Common to CSE & CSIT)

**Time: 3 Hours****Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Discuss the various Distributed System Design objectives. CO1 L3 6M  
b Describe in detail about the Technologies for network based systems. CO1 L4 6M

**OR**

- 2 a What is Virtual Machine? What are the VM Primitive Operations? Explain it with appropriate diagrams. CO1 L3 6M  
b Differentiate SAN and WAN. CO1 L3 6M

**UNIT-II**

- 3 a Define service Model. Determine the Service Model. CO2 L4 6M  
b Differentiate between IaaS And SaaS. CO2 L3 6M

**OR**

- 4 a Elaborate the concept of SLA Management. CO2 L3 6M  
b Analyze Cons in Cloud Computing. CO2 L4 6M

**UNIT-III**

- 5 a Write a note on Virtualization support at the OS level CO3 L3 6M  
b Explain the levels of virtualization implementation CO3 L4 6M

**OR**

- 6 a Classify Physical and Virtual Clusters. CO3 L3 6M  
b Explain the Migration of Memory , File System and Network Resources. CO3 L2 6M

**UNIT-IV**

- 7 a Discuss about components of IAM. CO4 L4 6M  
b Compare Authorization Methods and Authentication Methods. CO4 L3 6M

**OR**

- 8 a Compare the Network, Host and Application Levels. CO4 L3 6M  
b Discuss aspects of data security. CO4 L2 6M

**UNIT-V**

- 9 a Compare mobile computing and cloud computing. CO5 L3 6M  
b Explain about Benefits of mobile cloud computing. CO5 L2 6M

**OR**

- 10 a Describe about personal data storage on mobile cloud. CO5 L3 6M  
b Identify the approaches in mobile augmentation. CO5 L2 6M

**\*\*\* END \*\*\***



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Supplementary Examinations November-2024**

**ENTREPRENEURSHIP DEVELOPMENT**

(Common to ECE, CSE & CSIT)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 1 | a | Elucidate the characteristics of entrepreneur.             | CO1 | L1 | 6M |
|   | b | Distinguish between Entrepreneurship and Intrapreneurship. | CO1 | L3 | 6M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 2 | a | Write short note on social entrepreneurship.    | CO1 | L1 | 6M |
|   | b | Briefly explain various types of entrepreneurs. | CO1 | L2 | 6M |

**UNIT-II**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 3 | a | Discuss about the role of MSMEs in improving the economy. | CO2 | L2 | 6M |
|   | b | Explain the classification of MSMEs.                      | CO2 | L1 | 6M |

**OR**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 4 | a | Distinguish Between Private Company and Public Company. | CO2 | L3 | 6M |
|   | b | State the features of Partnership.                      | CO2 | L4 | 6M |

**UNIT-III**

- |   |   |   |     |    |    |
|---|---|---|-----|----|----|
| 5 | a | Creativity and Innovation are interrelated or different- Comment. | CO3 | L4 | 6M |
|   | b | List out the best sources of Innovation in Business.              | CO3 | L3 | 6M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 6 | a | Describes the types of Intellectual Property Rights.       | CO3 | L2 | 6M |
|   | b | What is e-commerce and why it is important for start- ups? | CO3 | L1 | 6M |

**UNIT-IV**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 7 | a | Explain Maslow's Need Hierarchy Theory in detail.            | CO4 | L2 | 6M |
|   | b | What are the needs of Entrepreneurship Development Programs? | CO4 | L2 | 6M |

**OR**

- |   |   |  |     |    |    |
|---|---|--|-----|----|----|
| 8 | a | Explain Short term source financing in brief.                    | CO4 | L2 | 6M |
|   | b | Role of government agencies in small business financing-Discuss. | CO4 | L4 | 6M |

**UNIT-V**

- |   |  |  |     |    |     |
|---|--|--|-----|----|-----|
| 9 |  | Define project Planning. Determine the stages of the project planning process. | CO5 | L2 | 12M |
|---|--|--|-----|----|-----|

