30/4/26 FN

| O.P.Code: 20ME0308 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**MANUFCTURING PROCESSES**
(Mechanical Engineering)

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

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

| | | | | | |
|---|---|---|---|---|---|
| | | **UNIT-I** | | | |
| 1 | a | List the main advantages and applications of the casting process. | CO1 | L3 | 6M |
| | b | What are the major limitations of the sand casting process and how are they overcome? | CO1 | L4 | 6M |
| | | **OR** | | | |
| 2 | a | Distinguish clearly between the following: moulding sand, backing sand and facing sand. | CO1 | L3 | 6M |
| | b | Define pattern. Name the different types of patterns and pattern materials. | CO1 | L1 | 6M |
| | | **UNIT-II** | | | |
| 3 | a | Explain the working of oxy acetylene gas welding | CO2 | L3 | 6M |
| | b | Distinguish three types of welding flames and for what applications these are used? | CO2 | L4 | 6M |
| | | **OR** | | | |
| 4 | | With a neat sketch explain the working of submerged arc welding along with its applications. | CO2 | L3 | 12M |
| | | **UNIT-III** | | | |
| 5 | a | Discuss the different types of rolling mills with a neat sketch. | CO3 | L3 | 6M |
| | b | Write the advantages and disadvantages of rolling processes? | CO3 | L3 | 6M |
| | | **OR** | | | |
| 6 | a | What is bulk deformation process? | CO3 | L2 | 6M |
| | b | List out the applications of hot rolling and cold rolling process. | CO3 | | 6M |
| | | **UNIT-IV** | | | |
| 7 | a | What are the characteristics of sheet metal? | CO4 | L2 | 6M |
| | b | What are the various types of shearing operations? | CO4 | L2 | 6M |
| | | **OR** | | | |
| 8 | a | Explain the Stretch forming operations & its applications. | CO4 | L3 | 6M |
| | b | Write the Formability of sheet metal characteristics | CO4 | L3 | 6M |
| | | **UNIT-V** | | | |
| 9 | | Explain the working principles and application of compression Moulding. | CO5 | L3 | 12M |
| | | **OR** | | | |
| 10 | | Explain the working principles and application of Injection Moulding. | CO5 | L3 | 12M |

***** END *****

| O.P.Code: 20CS0513 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**COMPUTER NETWORKS**
(Common to CAD, CSM & CSE)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Define Computer Network and elaborate the Network criteria. | CO1 | L1 | 6M |
| | b | Discuss briefly about Computer Network Types. | CO1 | L6 | 6M |
| | | **OR** | | | |
| 2 | a | Discuss about Physical layer in detail. | CO1 | L6 | 6M |
| | b | Illustrate about Twisted Pair cable with neat diagram. | CO1 | L2 | 6M |
| | | **UNIT-II** | | | |
| 3 | | Explain the various Error correction methods. | CO2 | L5 | 12M |
| | | **OR** | | | |
| 4 | | Discuss HDLC Protocol with the elaborative explanation of its frames. | CO2 | L6 | 12M |
| | | **UNIT-III** | | | |
| 5 | a | Calculate the Shortest Path Algorithm considering an example. | CO3 | L4 | 6M |
| | b | Explain Flooding concept. | CO3 | L2 | 6M |
| | | **OR** | | | |
| 6 | a | Sketch and explain in detail about IPV4protocol. | CO3 | L5 | 6M |
| | b | Sketch and explain in detail about IPV6protocol. | CO3 | L2 | 6M |
| | | **UNIT-IV** | | | |
| 7 | | Illustrate the different Primitives used for transport service. Elaborate them. | CO4 | L1 | 12M |
| | | **OR** | | | |
| 8 | a | Describe about TCP connection Establishment. | CO4 | L2 | 6M |
| | b | Describe about TCP Connection Release. | CO4 | L2 | 6M |
| | | **UNIT-V** | | | |
| 9 | a | Describe short notes on application layer. | CO5 | L2 | 6M |
| | b | Illustrate in detail about WWW in application layer. | CO5 | L1 | 6M |
| | | **OR** | | | |
| 10 | | Discuss the features of HTTP and explain how HTTP works. | CO5 | L6 | 12M |

***** END *****

| O.P.Code: 20EC0410 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**DIGITAL COMMUNICATIONS**
(Electronics & Communications Engineering)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Draw the block diagram of digital communication system? Explain each block? | CO1 | L2 | 6M |
| | b | Compare Analog and Digital Communication. | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | a | With a neat block diagram explain PCM transmitter and receiver? | CO1 | L2 | 6M |
| | b | Explain the DM (delta modulation system) with suitable diagrams? | CO1 | L2 | 6M |
| | | **UNIT-II** | | | |
| 3 | a | Derive the properties of matched filter. | CO2 | L3 | 6M |
| | b | What is ISI? Draw the basic block diagram of baseband binary data transmission. | CO2 | L1 | 6M |
| | | **OR** | | | |
| 4 | a | Explain duo-binary signaling scheme with precoder through one example. | CO2 | L2 | 6M |
| | b | Describe the baseband M-array PAM Transmission system. | CO2 | L2 | 6M |
| | | **UNIT-III** | | | |
| 5 | a | Determine signal representation of a signal N=2and M=3. | CO3 | L2 | 6M |
| | b | What is Gram-Schmidt orthogonalization procedure? Explain. | CO3 | L1 | 6M |
| | | **OR** | | | |
| 6 | a | Discuss about signal constellation diagram. | CO3 | L2 | 6M |
| | b | With a neat sketch explain the working of correlation receiver. | CO3 | L2 | 6M |
| | | **UNIT-IV** | | | |
| 7 | a | Draw the block diagram of ASK transmitter and receiver and explain Operation. | CO4 | L1 | 6M |
| | b | Derive the expression for probability of error for BPSK. | CO4 | L3 | 6M |
| | | **OR** | | | |
| 8 | a | A binary data stream 101101100 is to be transmitted using DPSK. | CO4 | L4 | 6M |
| | b | Derive the probability of error for a coherent QPSK system. | CO4 | L3 | 6M |
| | | **UNIT-V** | | | |
| 9 | a | Explain the concept of matrix representation of Linear block codes. | CO5 | L2 | 6M |
| | b | A generator matrix for a (6, 3) block code is given below | CO5 | L1 | 6M |

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 \end{bmatrix}$$

List all the code vectors.

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10 | a | What is forward error correction system and explain in detail? | CO5 | L1 | 6M |
| | b | Define the following terms | CO5 | L1 | 6M |

i) Code efficiency ii) Hamming Distance
iii) Code vectors iv) Constraint length.

*** END ***

| O.P.Code: 20CS1001 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**CRYPTOGRAPHY & DATA SECURITY**
CSE (Internet of Things and Cyber security Including Block Chain Technology)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | | Explain in detail about passive attacks and active attacks. | CO1 | L1 | 12M |
| | | **OR** | | | |
| 2 | a | Discuss in detail about Denial of services (DOS), Spoofing and Phishing attacks? | CO1 | L2 | 6M |
| | b | Infer the Principles of security in data security? | CO1 | L2 | 6M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Explain Rail fence Technique and Row Columnar techniques. | CO2 | L2 | 6M |
| | b | Categorize any two Substitution Techniques in symmetric key cryptography. | CO2 | L4 | 6M |
| | | **OR** | | | |
| 4 | | Write short notes on block cipher principles? Explain the block cipher modes of operation. | CO2 | L1 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Explain the RSA algorithm. Compute cipher text for M=88, p=17, q=11, e=7. | CO3 | L2 | 6M |
| | b | Write about the strength of RSA? | CO3 | L1 | 6M |
| | | **OR** | | | |
| 6 | a | Infer the concept of Elgamal Cryptography algorithm. | CO3 | L2 | 6M |
| | b | List out the possible attacks on RSA Algorithm. | CO3 | L1 | 6M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | What is security attack? Explain different Types of Security attacks? | CO4 | L2 | 12M |
| | | **OR** | | | |
| 8 | a | Define Non-malicious Program errors and identify Buffer overflow in Nonmalicious Program errors. | CO4 | L3 | 6M |
| | b | Evaluate the types and characteristics of Data Integrity. | CO4 | L5 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | | Sketch neatly and summarize IP security Architecture in detail. | CO5 | L3 | 12M |
| | | **OR** | | | |
| 10 | a | Illustrate the steps involved in DSA Algorithm. | CO5 | L3 | 6M |
| | b | Examine the Proof of Digital signature algorithm. | CO5 | L3 | 6M |

