

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

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

PYTHON PROGRAMMING

(Common to CE, AGE, ME, EEE)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|---|-----|----|----|
| 1 | a | Explain about the Single-Valued data types in python. | CO1 | L2 | 6M |
| | b | What is Indentation? Explain with example. | CO1 | L2 | 6M |

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 2 | a | What is dictionary? Explain the methods available in dictionary. | CO1 | L2 | 6M |
| | b | Differentiate between the tuple and sets in python. | CO1 | L2 | 6M |

UNIT-II

- | | | | | | |
|---|---|--|-----|----|----|
| 3 | a | If the age of Ram, Sam, and Khan are input through the keyboard, write a python program to determine the eldest and youngest of the three. | CO2 | L6 | 6M |
| | b | Arithmetic operations (Addition, Subtraction, Multiplication, and Division) on integers. Input the two integer values and operator for performing arithmetic operation through keyboard. | CO2 | L6 | 6M |

OR

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|---|---|---|-----|----|----|
| 4 | a | Develop a program to find the largest among three numbers. | CO2 | L6 | 6M |
| | b | Write a python program to find the given year is leap or not. | CO2 | L6 | 6M |

UNIT-III

- | | | | | | |
|---|---|---|-----|----|----|
| 5 | a | Differentiate key word and default arguments. | CO3 | L2 | 6M |
| | b | Differentiate global and local variables. | CO3 | L2 | 6M |

OR

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|---|---|--|-----|----|----|
| 6 | a | Write about class constructor(_init_()),self-variable. | CO3 | L1 | 6M |
| | b | Compare method overloading and overriding. | CO3 | L2 | 6M |

UNIT-IV

- | | | | | | |
|---|---|--|-----|----|----|
| 7 | a | Explain in details about namespaces and scoping. | CO4 | L2 | 6M |
| | b | Explain about the import statement in modules. | CO4 | L2 | 6M |

OR

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|---|---|---|-----|----|----|
| 8 | a | What is module? | CO4 | L1 | 4M |
| | b | How to create a module? Explain with example. | CO4 | L2 | 8M |

UNIT-V

- | | | | | | |
|---|---|---------------------------------|-----|----|----|
| 9 | a | Explain about Data Compression. | CO4 | L2 | 6M |
| | b | Explain about Dates and Times. | CO4 | L2 | 6M |

OR

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|----|---|--|-----|----|----|
| 10 | a | Explain about Python Runtime Services. | CO4 | L2 | 6M |
| | b | Explain about Data Compression. | CO4 | L2 | 6M |

*** END ***

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

B.Tech II Year II Semester Supplementary Examinations April-2026
ELECTROMAGNETIC THEORY AND TRANSMISSION LINES
(Electronics & Communications Engineering)

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

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

UNIT-I

- 1 a Find the electric field at a point P located with a distance of r from an infinite sheet with uniform surface charge density of $\rho_s \text{ C/m}^2$. CO1 L3 6M
 b Apply Gauss Law to evaluate the electric flux density at a point P due to the point charge located at the origin. CO1 L5 6M

OR

- 2 a Evaluate the two Maxwell's equations for electrostatic fields and state them. CO1 L4 6M
 b Two point charges, $Q_A = +8 \mu\text{C}$ and $Q_B = -5 \mu\text{C}$, are separated by a distance $r = 10 \text{ cm}$. What is the magnitude of the electric force between them? CO1 L3 6M

UNIT-II

- 3 a Explain Ampere's Circuit Law. CO2 L2 6M
 b Determine Maxwell's Equations for Magnetostatic Field. CO2 L4 6M

OR

- 4 a Explain about magnetic scalar and vector potential for Magneto-statics. CO2 L2 6M
 b Determine the Magnetic Field Density due to Infinite line Current by applying Ampere's Circuit law. CO2 L4 6M

UNIT-III

- 5 a Prove that the Displacement Current Density CO3 L5 6M
- $$J_D = \frac{\partial D}{\partial t}$$

- b Explain the motional EMF and derive the expression for the maxwell equation. CO3 L3 6M

OR

- 6 a Prove that one of the Maxwell's equation is $\nabla \times E = -dB/dt$ CO3 L4 6M
 b Determine the Expressions for inconsistency of Ampere's law. CO3 L4 6M

UNIT-IV

- 7 Discuss about pointing theorem and poynting vector. CO4 L2 12M

OR

- 8 a Evaluate the wave equation in lossy dielectric medium for sinusoidal time variations. CO4 L3 6M
 b Explain and derive the characteristics of wave propagation in free space. CO4 L2 6M