**OR**

- |    |   |   |     |    |    |
|----|---|---|-----|----|----|
| 10 | a | Examine project life cycle in detail.             | CO5 | L4 | 6M |
|    | b | Describe about Project post Feasibility analysis. | CO5 | L2 | 6M |

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations November-2024

**ENGINEERING MECHANICS**

(Common to CE, AGE & ME)

Time: 3 Hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Classify different systems of forces with suitable examples CO1 L2 6M  
 b The resultant of the two forces, when they act at an angle of  $60^\circ$  is 14 N. CO1 L4 6M  
 If the same forces are acting at right angles, their resultant is  $\sqrt{137}$  N.  
 Determine the magnitude of the two forces.

OR

- 2 a Explain free-body diagram with an example. CO1 L2 4M  
 b State and prove Lami's theorem. CO1 L1 8M

**UNIT-II**

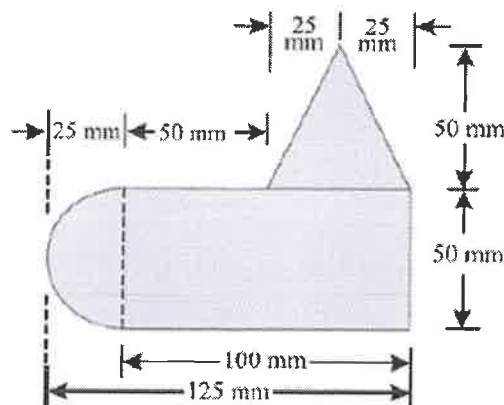
- 3 a State laws of friction. CO2 L1 8M  
 b Explain *Cone of Friction* with a neat sketch. CO2 L2 4M

OR

- 4 Define the following: CO2 L1 12M  
 (a) Limiting Force of Friction  
 (b) Kinetic Friction  
 (c) Co-efficient of Friction  
 (d) Angle of Friction  
 (e) Angle of Repose

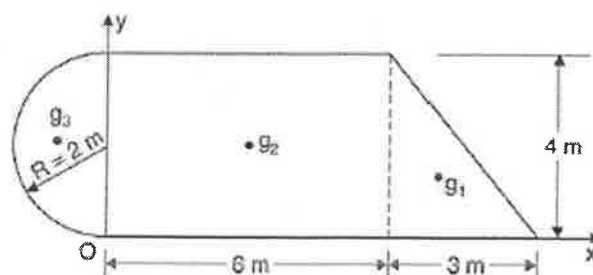
**UNIT-III**

- 5 A uniform lamina shown in the figure below consists of a rectangle, a circle and a triangle. Determine the centre of gravity of the lamina. All dimensions are in mm. CO3 L4 12M



OR

- 6 Determine the centroid of the area shown in the figure below with CO3 L4 12M respect to the axis shown.



**UNIT-IV**

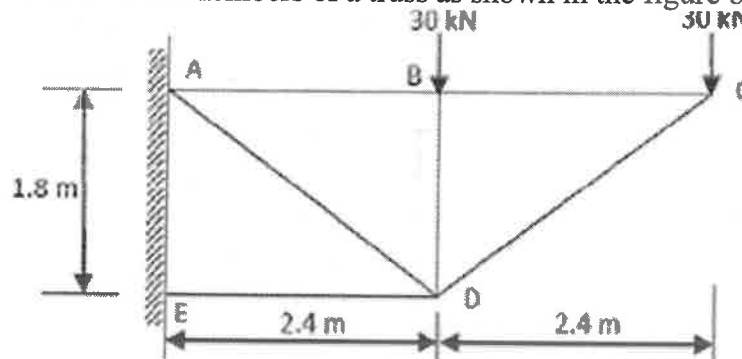
- 7 Prove the parallel axis theorem in the determination of the moment of inertia of areas with the help of a neat sketch **CO4 L4 12M**