*** END ***

| O.P.Code: 20ME0309 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**MATERIALS SCIENCE**
(Mechanical & Engineering)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | What is Material science? List out classification of materials | CO1 | L1 | 6M |
| | b | Explain the primary type of Bonds in solids with neat sketches | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | | Define the following terms: (i) Space lattice (ii) Unit cell iii)primitive cell iv) Bonding energy v) Atomic packing factor (vi) crystal structure | CO1 | L1 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Construct a phase diagram and explain briefly and list out different types of phase diagrams. | CO2 | L6 | 6M |
| | b | Define invariant reactions in phase Diagram with examples. | CO2 | L1 | 6M |
| | | **OR** | | | |
| 4 | | Draw and explain the Fe-Fe3c phase diagram invariant reactions. | CO2 | L1 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | | Explain the structure and properties of white cast iron. | CO3 | L2 | 12M |
| | | **OR** | | | |
| 6 | a | Which steel is called Hadfield steels? Evaluate it. | CO3 | L2 | 6M |
| | b | Compare the difference between steel and tool steel? List out its applications. | CO3 | L4 | 6M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | Name the various methods of heat treatment of steel. Briefly explain any one method. | CO4 | L1 | 12M |
| | | **OR** | | | |
| 8 | | What is Fracture Mechanism? Explain the mechanical properties of materials and Fracture. | CO4 | L1 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Compare the particle and Reinforced composites. | CO5 | L5 | 6M |
| | b | What is ceramic material? Explain crystalline ceramics. | CO5 | L2 | 6M |
| | | **OR** | | | |
| 10 | | Compare the following composite material properties and its applications (i) Polymer matrix composites (ii) Metal matrix composites. | CO6 | L4 | 12M |

***** END *****

| O.P.Code: 20EE0209 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**POWER ELECTRONICS**
(Electrical & Electronics Engineering)

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

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

**UNIT-I**

| | | | | |
|---|---|---|---|---|
| 1 | Draw and explain V-I characteristics of SCR and Its working. | CO1 | L2 | 12M |
| | **OR** | | | |
| 2 | Explain the Resistance firing circuit with the necessary waveforms. | CO1 | L2 | 12M |

**UNIT-II**

| | | | | |
|---|---|---|---|---|
| 3 | Describe the operation of single-phase Full wave converter with R-Load at $\alpha$=45 with necessary wave forms. Also derive the output voltage, output current and RMS output voltages. | CO2 | L2 | 12M |
| | **OR** | | | |
| 4 | Illustrate the operation of Three phase fully controlled rectifier with R- load at $\alpha$=60 and also derive the average and RMS load voltage. | CO2 | L4 | 12M |

**UNIT-III**

| | | | | |
|---|---|---|---|---|
| 5 | Define a DC chopper? Describe various types of chopper configurations. With appropriate diagram wherever necessary. | CO3 | L1 | 12M |
| | **OR** | | | |
| 6 | The buck converter has an input voltage of Edc=12V.The required average output voltage is E0=5V at R=500Ω and the peak-to-peak output voltage is 20mV,the switching frequency is 2kHz. If the peak-to-peak ripple current of inductor is limited to 0.8A,determine<br>(i) the duty cycle<br>(ii) the filter inductance L and<br>(iii) the filter capacitor C, and<br>(iv) the critical values of L and C. | CO3 | L3 | 12M |

**UNIT-IV**

| | | | | |
|---|---|---|---|---|
| 7 | Describe the principle of operation of single phase to single phase step up midpoint cycloconverter with Resistive Load. | CO4 | L2 | 12M |
| | **OR** | | | |
| 8 | Illustrate the principle of operation of single phase to single phase step-down Bridge type cycloconverter with Resistive Inductive Load for Discontinuous Load Current. | CO4 | L4 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | **a** | Define ac voltage controllers and what are the different types. | CO5 | L1 | 6M |
| | **b** | List the applications of ac voltage controller. | CO5 | L1 | 6M |
| | | **OR** | | | |
| 10 | | Describe the operation of single-phase full wave ac voltage controller with resistive load. | CO5 | L2 | 12M |

***** END *****

| O.P.Code: 20CE0114 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**GEOTECHNICAL ENGINEERING**
(Civil Engineering)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Classify various types of soil structures occur in nature with neat sketch. | CO1 | L2 | 6M |
| | b | Explain clay mineralogy with neat sketch. | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | a | Write short notes on Index Properties of soils. | CO1 | L1 | 4M |
| | b | Explain in detail the laboratory method for particle size distribution of coarse grained soils by dry sieve analysis. | CO1 | L2 | 8M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Differentiate between compaction and consolidation. | CO2 | L2 | 6M |
| | b | Differentiate between Standard proctor test and Modified proctor test. | CO2 | L2 | 6M |
| | | **OR** | | | |
| 4 | a | Define Coefficient of compressibility, Coefficient of Volume Change and Compression index. | CO2 | L2 | 6M |
| | b | A 15 m thick hydraulically isotropic clay stratum overlies an impervious stratum. If the coefficient of consolidation is $5 \times 10^{-4}$ $cm^2/s$, find the time required for 50% and 90% consolidation (Tv = 0.20 and 0.85 respectively). | CO2 | L3 | 6M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | What do you understand by 'Pressure bulb'? Illustrate with sketches. | CO3 | L1 | 6M |
| | b | A concentrated load of 2000 kN acts vertically at the ground surface. Determine the vertical stress at a point P which is 6m directly below the load. Also calculate the vertical stress at a point R which is at a depth of 6m but at a horizontal distance of 5m from the axis of the load. | CO3 | L3 | 6M |
| | | **OR** | | | |
| 6 | a | What are the various methods of determination of shear strength in the laboratory? | CO4 | L1 | 6M |
| | b | Explain types of shear strength based on drainage conditions. | CO4 | L2 | 6M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | With the help of a neat sketch explain in detail about friction circle method. | CO5 | L2 | 12M |
| | | **OR** | | | |
| 8 | | Give the step by step procedure of analyzing stability of a finite slope using Swedish circle method. | CO5 | L3 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Explain various types of soil samples. | CO6 | L2 | 6M |
| | b | List out various design features affecting the sample disturbance. | CO6 | L1 | 6M |
| | | **OR** | | | |
| 10 | | Explain in detail how plate load Test is conducted with neat sketch. | CO6 | L2 | 12M |

***** END *****

| O.P.Code: 20CE0111 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**HYDRAULIC ENGINEERING**
**(Civil Engineering)**