UNIT-V

- 9 a Evaluate the equation for voltage and current at any point in a transmission line. CO5 L3 6M
 b Explain about S-Circle, r-Circle and x-Circle in smith chart. CO5 L2 6M

OR

- 10 a Relate SWR and reflection coefficient. CO5 L3 6M
 b With neat sketch explain about Primary and Secondary constants of transmission line. CO5 L2 6M

***** END *****

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

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

PRINCIPLES OF OPERATING SYSTEMS

(Computer Science & Information Technology)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|--|-----|----|----|
| 1 | a | Define an Operating System. Explain its major functions in detail. | CO1 | L2 | 6M |
| | b | Demonstrate evolution of Operating Systems from early systems to modern systems. | CO1 | L3 | 6M |

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 2 | a | Explain Computing Environments in Operating System in Detail. | CO1 | L2 | 6M |
| | b | Compare between Operating System Protection and Operating System Security. | CO1 | L5 | 6M |

UNIT-II

- | | | | | | |
|---|---|---|-----|----|----|
| 3 | a | Explain in detail about Inter process Communication. | CO2 | L2 | 6M |
| | b | What is multithreading? Explain the thread libraries in detail. | CO2 | L2 | 6M |

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 4 | | Demonstrate Operating System Scheduling-Criteria in detail. | CO3 | L3 | 12M |
|---|--|---|-----|----|-----|

UNIT-III

- | | | | | | |
|---|---|--|-----|----|----|
| 5 | a | Define the critical-section problem. Explain its three requirements. | CO3 | L2 | 6M |
| | b | Analyze the classical synchronization problems. | CO3 | L4 | 6M |

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 6 | a | Explain deadlock characterization with necessary conditions. | CO3 | L2 | 6M |
| | b | Describe methods of handling deadlocks. | CO3 | L2 | 6M |

UNIT-IV

- | | | | | | |
|---|---|---|-----|----|----|
| 7 | a | Discuss Contiguous Memory allocation in detail. | CO6 | L6 | 6M |
| | b | Demonstrate Segmentation with paging in detail. | CO4 | L3 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 8 | a | Explain about Demand paging in detail. | CO4 | L2 | 6M |
| | b | Discuss about Page-replacement in detail. | CO6 | L6 | 6M |

UNIT-V

- | | | | | | |
|---|---|---|-----|----|----|
| 9 | a | Explain about Disk scheduling and Swap-space management. | CO5 | L3 | 6M |
| | b | Explain about access methods and directory structure in detail. | CO5 | L2 | 6M |

OR

- | | | | | | |
|----|--|---|-----|----|-----|
| 10 | | Explain in detail Allocation Methods and Free-Space management. | CO5 | L2 | 12M |
|----|--|---|-----|----|-----|

*** END ***

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

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

THEORY OF MACHINES

(Mechanical Engineering)

Time: 3 Hours

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

Max. Marks: 60

- 1** A ship is pitching through a total angle of 150, the oscillation may be taken as simple harmonic and the complete period is 32 seconds. The turbine rotor weighs 6 tons, its radius of gyration is 45cm and it is rotating at 2400 r.p.m. Calculate the maximum value of gyroscopic couple set up by the rotor and its effect, when the bow is descending and the rotor is rotating clockwise looking from aft. What is the maximum angular acceleration to which the ship is subjected to while pitching ?

CO1 L3 12M

UNIT-I

2 The turning moment diagram for a petrol engine is drawn to a vertical scale of 1mm to 6 Nm and horizontal scale of 1mm to 10. The turning moment repeats itself after every half revolution of the engine, the areas above and below the mean torque line are 305, 710, 50, 350, 980, and 275mm². Mass of rotating parts is 40 kg at a radius of gyration of 140 mm. Calculate the coefficient of fluctuation of speed if the mean speed is 1500 r.p.m.

CO1 L3 12M

OR

- 3 a** Explain the working of a single-plate clutch with neat sketch.

CO2 L1 6M
CO2 L5 6M

b A single plate clutch, effective on both sides, is required to transmit 25 kW at 3000 r.p.m. Determine the outer and inner radii of a frictional surface if the coefficient of friction is 0.255, the ratio of radii is 1.25 and the maximum pressure is not to exceed 0.1 N/mm². Also determine the axial thrust to be provided by springs. Assume the theory of uniform wear.