**OR**

- 8 Derive an equation for the moment of inertia of the following sections about the centroidal axis: **CO4 L4 12M**  
a) A rectangular section  
b) A triangular section from its base

**UNIT-V**

- 9 Find the forces in the members of a truss as shown in the figure below. **CO5 L3 12M**



**OR**

- 10 a) What is a cantilever truss? How will you find out its reactions? **CO5 L1 12M**  
b) State the assumptions made in the analysis of pin jointed trusses. **&**  
c) How method of joint differs from the method of section in the analysis of pin jointed trusses? **L2**  
d) What is meant by perfect frame?  
e) What are the types of vibrations?

**\*\*\* END \*\*\***

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**  
**NETWORK THEORY**

(Electronics & Communication Engineering)

**Time: 3 Hours**

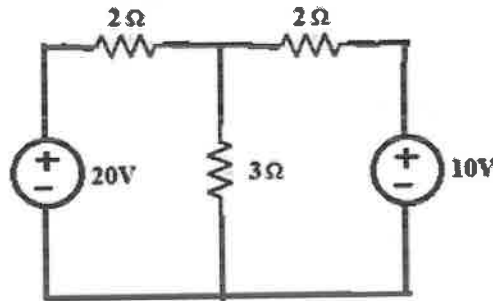
**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a State and prove Compensation theorem.  
b Verify Tellegen's theorem for the circuit shown in below figure.

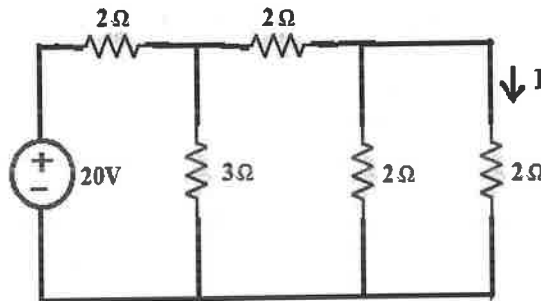
CO2 L2 6M  
CO2 L4 6M



OR

- 2 a State and prove Milliman's theorem  
b Verify reciprocity theorem for the network shown in below figure.

CO2 L2 6M  
CO2 L4 6M



**UNIT-II**

- 3 Explain about Constant-K low-pass filter in detail.

CO6 L3 12M

OR

- 4 a Explain about Propagation constant and Characteristic impedance in  $\Pi$ -network filters  
b Design Low Pass Filter in both T &  $\Pi$  section having a cut off frequency of 2KHz to operate with a terminated load resistance of 500  $\Omega$ .

CO6 L2 6M  
CO6 L2 6M

**UNIT-III**

- 5 Derive the Transient Response of series RLC-circuit with D.C excitation

CO3 L2 12M

OR

- 6 Derive the Transient Response of Series RLC circuit with Sinusoidal excitation.

CO3 L2 12M

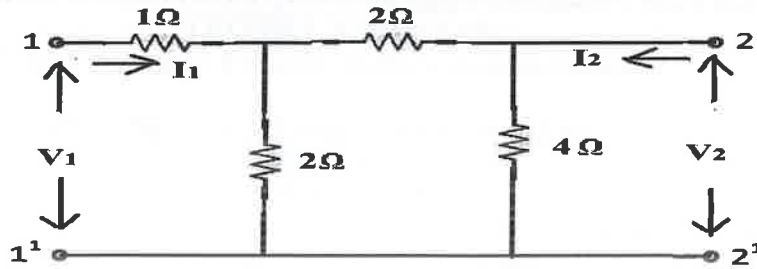
**UNIT-IV**

- 7 a The given ABCD parameters are,  $A=2$ ,  $B=0.9$ ,  $C=1.2$ ,  $D=0.5$ . Find Y-parameters  
b The given Y-parameters are,  $Y_{11}=0.5$ ,  $Y_{12}=Y_{21}=0.6$ ,  $Y_{22}=0.9$ . Find Z-parameters