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | | Derive the condition for a trapezoidal channel to be most economical. | CO1 | L2 | 12M |
| | | **OR** | | | |
| 2 | | Prove that for a channel of circular section, the depth of flow d=0.81D for maximum velocity. | CO1 | L3 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | What are assumptions of gradually varied flow? Derive the Dynamic equation of gradually varied flow. | CO2 | L2 | 12M |
| | | **OR** | | | |
| 4 | | What is hydraulic jump and derive the expression for depth of hydraulic jump | CO2 | L2 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Derive the equation for force exerted by a jet on stationary inclined flat plate. | CO3 | L2 | 6M |
| | b | Find the force exerted by a jet of water of diameter 75mm on a stationary flatplate, when the jet strikes the plate normally with velocity of 20m/s | CO3 | L2 | 6M |
| | | **OR** | | | |
| 6 | | A jet of water of diameter 75mm moving with a velocity of 30m/s, strikes a curved fixed plate tangentially at one end at an angle of 30° to the horizontal. The jet leaves the plate at an angle of 20 degrees to the horizontal. Find the force exerted by the jet on the plate in the horizontal and vertical direction | CO3 | L3 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | What is centrifugal pump? Explain the parts of centrifugal pump with neat sketch. | CO4 | L2 | 12M |
| | | **OR** | | | |
| 8 | | Explain the different types of hydraulic similarities that must exist between a prototype and its model. | CO4 | L2 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | What is a turbine and give the classification in detail? Give the various efficiencies. | CO5 | L2 | 6M |
| | b | Explain Radial flow reaction turbine with a neat diagram | CO5 | L3 | 6M |
| | | **OR** | | | |
| 10 | | A Kaplan turbine runner is to be designed to develop 9100KW.Th net available head is 5.6 m, If the speed ratio =2.09, Flow ratio =0.68, overall efficiency=86% & diameter of the boss is1/3 the diameter of the runner. Find the diameter of the runner and itsspeed and the specific speed of the turbine. | CO5 | L3 | 12M |

***** END *****

| O.P.Code: 20CS0901 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**Fundamentals of Artificial Intelligence**
**(CSM & CAD)**

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Define AI. How it is organized? Explain the categories of it in detail. | CO1 | L1 | 6M |
| | b | Explain the role of AI in Education and Finance. | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | | Identify the areas from which Artificial Intelligence laid its foundation. | CO1 | L1 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Illustrate general steps in Problem Solving in Artificial Intelligence. | CO2 | L3 | 6M |
| | b | Explain in detail about Problem Solving in Control Strategies. | CO2 | L2 | 6M |
| | | **OR** | | | |
| 4 | a | Design a Constraint Satisfaction Problem with an example | CO2 | L6 | 6M |
| | b | Distinguish A* Search and IDA* Search with an example. | CO2 | L4 | 6M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Describe Propositional Logic along with its syntax and types. | CO3 | L2 | 6M |
| | b | Prove { P →Q,Q→R } \| - ( P→R ), i.e., P →R is a deductive consequence of { P →Q, Q→R } using Axiomatic System | CO3 | L5 | 6M |
| | | **OR** | | | |
| 6 | a | Discuss about "Resolution in Propositional Logic" and explain with an example. | CO3 | L2 | 6M |
| | b | Express Tautologies and Contradictions with Truth tables. | CO3 | L2 | 6M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | How representations and Mappings in KR is done? Explain. | CO5 | L2 | 6M |
| | b | Describe the approaches to Knowledge Representation. | CO5 | L2 | 6M |
| | | **OR** | | | |
| 8 | a | How KR using Semantic Network is done. Explain in detail. | CO5 | L1 | 6M |
| | b | List the four properties that a KR system must have. | CO5 | L1 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | What do you mean by expert system technology? Explain. | CO6 | L1 | 6M |
| | b | Distinguish between forward chaining and backward chaining. | CO6 | L2 | 6M |
| | | **OR** | | | |
| 10 | a | Discuss about Characteristics and Capabilities of Expert Systems. | CO6 | L2 | 6M |
| | b | Explain Expert Systems Limitations in detail. | CO6 | L2 | 6M |

***** END *****

| O.P.Code: 20HS0815 | R20 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**ENTREPRENEURSHIP DEVELOPMENT (20HS0815)**
**(Common to EEE, ME & ECE)**

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

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

| | | | | | |
|---|---|---|---|---|---|
| | | **UNIT-I** | | | |
| 1 | a | What is meant by Entrepreneurship? Define the Functions of an Entrepreneur. | CO1 | L1 | 6M |
| | b | Elucidate the characteristics of entrepreneur. | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | a | What are the biggest challenges to be an entrepreneur? | CO1 | L1 | 6M |
| | b | Explain the advantages of entrepreneurship in a country's growth. | CO1 | L3 | 6M |
| | | **UNIT-II** | | | |
| 3 | | Elucidate the sole proprietorship, joint Hindu family and Joint Stock Company | CO2 | L2 | 12M |
| | | **OR** | | | |
| 4 | a | Discuss about the Role of MSMEs in improving the economy | CO2 | L2 | 6M |
| | b | What are the salient features of partnership firm? | CO2 | L1 | 6M |
| | | **UNIT-III** | | | |
| 5 | a | Justify the concept of Invention and innovation | CO3 | L4 | 6M |
| | b | Creativity and Innovation are interrelated or different- Comment. | CO3 | L3 | 6M |
| | | **OR** | | | |
| 6 | a | List out the best sources of Innovation in Business. | CO3 | L3 | 6M |
| | b | Examine the importance of Innovation in Entrepreneurship. | CO3 | L3 | 6M |
| | | **UNIT-IV** | | | |
| 7 | a | Develop the consequence of Invention in Entrepreneurship. | CO4 | L3 | 6M |
| | b | List out the problems faced by start-ups without IPRs? | CO4 | L3 | 6M |
| | | **OR** | | | |
| 8 | a | What are the types of Intellectual Property Rights? | CO4 | L1 | 6M |
| | b | What are the difficulties faced by start-ups without the IPRs? | CO4 | L2 | 6M |
| | | **UNIT-V** | | | |
| 9 | a | Entrepreneurship development program is the process of grooming entrepreneurs.Justify. | CO5 | L5 | 6M |
| | b | What are the loans available for starting industrial ventures in India? | CO5 | L1 | 6M |
| | | **OR** | | | |
| 10 | | What is meant by "motivation"? List out various motivational theories and explain them in detail. | CO5 | L4 | 12M |

***** END *****

| O.P.Code: 20CS0505 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**Database Management Systems**
**(CIC&CCC)**

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Illustrate about Views of data. | CO1 | L2 | 6M |
| | b | Outline the Data Abstraction and discuss levels of Abstraction. | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | a | Create the DDL Commands – Table Creation, Altering the table structures, truncating a table and dropping a table. | CO1 | L4 | 6M |
| | b | Differentiate between Database users and administrators. | CO1 | L4 | 6M |
| | | **UNIT-II** | | | |
| 3 | a | Identify relational database query language? | CO2 | L3 | 6M |
| | b | Illustrate different operations in Relational algebra with an example? | CO2 | L3 | 6M |
| | | **OR** | | | |
| 4 | a | Discuss about Complex integrity constraints in SQL. | CO2 | L2 | 6M |
| | b | Create a sub query to establish the WHERE, ANY,AS and ALL sub queries with example. | CO2 | L3 | 6M |
| | | **UNIT-III** | | | |
| 5 | a | Illustrate redundancy and the problems that it can cause. | CO3 | L3 | 6M |
| | b | Explain the following with suitable example. (i) Full functional dependency. (ii) Partial dependency. | CO3 | L2 | 6M |
| | | **OR** | | | |
| 6 | a | Compare Trivial and Non – Trivial Functional Dependencies with example. | CO3 | L3 | 6M |
| | b | Explain about Functional Dependency. | CO4 | L2 | 6M |
| | | **UNIT-IV** | | | |
| 7 | a | Explain ACID properties and illustrate them through examples. | CO5 | L2 | 6M |
| | b | What is a Transaction? Explain the States of the transaction with a neat sketch. | CO5 | L2 | 6M |
| | | **OR** | | | |
| 8 | a | What is Schedule? Explain the serial schedule with examples. | CO5 | L2 | 6M |
| | b | List out the types of Schedules with a neat sketch. | CO5 | L2 | 6M |
| | | **UNIT-V** | | | |
| 9 | a | Illustrates the basic principle of media recovery on a database. | CO6 | L3 | 6M |
| | b | Discuss about Time stamp based locking protocols? | CO6 | L2 | 6M |
| | | **OR** | | | |
| 10 | a | Classify the techniques to control deadlocks. | CO6 | L3 | 6M |
| | b | Explain how recovery is done using undo logging and redo logging. | CO6 | L2 | 6M |