UNIT-II

4 A band brake acts on the 3/4th of circumference of a drum of 450 mm diameter which is keyed to the shaft. The band brake provides a braking torque of 225 N-m. One end of the band is attached to a fulcrum pin of the lever and the other end to a pin 100 mm from the fulcrum. If the operating force is applied at 500 mm from the fulcrum and the coefficient of friction is 0.25, find the operating force when the drum rotates in the

CO2 L3 12M

OR

5 A Porter governor has equal arms each 250 mm long and pivoted on the axis of rotation. Each ball has a mass of 5 kg and the mass of the central load on the sleeve is 25 kg. The radius of rotation of the ball is 150 mm when the governor begins to lift and 200 mm when the governor is at maximum speed. Find the minimum and maximum speeds and range of speed of the governor.

CO3 L3 12M

UNIT-III

6 A Hartnell governor having a central sleeve spring and two right-angled bell crank levers moves between 290 r.p.m. and 310 r.p.m. for a sleeve lift of 15 mm. The sleeve arms and the ball arms are 80 mm and 120 mm respectively. The levers are pivoted at 120 mm from the governor axis and mass of each ball is 2.5 kg. The ball arms are parallel to the governor axis

CO3 L3 12M

OR

at the lowest equilibrium speed. Determine : (i). loads on the spring at the lowest and the highest equilibrium speeds, and (ii). stiffness of the spring.

- 7** Four masses m_1 , m_2 , m_3 , and m_4 are 200 kg, 300 kg, 240 kg and 260 kg respectively. The corresponding radii of rotation are 0.2 m, 0.15 m, 0.25 m and 0.3 m respectively and the angles between successive masses are 45°, 75° and 135°. Find the position and magnitude of the balance mass required, if its radius of rotation is 0.2 m.

CO4 L3 12M

UNIT-IV

8 Derive the following expression of effects of partial balancing in two cylinder locomotive engine (i) Variation of attractive force (ii) Swaying couple (iii) Hammer blow

- 9** A cantilever shaft 50 mm diameter and 300 mm long has a disc of mass 100 kg at its free end. The Young's modulus for the shaft material is 200 GN/m². Determine the frequency of longitudinal and transverse vibrations of the shaft.

CO5 L5 12M

UNIT-V

10 Derive the natural frequency of Free Transverse Vibrations by (i) Rayleighs method (ii) Dunkerleys method.

- CO5 L2 12M

OR

*** END ***

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

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

ELECTRICAL MACHINES – II
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|--|-----|----|----|
| 1 | a | Explain the principle of operation of Induction motor. | CO1 | L3 | 6M |
| | b | From fundamentals, deduce a relationship between Rotor power input, rotor copper loss and mechanical power developed in case of Induction motor. | CO1 | L2 | 6M |

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 2 | | Describe the constructional details of cage and wound rotor induction machines. | CO1 | L3 | 12M |
|---|--|---|-----|----|-----|

UNIT-II

- | | | | | | |
|---|--|--|-----|----|-----|
| 3 | | Explain how to predetermine the performance of induction motor from no-load and blocked rotor tests. | CO2 | L3 | 12M |
|---|--|--|-----|----|-----|

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 4 | a | With the help of circuit diagram explain Auto Transformer starting of Induction motor. | CO2 | L2 | 6M |
| | b | A Three phase induction motor has a ratio of maximum torque to full load torque as 2.5:1. Determine the ratio of starting torque to full load torque if star-delta starter is used. The rotor resistance and standstill reactance per phase are 0.4Ω and 4Ω respectively. | CO2 | L3 | 6M |

UNIT-III

- | | | | | | |
|---|---|---|-----|----|----|
| 5 | a | Derive EMF equation of an alternator. | CO3 | L3 | 6M |
| | b | Define voltage regulation of synchronous generator. | CO3 | L2 | 6M |

OR

- | | | | | | |
|---|--|--|-----|----|-----|
| 6 | | A 1200KVA,6600V, 3-phase star connected alternator has its armature resistance as 0.25Ω per phase and its synchronous reactance as 5Ω per phase. Calculate its regulation if it delivers a full load at
(i) 0.8 lagging and (ii) 0.8 leading p.f. | CO3 | L3 | 12M |
|---|--|--|-----|----|-----|

UNIT-IV

- | | | | | | |
|---|---|--|-----|----|----|
| 7 | a | Explain the theory of operation of synchronous motor . | CO4 | L2 | 6M |
| | b | A 750 KW, 11KV, 3-phase star connected synchronous motor has a synchronous reactance of 35Ω/ph and negligible resistance. Determine the excitation e.m.f. per phase when the motor is operating on full load at 0.8 p.f leading. Its efficiency under this condition is 93%. | CO4 | L3 | 6M |