CO5 L4 6M  
CO5 L4 6M

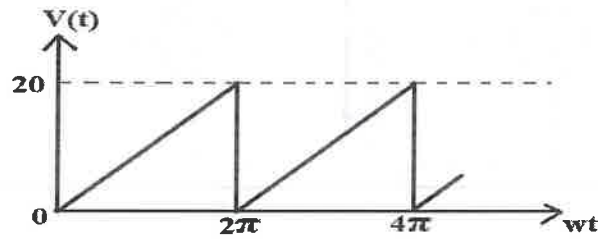
OR

- 8 a Derive the expressions for Y-parameters in terms of ABCD parameters. **CO5 L2 6M**  
b Determine the y-parameters of the following network. **CO5 L4 6M**



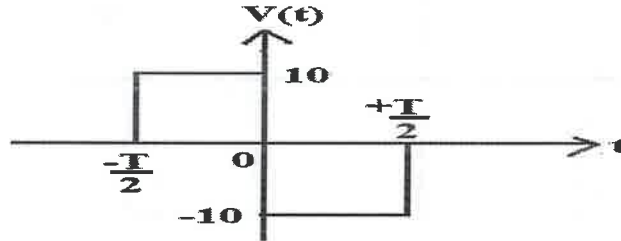
**UNIT-V**

- 9 a Derive the Trigonometric form of Fourier series. **CO4 L2 6M**  
b Find the Fourier series for the following waveform. **CO4 L4 6M**



OR

- 10 a Explain about Line spectrum and Phase spectrum. **CO4 L2 6M**  
b Obtain the magnitude and phase spectrum of the waveform shown in figure. **CO4 L2 6M**



\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**  
**NUMERICAL METHODS AND TRANSFORMS**

(Electronics & Communication Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 Find the real root of the equation  $xe^x - \cos x = 0$  by Newton Raphson method correct up to 3 decimal places. CO1 L3 12M

OR

- 2 Estimate the values of  $f(22)$  from the following data: CO1 L4 12M

x	20	25	30	35	40	45
f(x)	354	332	291	260	231	204

**UNIT-II**

- 3 a Solve  $y' = x + y$ ;  $y(1) = 0$  using Taylor's series method, find an approximate value of  $y(1.2)$  CO1 L3 6M

- b Solve  $y' = y^2 + x$ ,  $y(0) = 1$  by the Euler's method to find the approximate values for  $y(0.2)$ . CO1 L3 6M

OR

- 4 Evaluate  $\int_0^1 \frac{1}{1+x} dx$  by (a) Trapezoidal rule (b) Simpson's 1/3 rule CO1 L3 12M  
(c) Simpson's 3/8 rule and compare results with actual values.

**UNIT-III**

- 5 a Find  $L \left\{ \frac{e^{-at} - e^{-bt}}{t} \right\}$  CO1 L3 6M

- b  $L^{-1} \left( \frac{s^2}{(s^2+4)(s^2+25)} \right)$  using convolution theorem. CO1 L3 6M

OR

- 6 Solve the following differential equation using Laplace transform: CO1 L4 12M  
 $y'' - 3y' + 2y = 4t + e^{3t}$ ;  $y(0) = 1$ ,  $y'(0) = 1$

**UNIT-IV**

- 7 a Find the Fourier series of the function  $f(x) = x$ ,  $-\pi \leq x \leq \pi$  CO4 L2 6M

- b Obtain the Fourier series expansion of  $f(x) = (x - x^2)$  in the interval CO4 L3 6M

$[-\pi, \pi]$ . Hence show that  $\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \dots = \frac{\pi^2}{12}$

OR

- 8 a Find the Fourier sine series of the function  $f(x) = \cos x$ ,  $0 \leq x \leq \pi$ . CO4 L3 6M

- b Find the half range sine series expansion of  $f(x) = x^2$ ;  $0 < x < 4$  CO4 L3 6M