***** END *****

| O.P.Code: 20CS1401 | R20 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**Artificial Intelligence and its Applications**
**CAI**

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | | Explain in detail about Intelligent System and when it acts rationally. | CO1 | L2 | 12M |
| | | **OR** | | | |
| 2 | | Discuss in detail about N-queens problem and its example. Write a program for Nqueens problem using python. | CO1 | L2 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | Illustrate the concept of Problem-solving agent with an example. | CO2 | L2 | 12M |
| | | **OR** | | | |
| 4 | | Explain about Alpha-Beta Pruning with α and β algorithms. Prepare a Graph Tree and explain it. Write an example program for alpha beta pruning. | CO2 | L3 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Give a detail note on a generic knowledge-based agent | CO2 | L3 | 6M |
| | b | What is Propositional Logic? Explain the facts and types in it in detail. | CO2 | L3 | 6M |
| | | **OR** | | | |
| 6 | | How representation facts in Propositional Logic are done? Explain | CO4 | L2 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | How representations and Mappings in KR is done? Explain. | CO2 | L5 | 6M |
| | b | Describe the approaches to Knowledge Representation. | CO2 | L5 | 6M |
| | | **OR** | | | |
| 8 | a | List the set of primitives and conceptual tenses used in Conceptual Dependency. | CO5 | L1 | 6M |
| | b | List the ways in which classes are related to each other in frames, with suitable example. | CO5 | L1 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | | Briefly explain the language model in AI and its application of AI. | CO6 | L1 | 12M |
| | | **OR** | | | |
| 10 | | Discuss the components in Robotic Hardware. | CO6 | L3 | 12M |

***** END *****

| O.P.Code: 19CS0510 | R19 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**

(AUTONOMOUS)

**B.Tech II Year II Semester Supplementary Examinations April-2026**

**OBJECT ORIENTED PROGRAMMING THROUGH JAVA**

(Common to CSE & CSIT)

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

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

| | | | | | |
|---|---|---|---|---|---|
| | | **UNIT-I** | | | |
| **1** | **a** | Define Conditional Operator. Write the suitable example. | **CO1** | **L3** | **6M** |
| | **b** | State the Java Selection Statements? Give an example to each one. | **CO1** | **L2** | **6M** |
| | | **OR** | | | |
| **2** | **a** | Define is a Data Type. Give the declaration of variable in Java. Write the Rules. | **CO1** | **L3** | **6M** |
| | **b** | Justify the Byte Code. Discriminate states of Java Program execution. | **CO1** | **L3** | **6M** |
| | | **UNIT-II** | | | |
| **3** | **a** | What is mean by OOP? Illustrate the Concepts OOP. | **CO2** | **L4** | **6M** |
| | **b** | Write about Garbage Collector in Java and test how it works. | **CO2** | **L5** | **6M** |
| | | **OR** | | | |
| **4** | **a** | What is a package? How to create user defined package in java with Example. | **CO2** | **L1** | **6M** |
| | **b** | What is an interface? Rules to create an interface in java with example. | **CO2** | **L1** | **6M** |
| | | **UNIT-III** | | | |
| **5** | **a** | What is Multithreading? Illustrate the ways to create multiple threads in java. | **CO3** | **L4** | **6M** |
| | **b** | Explain about Thread Life Cycle. | **CO3** | **L2** | **6M** |
| | | **OR** | | | |
| **6** | **a** | What are Daemon Threads? Explain with an example. | **CO3** | **L3** | **6M** |
| | **b** | Write a java program to implement join() method in multithreading. | **CO3** | **L4** | **6M** |
| | | **UNIT-IV** | | | |
| **7** | | Write a program illustrating following framework.<br>i)Array List ii)Vector iii)Hash Table iv)Stack | **CO3** | **L2** | **12M** |
| | | **OR** | | | |
| **8** | **a** | Write a java Program to read a text file and print the number of unique words. | **CO4** | **L3** | **6M** |
| | **b** | Explain File operations in java. | **CO4** | **L2** | **6M** |
| | | **UNIT-V** | | | |
| **9** | | Write a java Program to implement an AWT based calculator with basic Operations. | **CO5** | **L6** | **12M** |
| | | **OR** | | | |
| **10** | **a** | Explain Lambda Expression. | **CO5** | **L3** | **6M** |
| | **b** | Discuss Functional Interface in java. | **CO5** | **L2** | **6M** |

***** END *****

| O.P.Code: 20CS0511 | R20 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**PYTHON PROGRAMMING**
(Common to CSE, CSIT, CIC & CCC)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Discuss about History of Python Language. | CO1 | L6 | 6M |
| | b | List out the Features and Applications of Python. | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | a | Explain about the Single-Valued data types in python. | CO1 | L2 | 6M |
| | b | Discriminate about the Multi-Valued Data types with example. | CO1 | L5 | 6M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | Classify various types of Operators in Python and write any 4 types of Operators. | CO2 | L5 | 12M |
| | | **OR** | | | |
| 4 | a | What are the different loop control statements available in Python? Explain with suitable examples. | CO2 | L2 | 6M |
| | b | Write a python program to calculate sum of natural numbers. | CO2 | L2 | 6M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Describe about default arguments with suitable program. | CO3 | L2 | 6M |
| | b | Illustrate lambda function with example. | CO3 | L3 | 6M |
| | | **OR** | | | |
| 6 | a | Define Class and Object with example code. | CO3 | L2 | 6M |
| | b | Analyze the term: Self-variable with code. | CO3 | L4 | 6M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | What is Module in Python? Explain, how the Modules are used in python program with an example code. | CO4 | L2 | 12M |
| | | **OR** | | | |
| 8 | a | Classify Errors and Exception Handling in Python programming. | CO4 | L5 | 6M |
| | b | Express the term: user defined exceptions. | CO4 | L2 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Create a Python Program to display the current date and time. | CO5 | L6 | 6M |
| | b | Write a Python program to demonstrate the file I/O Write a Python program to demonstrate the file I/O. | CO5 | L2 | 6M |
| | | **OR** | | | |
| 10 | a | What is Data Management and Object Persistence? Explain in detail. | CO6 | L2 | 6M |
| | b | Describe the Turtle using python program. | CO6 | L2 | 6M |

***** END *****

| O.P.Code: 20CE0160 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**Fluid mechanics & Hydraulic machinery**
**(AGE)**

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Explain the terms of compressibility and bulk modulus. | CO1 | L2 | 6M |
| | b | Obtain an expression for capillary fall of a liquid. | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | | Derive the expression for pressure difference in differential manometers with neat sketches. | CO1 | L2 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | Explain the different types of fluid flows in detail | CO2 | L4 | 12M |
| | | **OR** | | | |
| 4 | | Obtain an expression for continuity equation for three - dimensional flow with neat sketch. | CO2 | L2 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | | Derive expression for rate of flow through Venturimeter with neat sketch. | CO3 | L2 | 12M |
| | | **OR** | | | |
| 6 | | Explain about orifice meter and Derive expression for rate of flow through orifice meter | CO3 | L2 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | Derive an expression for jet strikes the curved plate at the centre and at one end tangentially when the plate is unsymmetrical. | CO4 | L2 | 12M |
| | | **OR** | | | |
| 8 | | A 7.5 cm diameter jet having a velocity of 30 m/s strikes a flat plate, the normal of which is inclined at 45° to the axis of the jet. Find the normal pressure on the plate: (i) when the plate is stationary, and (ii) when the plate is moving with a velocity of 15 m/s and away from the jet. Also determine the power and efficiency of the jet when the plate is moving. | CO4 | L2 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | | Derive the expression for velocity triangles and work done by the Pelton wheel with a neat sketch. | CO5 | L2 | 12M |
| | | **OR** | | | |
| 10 | | Explain what are the component parts of Kaplan turbines with neat sketch. | CO5 | L2 | 12M |