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 8 | | Derive the expression for power developed by the synchronous motor. | CO4 | L3 | 12M |
|---|--|---|-----|----|-----|

UNIT-V

- | | | | | | |
|---|---|---|-----|----|----|
| 9 | a | Explain the phasor Diagram of A.C Series Motor. | CO5 | L3 | 6M |
| | b | A 220V,500W,50Hz series motor has a total resistance of 2Ω and total reactance of 20 Ω. The full load stray losses and speed are 40W and 500r.p.m. Determine the current taken by the motor and power factor at rated load. | CO5 | L2 | 6M |

OR

- | | | | | | |
|----|--|--|-----|----|-----|
| 10 | | Explain the working and performance characteristics of permanent Magnet D.C motor. | CO5 | L3 | 12M |
|----|--|--|-----|----|-----|

*** END ***

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

B.Tech II Year II Semester Supplementary Examinations April-2026
ANALOG COMMUNICATIONS

(ECE)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | |
|---|--|-----|----|----|
| 1 | a Draw the basic block diagram of communication system | CO1 | L1 | 6M |
| | b Define modulation? Explain different types of modulation | CO1 | L1 | 6M |

OR

- | | | | | |
|---|---|-----|----|----|
| 2 | a How a modulating signal can be detected using ENVELOPE DETECTOR and explain | CO1 | L2 | 6M |
| | b Mention the Applications of AM wave | CO1 | L2 | 6M |

UNIT-II

- | | | | | |
|---|---|-----|----|----|
| 3 | a What is DSB-SC Modulation? Explain the time and frequency domain expressions of DSB-SC wave | CO1 | L1 | 6M |
| | b Obtain the expression for total transmitted power of DSB-SC wave | CO1 | L2 | 6M |

OR

- | | | | | |
|---|---|-----|----|----|
| 4 | a Explain VSB modulation? Mention the advantages and applications of VSB modulation | CO1 | L2 | 6M |
| | b Compare all Amplitude modulation techniques | CO1 | L2 | 6M |

UNIT-III

- | | | | | |
|---|---|-----|----|----|
| 5 | a Explain the concept of Instantaneous frequency | CO2 | L2 | 6M |
| | b Derive the expression for single - tone frequency modulation with necessary waveforms | CO2 | L3 | 6M |

OR

- | | | | | |
|---|--|-----|----|----|
| 6 | a Write a short notes on Pre-Emphasis and De-Emphasis circuits | CO2 | L2 | 6M |
| | b Discuss about the transmission bandwidth of FM signal | CO2 | L2 | 6M |

UNIT-IV

- | | | | | |
|---|---|-----|----|----|
| 7 | a Explain about sensitivity, selectivity and fidelity | CO5 | L2 | 6M |
| | b Draw block diagram of Super-heterodyne AM receiver and explain function of each block | CO5 | L1 | 6M |

OR

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|---|--|-----|----|----|
| 8 | a Discuss about different sources of noise | CO3 | L2 | 6M |
| | b Explain effective noise temperature and noise figure | CO3 | L2 | 6M |

UNIT-V

- | | | | | |
|---|---|-----|----|----|
| 9 | a State the definitions of different types of analog pulse modulation schemes | CO4 | L1 | 6M |
| | b Write the advantages and disadvantages of PAM | CO4 | L2 | 6M |

OR

- | | | | | |
|----|--|-----|----|----|
| 10 | a Explain Entropy, Information rate and Mutual information | CO5 | L2 | 6M |
| | b Write a short note on channel capacity theorem | CO5 | L2 | 6M |

*** END ***

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)
B.Tech II Year II Semester Supplementary Examinations April-2026
DISCRETE MATHEMATICS
 (Common to CSE & CSIT)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- Explain the connectives and their truth tables. **CO1 L2 6M**
 - Define the Principle Conjunctive Normal Form? Obtain the PCNF of $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$. **CO1 L2 6M**

OR

- Show that s is a valid conclusion from the premises $p \rightarrow q, p \rightarrow r, \neg(q \wedge r)$ and $s \vee p$. **CO1 L4 6M**
 - Obtain PCNF of $A = (p \wedge q) \vee (\neg p \wedge q) \vee (q \wedge r)$ by constructing PDNF. **CO1 L3 6M**