**UNIT-V**

- 9 Find the Fourier transform of  $f(x) = \begin{cases} a^2 - x^2, & |x| \leq a \\ 0, & |x| > a \end{cases}$  Hence deduce **C05 L3 12M**  
that  $\int_0^\infty \frac{\sin t - t \cos t}{t^3} dt = \frac{\pi}{4}$

**OR**

- 10 a Prove that  $F\{x^n f(x)\} = (-i)^n \frac{d^n}{ds^n} [F(s)]$  **C05 L3 6M**

- b Find the Fourier cosine transform of  $e^{-ax} \cos ax; a > 0$  **C05 L3 6M**

**\*\*\* END \*\*\***

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**  
**ENGINEERING THERMODYNAMICS**

(Agricultural Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |           |   |   |     |    |     |
|-----------|---|---|-----|----|-----|
| 1         | a | What do you understand by path function and point function? What are the exact and inexact differentials?     | CO1 | L1 | 6M  |
|           | b | State the thermodynamic system control volume.  | CO1 | L1 | 6M  |
| <b>OR</b> |   |   |     |    |     |
| 2         |   | Explain thermodynamics system, surrounding and universal. Distinguish between closed, open, isolated Systems. | CO1 | L2 | 12M |

**UNIT-II**

- |           |   |  |     |    |     |
|-----------|---|--|-----|----|-----|
| 3         | a | The air in a system expands from a temperature of 60°C to 300°C at a constant pressure of 2 bars. Calculate the heat transfer, work done and change in internal energy. The mass of the air is 0.6 Kg. Assume $C_p=1.02 \text{ KJ/Kg}^K$ and $C_v=0.71 \text{ KJ/Kg}^K$ for air. | CO2 | L3 | 6M  |
|           | b | State second law of thermodynamics.  | CO2 | L1 | 6M  |
| <b>OR</b> |   |  |     |    |     |
| 4         |   | Explain reversible and irreversible process.   | CO2 | L2 | 12M |

**UNIT-III**

- |           |   |   |     |    |    |
|-----------|---|---|-----|----|----|
| 5         | a | Sketch the following processes on P-V and T-S diagrams (i) constant volume (ii) constant pressure (iii) constant temperature (iv) isentropic process (v) polytropic process.  | CO3 | L4 | 6M |
|           | b | In a closed vessel a certain quantity of gas is heated from 200 KN/m <sup>2</sup> to 500 KN/m <sup>2</sup> . If the volume of the vessel is 5000 liters find the quantity of i) heat transfer, ii) change in internal energy, iii) work done. $c_p=1.005 \text{ KJ/kg}^k$ and $c_v=0.715 \text{ KJ/kg}^k$ . | CO3 | L3 | 6M |
| <b>OR</b> |   |   |     |    |    |
| 6         | a | What is the gas equation of ideal gas?  | CO3 | L1 | 6M |
|           | b | State Dalton's law of partial pressures.  | CO3 | L1 | 6M |

**UNIT-IV**

- |           |   |   |     |    |     |
|-----------|---|---|-----|----|-----|
| 7         |   | Derive an expression for the thermal efficiency of Ericson cycle and draw P-V & T-S diagrams.                     | CO4 | L4 | 12M |
| <b>OR</b> |   |   |     |    |     |
| 8         | a | Derive an expression for the thermal efficiency of Carnot cycle and draw P-V & T-S diagrams.                      | CO4 | L4 | 6M  |
|           | b | Find the change in enthalpy steam, initial pressure 5 bar and 0.98 then it will reach 10 bar and 250 temperature. | CO4 | L3 | 6M  |



**UNIT-V**

- 9 a State the advantages and disadvantages of a Reheat cycle. **CO5 L1 6M**  
b A Steam power plant operates at a pressure of 15 bar, 300°C expands through a high pressure turbine. It is reheated at a pressure of 4 bars to 300°C and expands through the low pressure turbine to a condenser pressure of 0.1 bar. Determine work done and cycle efficiency. **CO5 L3 6M**