***** END *****

| O.P.Code: 20EC0416 | R20 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**MICROPROCESSORS AND MICROCONTROLLERS**
**(CSE & CSIT)**

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

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

| | | | | | |
|---|---|---|---|---|---|
| | | **UNIT-I** | | | |
| 1 | | Draw a block diagram of Microprocessor based system and explain the functions of each component: Microprocessor, Memory and I/O and their line communication. | CO1 | L4 | 12M |
| | | **OR** | | | |
| 2 | a | Illustrate the microcomputer system with example. | CO1 | L3 | 6M |
| | b | Draw the block diagram of output section of Microcomputer. Describe the role of tristate bus driver, decoder and latch. | CO2 | L4 | 6M |
| | | **UNIT-II** | | | |
| 3 | a | Define an interrupt and explain the different types of interrupts available in the 8085 microprocessors. | CO2 | L2 | 6M |
| | b | List out the control and status signals in 8085 microprocessor. | CO2 | L1 | 6M |
| | | **OR** | | | |
| 4 | a | Describe the Logical instructions of the 8085 microprocessor with example. | CO2 | L2 | 6M |
| | b | Discuss CMA; RAR, RAL, RLC and RRC instructions with suitable example. | CO2 | L2 | 6M |
| | | **UNIT-III** | | | |
| 5 | a | Draw the internal architecture of 8051 microcontroller and explain the function of each block present in it. | CO3 | L2 | 8M |
| | b | List the features of 8051 microcontroller. | CO2 | L1 | 4M |
| | | **OR** | | | |
| 6 | a | Explain how the 8051 microcontroller transfers the serial data input and output using UART. | CO5 | L2 | 6M |
| | b | Explain the different types of interrupts in the 8051 microcontroller. | CO2 | L2 | 6M |
| | | **UNIT-IV** | | | |
| 7 | a | Describe the different types of addressing mode supported by 8051 with suitable examples. | CO4 | L2 | 6M |
| | b | List out the any five instructions for immediate addressing modes and indirect addressing modes with suitable example. | CO4 | L1 | 6M |
| | | **OR** | | | |
| 8 | a | Write and explain an ALP program of and, OR AND XROR operation in 8051. | CO4 | L2 | 6M |
| | b | Write and explain an ALP program of four time rotate right and rotate left carry operation in 8051. | CO4 | L2 | 6M |
| | | **UNIT-V** | | | |
| 9 | a | List out types of 16 key layout and draw the diagram of the lead per key keyboard configuration. | CO5 | L4 | 6M |
| | b | Design the x-y matrix keyboard and coded key board. | CO5 | L6 | 6M |
| | | **OR** | | | |
| 10 | a | Design and explain the A/D converter circuit. | CO5 | L2 | 8M |
| | b | List any five advantages of A/D converter and it applications. | CO5 | L1 | 4M |

***** END *****

| O.P.Code: 20EC0448 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**DIGITAL ELECTRONICS**
(Electrical & Electronics Engineering)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Convert the following to Decimal and then to Hexadecimal (i) $(1234)_8$ (ii) $(11001111)_2$ | CO1 | L2 | 6M |
| | b | Perform the subtraction by using 2's complement for the given 111001-1010. | CO1 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 2 | a | Express the function Y=A+B'C in Canonical SOP form. | CO1 | L2 | 6M |
| | b | Simplify the following Boolean functions to minimum number of literals F = ABC + ABC' + A'B. | CO1 | L3 | 6M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | Minimize the following Boolean function using K-Map F(A, B, C, D)= Σm(0, 2, 4, 6, 8, 10, 12, 14). | CO2 | L2 | 12M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | | What are the universal gates? Implement logic gates by using NAND and NOR gates. | CO2 | L1 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | | Design & implement Half Adder and Full Adder with truth table. | CO3 | L3 | 12M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6 | | What is parallel adder? Design and explain 4 bit parallel adder by using full adder. | CO4 | L1 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | Draw the logic diagram for D Flip Flop by using SR Flip Flop. Explain the operation with truth table. | CO5 | L1 | 6M |
| | b | Write the differences between combinational and sequential circuits. | CO5 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 8 | | What is Register and Explain<br>i) Parallel in Parallel out Register<br>ii) Series in Parallel out Register | CO5 | L1 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | What is FSM? Give the applications of FSM. | CO5 | L1 | 6M |
| | b | Explain about Memory decoding. | CO6 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10 | | What is ROM organization? Explain about Different types of ROM. | CO6 | L1 | 12M |

***** END *****

| O.P.Code: 20ME0307 | R20 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**CAD/CAM**
(Mechanical Engineering)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Draw the product cycle and CAD/CAM product cycle with neat sketch. | CO1 | L2 | 6M |
| | b | Explain the product cycle and CAD/CAM product cycle? | CO1 | L2 | 6M |
| | | **OR** | | | |
| 2 | | Briefly explain the computer graphics and Graphics package functions. | CO1 | L2 | 12M |
| | | **UNIT-II** | | | |
| 3 | | Elucidate about detail surface modeling and their representation. | CO2 | L2 | 12M |
| | | **OR** | | | |
| 4 | | Describe briefly the following methods of surface modeling with a few application examples:<br>(i) B-spline surface.; (ii) Bezier surface. | CO2 | L2 | 12M |
| | | **UNIT-III** | | | |
| 5 | | Illustrate about NC motion control systems. | CO3 | L2 | 12M |
| | | **OR** | | | |
| 6 | a | Illuminate the procedure adopted in NC systems. | CO3 | L2 | 6M |
| | b | Classify various types of Numerical Control systems and explain them. | CO3 | L2 | 6M |
| | | **UNIT-IV** | | | |
| 7 | | Describe the integration of CAQC with CAD/CAM | CO5 | L2 | 12M |
| | | **OR** | | | |
| 8 | | Illustrate various types of contact inspection methods with a neat sketch | CO5 | L2 | 12M |
| | | **UNIT-V** | | | |
| 9 | | Classify the CAPP system and explain the any one type in detail | CO6 | L2 | 12M |
| | | **OR** | | | |
| 10 | | Illuminate MRP-II with neat sketch and also write its benefits. | CO6 | L2 | 12M |

***** END *****

Q.P.Code: 20HS0833 | R20 | H.T.No.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**NUMERICAL METHODS, PROBABILITY & STATISTICS**
(Common to CE & AGE)

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

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

**UNIT-I**

1 Find real root of the equation $xe^x - \cos x = 0$ Using Newton - Raphson method. **CO1 L3 12M**

**OR**

2 Using the Newton's forward interpolation formula and the given table values. Obtain the value of $f(x)$ when $x=1.4$ **CO1 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-II**

3 Using the R-K method of 4th order, solve $\frac{dy}{dx} = x^2 - y$, $y(0)=1$. Find $y(0.1)$ & $y(0.2)$. **CO2 L3 12M**

**OR**

4 Evaluate $\int_0^1 \frac{1}{1+x}dx$ by (i) Trapezoidal rule and Simpson's 1/3rd ruel **CO2 L5 12M**

(ii) Using simpson's 3/8th rule and compare the result with actual value.