UNIT-II

- Let A be a given finite set and $P(A)$ its power set. Let \subseteq be the inclusion relation on the elements of $P(A)$. Draw the Hasse diagram of $(P(A), \subseteq)$ for 2. i) $A = \{a, b\}$ ii) $A = \{a, b, c\}$ iv) $A = \{a, b, c, d\}$ **CO2 L3 12M**

OR

- Show that $S = \{1, 2, 3, 4, 5\}$ is not a group under addition & multiplication modulo 6. **CO2 L3 6M**
 - Prove that the set of all integers Z is an abelian group with the operation $**$, defined as $a * b = a + b + 1, \forall a, b \in Z$. **CO2 L3 6M**

UNIT-III

- In how many ways can the letters of the word COMPUTER be arranged? How many of them begin with C and end with R? How many of them do not begin with C but end with R? **CO3 L3 6M**
 - Enumerate the number of non negative integral solutions to the inequality $x_1 + x_2 + x_3 + x_4 + x_5 \leq 19$. **CO3 L3 6M**

OR

- Consider a set of integers from 1 to 250. Find how many of these numbers are divisible by 3 or 5 or 7. Also indicate how many are divisible by 3 or 7 but not by 5 and divisible by 3 or 5. **CO3 L3 6M**
 - Find the minimum number of students in a class to be sure that 4 out of them are born on the same month. **CO3 L3 6M**

UNIT-IV

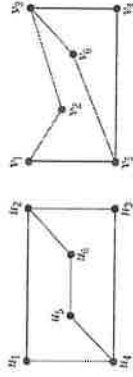
- Solve $a_n = a_{n-1} + 2a_{n-2}, n > 2$ with initial conditions $a_0 = 0, a_1 = 1$. **CO4 L3 6M**
 - Solve $a_n = 2a_{n-1} - a_{n-2}$ with initial conditions $a_1 = 1, a_2 = 3$. **CO4 L3 6M**

OR

- Solve $a_n - 7a_{n-1} + 10a_{n-2} = 4^n$ **CO4 L3 6M**
 - $a_n - 4a_{n-1} + 4a_{n-2} = (n+1)^2$ given that $a_0 = 0, a_1 = 1$. **CO4 L3 6M**

UNIT-V

- Define Spanning tree and explain the algorithm for Depth First Search (DFS) traversal of a graph with suitable example. **CO5 L2 6M**
 - Define isomorphism of graphs. Prove that the following graphs are isomorphic. **CO5 L4 6M**



OR

- Let G be a 4-regular connected planar graph having 16 edges. Find the number of regions of G . **CO3 L3 6M**
 - Define Euler circuit, Hamilton cycle, Wheel graph. Find the chromatic polynomial & chromatic number for $K_{3,3}$. **CO3 L2 6M**

***** END *****

UNIT-I

- 1 a Sketch the Hybrid- π model and explain the significance of each and every component in it. CO1 L2 6M
 b Explain various methods used for coupling multistage amplifiers with their frequency response. CO1 L2 6M

OR

- 2 With the help of necessary circuit diagrams and approximations, deduce the expression for CE short circuit current gain and derive the relation between f_β and f_T . CO1 L3 12M

UNIT-II

- 3 a Explain Feedback amplifier topologies with necessary diagram. CO2 L2 6M
 b Deduce the expressions of Gain, input and output resistances for a Voltage Series feedback amplifier. CO2 L4 6M

OR

- 4 a Explain the basic concept of Feedback in amplifier with suitable block diagram. CO2 L2 6M
 b Examine the effect of negative feedback on input resistance for Current shunt and Voltage shunt Feedback amplifier. CO2 L3 6M

UNIT-III

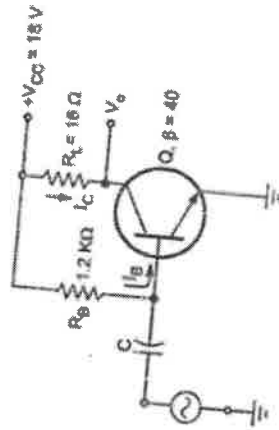
- 5 a Construct RC phase shift oscillator using BJT and deduce its expression for frequency of oscillations. CO3 L5 6M
 b Determine the frequency of oscillations when a RC phase shift oscillator has $R=100\text{ k}\Omega$, $C=0.01\text{ }\mu\text{F}$ and $R_C=2.2\text{ k}\Omega$. Also find the minimum current gain needed for this purpose. CO3 L4 6M