**OR**

- 10 a Describe the different operations of Rankine cycle and also derive the expression for its efficiency. **CO5 L1 6M**  
b A steam power plant works between 40 bar and 0.05 bar. If the steam supplied is dry saturated and the cycle of operation is Rankine, Find: (i) Cycle efficiency, (ii) Specific steam consumption. **CO5 L3 6M**

**\*\*\* END \*\*\***

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations November-2024**  
**PROBABILITY, NUMERICAL METHODS AND TRANSFORMS**

(Electrical & Electronics Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a A class consists of 6 girls and 10 boys. If a committee of 3 is chosen at random from the class, find the Probability that (i) 3 boys are selected (ii) Exactly 2 girls are selected. CO1 L1 6M
- b Three students A, B, C are in running race. A and B have the same Probability of winning and each is twice as likely to win as C. Find the Probability that B or C wins CO1 L2 6M

OR

- 2 a Determine (i)  $P(B/A)$  (ii)  $P(A/B^c)$  if A and B are events with  $P(A) = \frac{1}{3}$ ,  $P(B) = \frac{1}{4}$ ,  $P(A \cup B) = \frac{1}{2}$ . CO1 L5 6M
- b A businessman goes to hotel X, Y, Z, 20%, 50%, 30% of the time respectively. It is known that 5%, 4%, 8% of the rooms in X, Y, Z hotels have faulty plumbing. What is the probability that businessman's room having faulty plumbing is assigned to hotel Z CO1 L1 6M

**UNIT-II**

- 3 By applying Bisection method to find a positive root of  $x^3 - x - 1 = 0$  correct to two decimal places CO2 L3 12M
- OR
- 4 From the following table values of x and  $y = \tan x$ . Find the values of y when  $x = 0.12$  and  $x = 0.28$ . CO2 L3 12M

x	0.10	0.15	0.20	0.25	0.30
y	0.1003	0.1511	0.2027	0.2553	0.3093

**UNIT-III**

- 5 Using R-K method of 4<sup>th</sup> order find  $y(0.1)$ ,  $y(0.2)$  and  $y(0.3)$  given that  $\frac{dy}{dx} = 1 + xy$ ,  $y(0) = 2$ . CO3 L3 12M

OR

- 6 Evaluate  $\int_0^1 \frac{1}{1+x} dx$  (i) by Trapezoidal rule and Simpson's  $\frac{1}{3}$  rule. CO3 L5 12M
- (ii) Using Simpson's  $\frac{3}{8}$  rule and compare the result with actual value

**UNIT-IV**

- 7 a Determine the Laplace transform of  $f(t) = e^{3t} - 2e^{-2t} + \sin 2t + \cos 3t + \sinh 3t - 2\cosh 4t + 9$ . CO4 L2 6M
- b Determine  $L^{-1} \left\{ \frac{1}{(s^2 + 5^2)^2} \right\}$ , using Convolution theorem. CO4 L2 6M

OR

- 8 Solve  $\frac{d^2x}{dt^2} + 2\frac{dx}{dt} + x = 3te^{-t}$  using Laplace Transform given that CO4 L3 12M  
 $x(0) = 4; \frac{dx}{dt} = 0 \text{ at } t = 0$

**UNIT-V**

- 9 a Applying linearity property, find the Z-transforms of the following CO5 L5 6M  
functions (i)  $an^2 + bn + c$  (ii)  $(n-1)^2$
- b If  $F(z) = \frac{5z^2 + 3z + 12}{(z-1)^4}$ , What are the values of  $f(2)$  and  $f(3)$ ? CO5 L3 6M

**OR**

- 10 Solve  $y_{n+2} + 2y_{n+1} + y_n = n$  using the Z-transform given that  $y_0 = y_1 = 0$  CO5 L6 12M

\*\*\* END \*\*\*

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)**

**B.Tech III Year I Semester Supplementary Examinations November – 2024  
CONTROL SYSTEMS**

(Common to ECE & EEE)