**UNIT-III**

5 a (i) The weights of 6 competitors in a game are given below 58,62,56,63,55,61 kgs. Find arithmetic mean of weight of competitors. **CO3 L1 6M**

(ii) Find the median of the following values 26, 8, 6, 12, 15, 32.

b Find arithmetic mean to the following data **CO3 L1 6M**

| $x$ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| $f(x)$ | 5 | 8 | 10 | 12 | 6 |

**OR**

6 Calculuate Karl Pearson and Bowley's coefficient of Skewness to the following data **CO3 L3 12M**

| x | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 |
|---|---|---|---|---|---|---|---|---|---|---|
| F | 2 | 6 | 11 | 20 | 40 | 75 | 45 | 25 | 18 | 8 |



**UNIT-IV**

7 A random variable X has the following Probability function: **CO4 L4 12M**

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

Examine (i) K (ii) Mean (iii) Variance and (iv) P (X<6)

**OR**

8 If a random variable has a Probability density $f(x)$ as $f(x)=\begin{cases}2e^{-2x}, & for\ x>0\\ 0, & for\ x\le 0\end{cases}$. **CO4 L1 12M**

Find the probabilities that it will take on a value (i) Between 1 & 3 (ii) Greater than 0.5

**UNIT-V**

9 a Derive mean and variance of Binomial distribution. **CO5 L3 6M**

b 20% of items produced from a factory are defective. Find the probability that in a sample of 5 chosen at random (i) One is defective (ii) p(1< x <4 ) using appropriate distribution. **CO5 L3 6M**

**OR**

10 Calculate Correlation coefficient to the following data **CO5 L3 12M**

| x | 10 | 15 | 12 | 17 | 13 | 16 | 24 | 14 | 22 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| y | 30 | 42 | 45 | 46 | 33 | 34 | 40 | 35 | 39 | 38 |

*** END ***

| O.P.Code: 20HS0836 | R20 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**DISCRETE MATHEMATICS**
(Common to CSE, CSIT, CIC, CCC, CAD, CSM, CAI)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Explain indegree and out degree of a graph. Also explain about the adjacency matrix representation of graphs. Illustrate with an example? | CO1 | L1 | 6M |
| | b | Draw the graph represented by given adjacency matrix (i) $\begin{bmatrix}1&2&0&1\\2&0&3&0\\0&3&1&1\\1&0&1&0\end{bmatrix}$ (ii) $\begin{bmatrix}1&0&2&1\\0&1&1&2\\2&1&1&0\\1&2&0&1\end{bmatrix}$ | CO1 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 2 | a | Explain about complete graph & complete bipartite graph with example. | CO1 | L1 | 6M |
| | b | Explain the Rooted tree and Spanning tree with an example. | CO1 | L1 | 6M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Explain the Connectives & their truth tables | CO2 | L1 | 6M |
| | b | Construct the truth table to Show that $\neg P \wedge (Q \wedge P)$ is a contradiction | CO2 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | Define Quantifiers and types of Quantifiers with examples | CO2 | L2 | 6M |
| | b | Show that $(\forall x)(P(x) \rightarrow Q(x)) \wedge (\forall x)(Q(x) \rightarrow R(x)) \Rightarrow (\forall x)(P(x) \rightarrow R(x))$ | CO2 | L2 | 6M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Define a binary relation. Give an example. Let R be the relation from the set A = {1, 3, 4} on itself and defined by R = { (1, 1), (1, 3), (3, 3), (4, 4)} then Find the matrix of R ,draw the graph of R | CO3 | L2 | 6M |
| | b | Let A={1,2,3,4,,5,6,7},determine a relation R on A by $aRb \Leftrightarrow 3$ *divides* $(a-b)$, show that R is an equivalence relation. | CO3 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6 | a | Define and give an examples for group, semigroup, & abelian group | CO3 | L2 | 6M |
| | b | On the set Q of all rational number operation * is defined by $a*b = a+b-ab$, Show that this operation on Q forms a commutative monoid. | CO3 | L2 | 6M |



**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | How many ways can we get a sum of 8 when two indistinguishable dice are rolled? | CO4 | L2 | 6M |
| | b | Enumerate the number of non negative integral solutions to the inequality $x_1 + x_2 + x_3 + x_4 + x_5 \leq 19$ | CO4 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 8 | a | Find the coefficient of (i) $x^3y^2z^2$ *in* $(2x-y+z)^9$ (ii) $x^6y^3$ *in* $(x-3y)^9$ | CO4 | L2 | 6M |
| | b | Find the minimum number of students in a class to be sure that 4 out of them are born on the same month? | CO4 | L3 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Solve $a_n = a_{n-1} + f(n)$ *for* $n \geq 1$ by using substitution method. | CO5 | L2 | 6M |
| | b | Using generating function to solve $a_n = 3a_{n+1} + 2$, $a_0 = 1$ | CO5 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10 | | Solve $a_n = 2a_{n-1} - a_{n-2}$ with initial conditions $a_1 = 1.5$ & $a_2 = 3$ | CO5 | L3 | 12M |

*** END ***

O.P.Code: 20EE0214 | R20 | H.T.No.

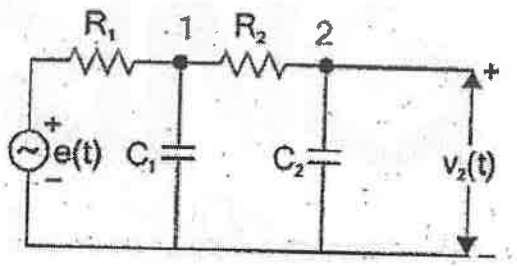
**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**CONTROL SYSTEMS**
(Electronics and Communications Engineering)

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

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

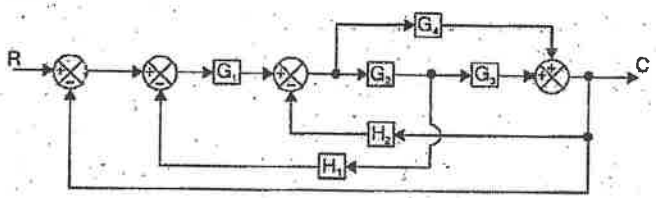
**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Compare open loop and closed loop control systems based on different aspects? | CO1 | L2 | 6M |
| | b | For the electrical system shown in Fig, find the transfer function. | CO1 | L3 | 6M |




**OR**

| | | | | | |
|---|---|---|---|---|---|
| 2 | | Using Block diagram reduction technique find the Transfer Function of the system. | CO1 | L3 | 12M |




**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | | Find all the time domain specifications for a unity feedback control system whose open loop transfer function is given by $G(S) = \frac{25}{S(S+5)}$. | CO2 | L3 | 12M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | | Define steady state error. Derive the static error components for Type 0, Type 1 & Type 2 systems. | CO2 | L2 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | | With the help of Routh's stability criterion find the stability of the following systems represented by the characteristic equations:<br>$s^4 + 8s^3 + 18s^2 + 16s + 5 = 0$<br>$s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0$ | CO3 | L3 | 12M |

**OR**



| | | | | | |
|---|---|---|---|---|---|
| 6 | | Develop the root locus of the system whose open loop transfer function is $G(S) = \frac{K}{S(S^2 + 4S + 13)}$ | CO3 | L3 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | Define and derive the expression for resonant frequency. | CO4 | L2 | 6M |
| | b | Given $\xi = 0.7$ and $\omega_n = 10$ rad/sec. Find resonant peak, resonant frequency and bandwidth. | CO4 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 8 | | Sketch the polar plot for the open loop transfer function of a unity feedback system is given by $G(s) = \frac{1}{S(1+S)(1+2S)}$. Determine Gain Margin & Phase Margin. | CO4 | L3 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Define state, state variable, state equation. | CO5 | L2 | 6M |
| | b | Find state variable representation of an armature controlled D.C motor. | CO5 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10 | | Find a state model for the system whose Transfer function is given by $G(S)H(S) = \frac{(7S^2 + 12S + 8)}{(S^3 + 6S^2 + 11S + 9)}$ | CO5 | L3 | 12M |