OR

- 6 a Draw the circuit diagram of Colpitts oscillator using BJT and deduce the expression for frequency of oscillations. CO3 L4 8M
 b In the Colpitts oscillator, $C_1=0.2\text{ }\mu\text{F}$ and $C_2=0.02\text{ }\mu\text{F}$. If the frequency of oscillation is 10kHz, Calculate the value of inductor. CO3 L3 4M

UNIT-IV

- 7 a A series fed Class A amplifier shown in the Fig, operates from dc source and applied sinusoidal input signal generates peak base current of 9mA. Determine (i) Quiescent current I_{CQ} , (ii) Quiescent voltage V_{CEQ} , (iii) DC input power P_{DC} , (iv) AC output power PAC and (v) Efficiency. CO4 L4 7M



- b Discuss about Transformer coupled Class A Power Amplifier with diagram and determine its Maximum efficiency. CO4 L2 5M

OR

- 8 a With circuit diagram, describe the stagger tuning operation. Sketch necessary waveforms. CO4 L3 6M
 b Discuss the stability considerations of a tuned amplifier. CO4 L2 6M

UNIT-V

- 9 With neat diagram, explain the modified and Emitter Coupled Astable multivibrator. CO5 L3 12M

OR

- 10 a Explain a triggering method for monostable multivibrator. CO5 L2 6M
 b Compare Astable and Monostable multivibrators. CO5 L4 6M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Semester Supplementary Examinations April-2026
NUMERICAL METHODS, PROBABILITY & STATISTICS

(Common to AGE & ME)

Time: 3 Hours
Max. Marks: 60

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

UNIT-I

- 1 Find a positive root of $x^2 - x - 1 = 0$ correct to two decimal places by Bisection method. CO1 L3 12M

OR

- 2 From the following table values of x and $y = \tan x$. Interpolate values of y when $x=0.12$ and $x=0.28$. CO1 L2 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 R-K method of 4th order find $y(0.1)$, $y(0.2)$ and $y(0.3)$ given that $y' = 1 + xy$, $y(0) = 2$. CO2 L3 12M

OR

- 4 Evaluate $\int_0^1 \frac{1}{1+x} dx$ by Trapezoidal rule, Simpson's $\frac{1}{3}$ rule, Simpson's $\frac{3}{8}$ rule and compare the result with actual value. CO2 L3 12M

UNIT-III

- 5 a Find the median to the following data CO3 L2 6M

Class Intervals	40-50	50-60	60-70	70-80	80-90
Frequency	5	12	23	8	2

- b Find arithmetic mean to the following data

x	1	2	3	4	5
f	5	8	10	12	6

OR

- 6 a In a certain town 40% have brown hair, 25% have brown eyes and 15% have both brown hair and brown eyes. A person is selected at random from the town. CO3 L2 6M

- i) If he has brown hair, what is the probability that he has brown eyes also?
 ii) If he has brown eyes, determine the probability, that he does not have brown hair?

- b The probability that students A, B, C, D solve the problem are $\frac{1}{3}, \frac{2}{5}, \frac{1}{5}, \frac{1}{5}$ CO3 L2 6M

and $\frac{1}{4}$ and respectively. If all of them try to solve the problem, what is the probability that the problem is solved.

UNIT-IV

- 7 A random variable X has the following probability function CO4 L2 12M

X	0	1	2	3	4	5	6	7
$P(X)$	0	K	2K	2K	3K	K ²	2K ²	7K ² +K

Determine (i) K (ii) Mean (iii) Variance. (iv) if $P(X \leq K) > 1/2$, find the Minimum value of K.

OR

8 For the continuous probability function $f(x) = \begin{cases} kx^2e^{-x}; & \text{when } x \geq 0 \\ 0; & \text{elsewhere} \end{cases}$ CO4 L2 12M

Find (i) k (ii) Mean (iii) Variance.

UNIT-V

- 9 Out of 800 families with 5 children each, how many would you expect to have (i) 3 boys (ii) 5 girls (iii) either 2 or 3 boys (iv) at least one boy. CO5 L3 12M

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 ***

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

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

ELECTROMAGNETIC FIELDS
(Electrical & Electronics Engineering)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- 1 a Convert point P(1,3,5) from cartesian to cylindrical and spherical co ordinates system. **CO1 L4 6M**
 b Given the two points A (X=2, Y=3, Z=-1) and B= (r=4, $\theta=25^\circ$ and $\phi=120^\circ$). Find the spherical co-ordinates of A and cartesian co-ordinates of B **CO1 L4 6M**

OR

- 2 a The Three fields are given by $A=2ax -az$, $B= 2 ax-ay+2az$,
 $C= 2ax-3ay +az$. **CO1 L4 6M**
 Find the scalar and vector triple product.
 b Find the gradient of the following scalar fields **CO1 L4 6M**
 i) $V= e-z \sin 2x \cosh y$,
 ii) $U= r^2 z \cos \phi$ and iii) $W= 10r \sin 2\theta \cos \phi$.