**Time: 3 Hours**

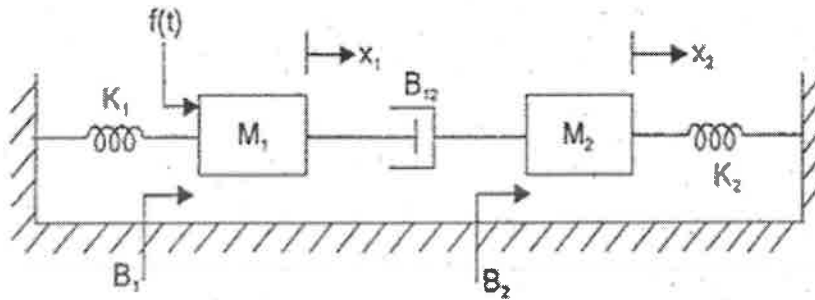
**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 Determine the transfer function,  $\frac{X_1(s)}{F(s)}$  and  $\frac{X_2(s)}{F(s)}$  for the system shown in fig

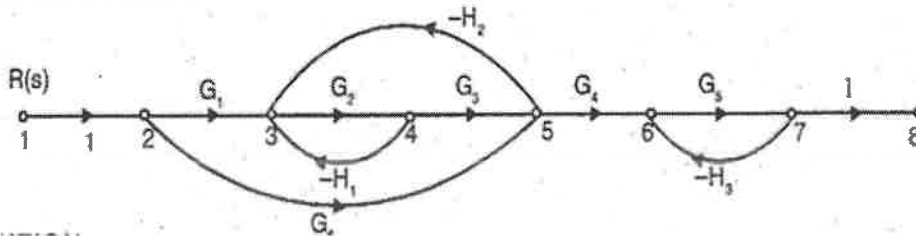
CO1 L1 12M



OR

- 2 Find the overall transfer function of the system whose signal flow graph is shown below

CO1 L1 12M



**UNIT-II**

- 3 Define steady state error? Derive the static error components for Type 0, Type 1 & Type 2 systems?

CO2 L1 12M

OR

- 4 A unity feedback control system has an open loop transfer function,  $(S) = \frac{10}{s(s+2)}$ . Find the rise time, percentage overshoot, peak time and settling time for a step input of 12 units.

CO2 L1 12M

**UNIT-III**

- 5 With the help of Routh's stability criterion determine the stability of the following systems represented by the characteristic equations:

CO2 L5 12M

(i)  $S^4 + S^3 + 2S^2 + 3S + 5 = 0$

(ii)  $9S^5 - 20S^4 + 10S^3 - S^2 - 9S - 10 = 0$

OR

- 6 Develop the root locus of the system whose open loop transfer function is  $(S)H(S) = \frac{K}{s(s+2)(s+4)}$ .

CO3 L3 12M

**UNIT-IV**

- 7 Derive the expressions for resonant peak and resonant frequency and hence establish the correlation between time response and frequency response.

CO4 L3 12M

OR

- 8 Develop the Bode plot for the following Transfer Function **CO4 L3 12M**  
 $G(S)H(S) = \frac{20(1+0.1S)}{s^2(1+0.2S)(1+0.02S)}$ . From the bode plot determine (i) Gain Margin (ii) Phase Margin (iii) Comment on the stability.

**UNIT-V**

- 9 a What are the properties of State Transition Matrix. **CO5 L1 4M**  
b Diagonalize the following system matrix  $A = \begin{bmatrix} 0 & 6 & -5 \\ 1 & 0 & 2 \\ 3 & 2 & 4 \end{bmatrix}$ . **CO5 L3 8M**
- OR**
- 10 For the state equation:  $\dot{X} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} X + \begin{bmatrix} 0 \\ 1 \end{bmatrix} U$  with the unit step input **CO5 L3 12M**  
and the initial conditions are  $X(0) = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ . Solve the following (i) State transition matrix (ii) Solution of the state equation.