*** END ***

| O.P.Code: 20EC0409 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**ELECTRONIC CIRCUIT ANALYSIS**
(Electronics & Communications Engineering)

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

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

**UNIT-I**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | a | Deduce the expression for Emitter diffusion capacitance of CE transistor at high frequency. | CO4 | L4 | 6M |
| | b | The following low frequency parameters are known for a given transistor at Ic=10mA, VCE=10v and at room temperature: hie=500Ω, hoe=10-5A/v, hfe=100, hre=10-4 . At the same operating point, fT=50MHz and Cob=3pF. Compute the values of all the hybrid-π parameters. | CO5 | L3 | 6M |
| | | **OR** | | | |
| 2 | a | Deduce the expressions for overall voltage gain, input resistance, current gain and output resistance for a Cascode amplifier with neat circuit diagrams. | CO4 | L4 | 6M |
| | b | List the applications of Cascode amplifier. | CO1 | L1 | 6M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Explain the basic concept of Feedback in amplifier with suitable block diagram. | CO1 | L2 | 6M |
| | b | List the characteristics of negative feedback amplifiers. | CO1 | L1 | 6M |
| | | **OR** | | | |
| 4 | | Determine the input and output resistances of Current Shunt feedback Amplifier. | CO5 | L3 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Construct RC phase shift oscillator using BJT and deduce its expression for frequency of oscillations. | CO4 | L4 | 6M |
| | b | Determine the frequency of oscillations when a RC phase shift oscillator has R=10kΩ, C=0.01μF and RC = 2.2 KΩ. Also find the minimum current gain needed for this purpose. | CO5 | L3 | 6M |
| | | **OR** | | | |
| 6 | | Establish the condition for sustained oscillations for Hartley and Colpitts oscillator with suitable equation. | CO4 | L3 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | With neat diagram, explain Series fed directly coupled Class A Power Amplifier and determine its maximum efficiency. | CO2 | L2 | 6M |
| | b | Classify the Large Signal Power Amplifier based on biasing condition. | CO2 | L1 | 6M |
| | | **OR** | | | |
| 8 | a | Discuss about Double Tuned Amplifier with neat diagram and deduce the expression for its bandwidth. | CO2 | L1 | 6M |
| | b | Discuss the stability considerations of a tuned amplifier. | CO2 | L1 | 6M |



**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | With a neat circuit diagram explain the working of a collector coupled Astable multivibrator and draw the necessary waveforms. | CO3 | L2 | 6M |
| | b | Determine the value of capacitors to be used in an Astable multivibrator to provide a train pulse 2μs wide at a repetition rate of 100 kHz, if R1 =R2 =20kΩ. | CO5 | L3 | 6M |
| | | **OR** | | | |
| 10 | a | Explain the unsymmetrical triggering method for the Bistable multivibrator with a neat diagram. | CO3 | L2 | 6M |
| | b | Why triggering is needed for multivibrators? Explain a triggering method for a monostable multivibrator. | CO3 | L2 | 6M |

***** END *****

| O.P.Code: 20EC0411 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**LINEAR & DIGITAL IC APPLICATIONS**
(Eletronics & Communications Engineering)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Explain the internal structure and working of an operational amplifier with the help of a clearly labeled block diagram. | CO2 | L1 | 6M |
| | b | Draw the circuit and explain the working of Voltage to current converter. | CO1 | L1 | 6M |
| | | **OR** | | | |
| 2 | a | Explain how an instrumentation amplifier amplifies differential signals while rejecting common-mode signals, with a diagram. | CO4 | L3 | 6M |
| | b | A differential amplifier has input voltages of 350 μV and 220 μV. The differential gain of the amplifier is 6000 and the CMRR is 120. Determine differential input voltage, common-mode input voltage, common-mode gain, differential output voltage, common-mode output voltage and total output voltage. | CO1 | L3 | 6M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Derive the gain of a 1st order high pass Butterworth filter and discuss its transfer function. | CO4 | L3 | 6M |
| | b | With the help of schematic diagram explain how 555 timer can be used as Monostable multivibrator. | CO4 | L2 | 6M |
| | | **OR** | | | |
| 4 | a | Explain the working of an RC phase shift oscillator using an Op-Amp and derive the expression for its oscillation frequency. | CO4 | L3 | 6M |
| | b | Describe the operation of a wide band pass filter using an Op-Amp. Draw the circuit diagram and derive the expression for its frequency response. | CO4 | L2 | 6M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Explain about flash type ADC. The basic step of a 9-bit DAC is 10.3 mV. If "000000000" represents 0V. What output is produced if the input is "101101111"? | CO4 | L2 | 6M |
| | b | Explain the working principle of a Phase Locked Loop (PLL) with a neat block diagram. Describe the function of each block. | CO2 | L2 | 6M |
| | | **OR** | | | |
| 6 | a | With the help of a block diagram and timing waveforms, explain the working of a dual slope analog-to-digital converter. | CO5 | L2 | 6M |
| | b | Analyze the characteristics of low-voltage CMOS and explain the challenges involved in interfacing it with TTL logic. | CO5 | L2 | 6M |



**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | Implement the Boolean function F(A, B, C, D) = Σ(1,5,6,7,9,13) with don't care conditions (4,15) using a structural VHDL model. Draw the corresponding logic circuit. | CO6 | L4 | 6M |
| | b | Explain the concept of structural modeling in VHDL. Describe its key design elements with a suitable example. | CO6 | L2 | 6M |
| | | **OR** | | | |
| 8 | a | Classify the different data types available in VHDL and illustrate each category with suitable examples. | CO5 | L2 | 6M |
| | b | Simplify and design the logic circuit for F(A, B, C, D) = Π(2, 4, 6, 8, 10, 12, 14) and write the corresponding VHDL code. | CO6 | L4 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Design a 32-line to 5-line priority encoder using 74LS148 ICs and necessary logic gates. Draw the logic diagram, provide the truth table, and explain its working. | CO6 | L3 | 6M |
| | b | Design an 8-bit Serial-In Serial-Out (SISO) shift register. Draw the logic diagram and write the corresponding VHDL code. | CO6 | L3 | 6M |
| | | **OR** | | | |
| 10 | a | Construct a full adder using two half adders and necessary logic gates. Draw the circuit diagram and write the corresponding VHDL code. | CO6 | L3 | 6M |
| | b | Compare latches and flip-flops in terms of operation, timing control, and applications. Illustrate both with logic diagrams and functional tables. | CO6 | L4 | 6M |

***** END *****

O.P.Code: 20CS0512 | R20 | H.T.No.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**FORMAL LANGUAGES AND AUTOMATA THEORY**
(Common to CSIT & CSE)

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

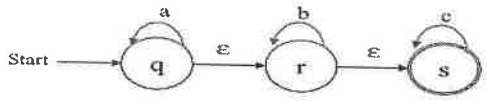
(Answer all Five Units **5 x 12** = **60** Marks)

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Define relations on sets and explain its properties with an example. | CO1 | L1 | 6M |
| | b | Differences between DFA and NFA with examples. | CO1 | L4 | 6M |

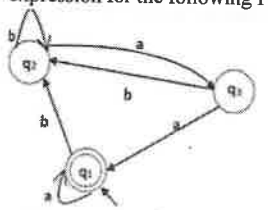
**OR**

| | | | | | |
|---|---|---|---|---|---|
| 2 | | Convert the following NFA with ε moves to NFA without ε moves by ε-closure method. | CO2 | L3 | 12M |