UNIT-II

- 3 a State and explain Coulomb's law indicating clearly the units of quantities in the equation of force. **CO2 L3 6M**
 b State and prove Gauss's law and write limitations of Gauss's law. **CO2 L3 6M**
- OR**
- 4 a The potential field in free space is given by $V=(50/r)$, $a < r < b$ (spherical) show that $\rho_v=0$ for $a < r$. **CO2 L4 6M**
 b An electric potential is given by $V=(60 \sin \theta / r^2)$ v . **CO2 L4 6M**
 Find V and E at P(3,60°,25°).

UNIT-III

- 5 a Derive the continuity equation. What is its physical significance? **CO3 L4 6M**
 b Derive the point form of ohms law. **CO3 L4 6M**
- OR**
- 6 a Explain the boundary conditions between conductor and free space. **CO3 L3 6M**
 b Find the magnitude of D and P for a dielectric material in which $E=0.15$ mV/m and $\chi=4.25$. **CO3 L3 6M**

UNIT-IV

- 7 a Explain maxwell's second equation. **CO4 L3 6M**
 b State and explain ampere's circuital law. **CO4 L3 6M**
- OR**
- 8 a Calculate the inductance of a solenoid of 200 turns wound tightly on a cylindrical tube of 6 cm diameter. The length of the tube is 60 cm and the solenoid is in air. **CO4 L3 6M**
 b Find inductance per unit length of a co-axial cable if radius of inner and outer conductors are 1 mm and 3 mm respectively. Assume relative permeability unity. **CO4 L3 6M**

UNIT-V

- 9 Write Maxwell's equation in good conductors for time varying fields and static fields both in differential and integral form. **CO5 L4 12M**
- OR**
- 10 Derive an expression for motional and transformer induced emf. **CO5 L4 12M**

*** END ***

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

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

METROLOGY & MEASUREMENTS

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- 1 Construct the conventional diagram of limits and fits and explain all terms. CO1 L2 12M
OR
2 Describe briefly the principal features of the Indian standard System of limits and fits. CO1 L2 12M

UNIT-II

- 3 a What is mean by wringing process? Describe briefly the manufacture of slip gauges. CO2 L1 6M
b What is procedure for buildup slip gauge blocks for required dimension CO2 L1 6M
OR
4 a Explain why it is not preferred to use sine bar for measuring angles more than 45°. CO2 L2 6M
b A 100mm sine bar is to be set up to angle of 33°, determine the slip gauges needed from 87 pieces set. CO2 L3 6M

UNIT-III

- 5 Explain with the help of neat sketches the principle and construction of an auto collimator. CO3 L2 12M
OR
6 Sketch and explain working and application of versatile instrument of toolmakers microscope. CO3 L2 12M

UNIT-IV

- 7 List out Displacement transducers? Explain inductive transducer with suitable sketch. CO4 L2 12M
OR
8 What do you understand about measurement of torque? Discuss about strain gauge torque meter. CO4 L2 12M

UNIT-V

- 9 Sketch a Mcleod gauge and explain working principle and its applications, limitations. CO5 L2 12M
OR
10 Discuss about Differential U-Tube Manometer in details and Derive the expression for pressure difference. CO5 L2 12M

*** END ***

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

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

COMPUTER NETWORKS

(Common to CSE & CSIT)

Time: 3 Hours

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

Max. Marks: 60

UNIT-I

1 Write about various Network topologies? CO1 L1 12M

OR

2 a Classify performance of the networks. CO1 L3 6M

b Briefly explain about different guided media CO1 L1 6M

UNIT-II

3 a Classify the Data Link Layer Design Issues. CO2 L3 6M

b Describe flow control in data link layer. CO2 L2 6M

OR

4 Discuss HDLC Protocol with the elaborative explanation of its frames CO2 L6 12M

UNIT-III

5 List and explain congestion control algorithms in network layer. CO3 L4 12M

OR

6 Illustrate Link State Routing algorithm to find the route and ages of Routers. CO3 L2 12M

UNIT-IV

7 a Elaborate each field of TCP segment header with neat diagram. CO4 L2 6M

b Explain the three way handshake protocols with suitable diagram. CO4 L5 6M

OR

8 a Write in detail about User Datagram Protocol(UDP). CO4 L3 6M

b Write in detail about performance issues of transport layer. CO4 L3 6M

UNIT-V

9 a List out the four main properties of HTTP. CO5 L4 6M

b Illustrate in detail about function and structure of e-mail protocol. CO5 L2 6M