**\*\*\* END \*\*\***

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech III Year I Semester Supplementary Examinations November-2024**

**DESIGN OF MACHINE ELEMENTS - I**

(Mechanical Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 1 | a How do you classify the machine design? Explain                         | CO1 | L1 | 6M |
|   | b Explain the general design procedure while designing a machine element. | CO1 | L2 | 6M |

**OR**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 2 | a Derive an expression for the impact stress induced due to a falling load  | CO1 | L5 | 6M |
|   | b An unknown weight falls through 10 mm on a collar rigidly attached to the lower end of a vertical bar 3 m long and 600 mm <sup>2</sup> in section. If the maximum instantaneous extension is known to be 2 mm, what is the corresponding stress and the value of unknown weight? Take E = 200kN/mm <sup>2</sup> | CO1 | L3 | 6M |

**UNIT-II**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 3 | Explain stress concentration in detail and various methods to reduce stress concentration in machine members. | CO2 | L2 | 12M |
|---|---|-----|----|-----|

**OR**

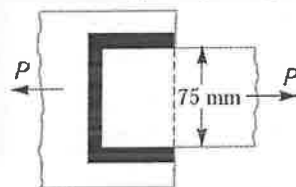
- |   |  |     |    |     |
|---|--|-----|----|-----|
| 4 | A circular bar of 500 mm length is supported freely at its two ends. It is acted upon by a central concentrated cyclic load having a minimum value of 20 kN and a maximum value of 50 kN. Determine the diameter of bar by taking a factor of safety of 1.5, size effect of 0.85, surface finish factor of 0.9. The material properties of bar are given by : ultimate strength of 650 MPa, yield strength of 500 MPa and endurance strength of 350 MPa. | CO2 | L3 | 12M |
|---|--|-----|----|-----|

**UNIT-III**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 5 | a Explain Stress in screw fasteners due to Combined Forces.   | CO3 | L2 | 6M |
|   | b Two machine parts are fastened together tightly by means of a 24 mm tap bolt. If the load tending to separate these parts is neglected, find the stress that is set up in the bolt by the initial tightening. | CO3 | L1 | 6M |

**OR**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 6 | A plate 75 mm wide and 12.5 mm thick is joined with another plate by a single transverse weld and a double parallel fillet weld as shown in Fig. The maximum tensile and shear stresses are 70 MPa and 56 MPa respectively. Find the length of each parallel fillet weld, if the joint is subjected to both static and fatigue loading. | CO3 | L3 | 12M |
|---|---|-----|----|-----|



**UNIT-IV**

- 7 Design and draw a spigot and socket cotter joint to support a load varying from 30 kN in compression to 30 kN in tension. The material used is carbon steel for which the following allowable stresses may be used. The load is applied statically. Tensile stress = compressive stress = 50 MPa; shear stress = 35 MPa and crushing stress = 90 MPa. **CO4 L2 12M**

**OR**

- 8 a What type of stresses are induced in shafts? **CO4 L1 5M**  
b A solid circular shaft is subjected to a bending moment of 3000 N-m and a torque of 10,000 N-m. The shaft is made of 45 C 8 steel having ultimate tensile stress of 700 MPa and a ultimate shear stress of 500 MPa. Assuming a factor of safety as 6, determine the diameter of the shaft. **CO4 L3 7M**

**UNIT-V**

- 9 a Discuss the function of a coupling. Give at least three practical applications. **CO5 L2 6M**  
b Design and make a neat dimensioned sketch of a muff coupling which is used to connect two steel shafts transmitting 40 kW at 350 r.p.m. The material for the shafts and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 MPa and 80 MPa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 MPa. **CO5 L1 6M**

**OR**

- 10 Describe, with the help of neat sketches, the types of various shaft couplings mentioning the uses of each type. **CO5 L1 12M**

\*\*\* END \*\*\*