**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Construct the regular expression for the following FA. | CO3 | L6 | 6M |




| | | | | | |
|---|---|---|---|---|---|
| | b | Construct an equivalent FA for the given regular expression (0+1)*(00+11)(0+1)* | CO2 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | Define Regular expressions. List its Applications. | CO3 | L1 | 6M |
| | b | Compare and Prove that the following regular expressions are equivalent. L1 = 1*(011)*(1*(011)*)* L2 = (1+011)* | CO2 | L3 | 6M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Explain Left recursion and Left factoring. | CO4 | L2 | 6M |
| | b | Perform left factor for the grammar A→abB/aB/cdg/cdeB/cdfB | CO4 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6 | a | Define the following terms: i) Useless symbol ii) Null production iii) Unit productions | CO4 | L1 | 6M |
| | b | List the closure properties of CFLs | CO4 | L1 | 6M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | State the formal of PDA. | CO5 | L1 | 6M |
| | b | Construct a PDA which recognizes all strings that contain equal number of 0's and 1's. | CO5 | L6 | 6M |



**OR**

| | | | | | |
|---|---|---|---|---|---|
| 8 | a | Explain about the graphical notation of PDA. | CO5 | L5 | 6M |
| | b | Explain acceptance of PDA with empty stack. | CO5 | L5 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Explain about the graphical notation of TM. | CO6 | L3 | 6M |
| | b | Describe Instantaneous Description of Turing Machine. | CO6 | L6 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10 | | Explain the various types of Turing machine. | CO6 | L2 | 12M |

*** END ***

| O.P.Code: 20CE0115 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**STRUCTURAL ANALYSIS**
(Civil Engineering)

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

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

**UNIT-I**

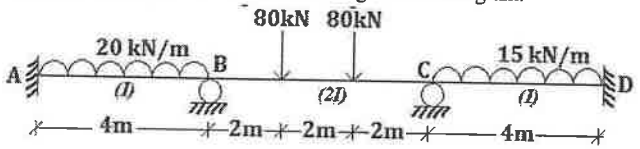
| | | | | | |
|---|---|---|---|---|---|
| 1 | a | What is meant by Influence Line Diagram (ILD)? State some of the benefits of it. | CO1 | L2 | 3M |
| | b | A simply supported beam AB is subjected to a point load W. Derive an expression and draw the ILD for reaction at A, reaction at B, shear force & bending moment at a distance of x from the support. | CO1 | L2 | 9M |
| | | **OR** | | | |
| 2 | | A simple girder of 25m span is traversed by a moving UDL of 8m length with an intensity of 25 kN/m from left to right. Analyze for maximum bending moment, maximum +ve/ –ve shear force at a section of 4m from left support. Also find the absolute maximum bending moment that occurs anywhere in the girder. | CO1 | L3 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Define the term<br>i) Strain Energy ii) Resilience<br>iii) Proof Resilience iv) Modulus of Resilience | CO2 | L1 | 4M |
| | b | Derive an expression for the strain energy stored in a beam due to axial loading and due to bending. | CO2 | L3 | 8M |
| | | **OR** | | | |
| 4 | | State and derive Castigliano's first theorem | CO2 | L2 | 12M |

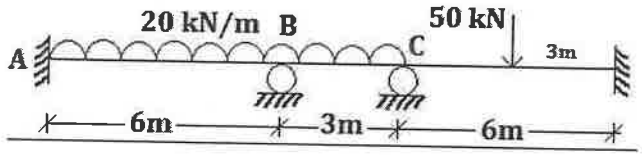
**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | | Analyse the continuous beam loaded as shown in the figure by slope deflection method and sketch the bending moment diagram. | CO3 | L4 | 12M |




**OR**

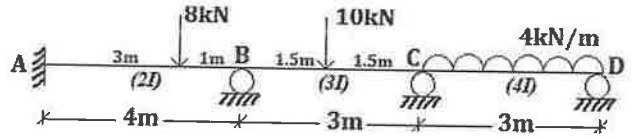
| | | | | | |
|---|---|---|---|---|---|
| 6 | | Analyse the continuous beam using slope-deflection method if the support B sinks by 10mm. Take E = 2 x 105 N/mm$^2$ and I = 16 x 107mm$^4$ and sketch the bending moment diagram. | CO3 | L4 | 12M |





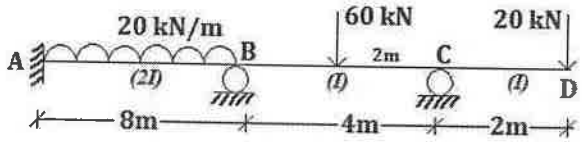

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | | Determine the support moments for the continuous beam as shown in the figure and draw the bending moment diagram using the moment distribution method. | CO4 | L4 | 12M |



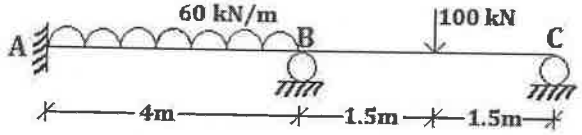

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 8 | | Analyse the beam ABCD shown in the figure by moment distribution method. | CO4 | L4 | 12M |




**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | | Explain the steps involved in Flexibility matrix method of analysis<br>Explain the steps involved in Stiffness matrix method of analysis | CO5 | L2 | 12M |
| | | **OR** | | | |
| 10 | | Analyse the continuous beam shown in the figure using flexibility matrix method. | CO5 | L4 | 12M |

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| O.P.Code: 20HS0812 | R20 | H.T.No. | | | | | | | | | |
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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech II Year II Semester Supplementary Examinations April-2026**
**MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS**
(Common to AGE, CSM, CAD, CIC, CCC & CAI)

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

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

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Identify nature of managerial economics through its definitions. | CO1 | L2 | 6M |
| | b | Analyze the significance of managerial economics in decision-making? | CO1 | L3 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 2 | a | List out the contemporary practices of Managerial Economics. | CO1 | L2 | 6M |
| | b | Describe the "Law of Demand" and its exceptions. | CO1 | L1 | 6M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Define production function. Explain production function with one variable input. | CO2 | L2 | 6M |
| | b | Explain the law of returns with appropriate examples. | CO2 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 4 | | A Firm has a fixed cost of Rs 50000/- selling price per unit Rs50/- and variable cost per unit Rs 25/- present level of production is 3500/- units<br>i Determine BEP in terms of volume and also sales value.<br>ii Calculate the margin of safety.<br>iii What is the change in BEP and margin of safety if Fixed cost increases from Rs50000/- to Rs60000/- | CO2 | L4 | 12M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Define market and explain features of monopoly. | CO3 | L1 | 6M |
| | b | What is meant by perfect competition? Explain its features. | CO3 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 6 | | Globalization is a means of attaining international standard of living. Do you agree with this statement? | CO3 | L5 | 12M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | What is the importance of Capital budgeting and what are its limitations? | CO4 | L3 | 6M |
| | b | What is meant by working capital and working capital cycle? | CO4 | L2 | 6M |

**OR**



| | | | | | |
|---|---|---|---|---|---|
| 8 | | Consider the case of the company with the following two investment alternatives each costing Rs.9 lakhs. The details of cash inflows are as follows:<br>Year 1 2 3<br>Project1 3,00,000 5,00,000 6,00,000<br>Project2 6,00,000 3,00,000 4,00,000<br>Estimated the cost of capital is 10% per year. Determine NPV for the two projects. | CO4 | L5 | 12M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Write about various types of accounts and their rules governing each account. | CO5 | L2 | 6M |
| | b | Brief note on accounting cycle. | CO5 | L2 | 6M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 10 | | Journalize the following transactions in the books of Ms. Jeevani. | CO5 | L5 | 12M |

2012, Jan 1 Jeevani commenced business with cash Rs.5,00,000

2. Purchased goods for cash Rs.20,000
3. Purchased goods from Mohan Rs.6,000
7. Paid into bank Rs.5,000
10. Purchased furniture Rs.2000
20. Sold goods to Suresh on credit Rs.5,000
25. Cash sales Rs. 3,500
26. Paid to Mohan on account Rs.3,000
31. Paid salaries Rs.2,800

*** END ***