OR

10 Discuss about File Transfer Protocol with neat diagram. CO5 L6 12M

*** END ***

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

B.Tech III Year II Semester Supplementary Examinations April-2026
MICROPROCESSORS AND MICROCONTROLLERS

(Common to EEE & ECE)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- 1 Explain, how computers are classified from large computers to single-chip microcontrollers. CO1 L5 12M

OR

- 2 a Sketch the functional block diagram of the microcomputer system and summarize the function of each block. CO1 L1 6M
b Distinguish Low level and high-level Languages. CO1 L3 6M

UNIT-II

- 3 a Illustrate the timing and control signals generation in 8085 microprocessor. CO2 L2 6M
b Explain the functions of a program counter, stack pointer & ALU in 8085 μ P. CO2 L5 6M

OR

- 4 Discuss how data flow from memory to Microprocessor with a timing diagram. CO2 L6 12M

UNIT-III

- 5 a List the applications of the timers and counters in 8051 microcontrollers. CO3 L4 4M
b Illustrate the operation of timers present in 8051 microcontroller. CO3 L2 8M

OR

- 6 a Explain the modes of operation using SCON register in 8051 μ C CO3 L5 6M
b Define and draw the formats for IE, IP and TCON register. CO3 L1 6M

UNIT-IV

- 7 a Explain, how the stack can be used in the subroutine process in 8051 microcontroller. CO4 L2 4M
b Discuss the following instructions of 8051 microcontroller with an example. (i) Bit-level instructions (ii) Byte level instructions CO4 L6 8M

OR

- 8 a Describe the operation of return instruction in 8051 microcontroller with a suitable example. CO4 L2 6M
b Compare CALL and PUSH instructions CO4 L3 6M

UNIT-V

- 9 a With the help of a neat sketch, show the interfacing of ADC 0808 with 8051 microcontroller and explain its operation. CO5 L1 6M
b With the help of a neat sketch, show the interfacing of DAC 1408 with an 8051 microcontroller and explain its operation. CO5 L1 6M

OR

- 10 a Define Interrupt and classify the interrupts. CO5 L1 6M
b Explain multiple interrupts present in 8051 microcontroller. CO5 L5 6M

*** END ***

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

B.TechIII Year II Semester Supplementary Examinations April-2026

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

(Common to CSIT & CSE)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | |
|---|---|-----|----|----|
| 1 | a Illustrate various characteristics of Intelligent agents. | CO1 | L3 | 6M |
| | b Explain Foundations of Artificial Intelligence. | CO1 | L1 | 6M |

OR

- | | | | | |
|---|--|-----|----|----|
| 2 | a Analyse water jug problem in AI with operators involved in it. | CO1 | L4 | 6M |
| | b Design and Solve Vacuum Cleaner toy problem in AI. | CO1 | L3 | 6M |

UNIT-II

- | | | | | |
|---|--|-----|----|----|
| 3 | a Explain A* Algorithm finds a shortest distance between Source and Goal state? | CO1 | L2 | 6M |
| | b Analyze Depth Limited search and Bidirectional search techniques with suitable examples? | CO2 | L4 | 6M |

OR

- | | | | | |
|---|--|-----|----|-----|
| 4 | Illustrate the working principle of Alpha – Beta pruning with neat sketch. | CO2 | L3 | 12M |
|---|--|-----|----|-----|

UNIT-III

- | | | | | |
|---|---|-----|----|----|
| 5 | a Explain the various types of Machine Learning techniques. | CO3 | L2 | 6M |
| | b List out an applications of Machine Learning. | CO3 | L1 | 6M |

OR

- | | | | | |
|---|---|-----|----|----|
| 6 | a Elaborate the Bayes Estimator in supervised learning? | CO3 | L6 | 6M |
| | b Illustrate Gradient descent algorithm and its variants. | CO3 | L3 | 6M |

UNIT-IV

- | | | | | |
|---|--|-----|----|----|
| 7 | a Discuss the following terms
i. unsupervised learning ii. Clustering | CO4 | L2 | 6M |
| | b Illustrate the mixtures of latent variable models? | CO4 | L2 | 6M |

OR

- | | | | | |
|---|--|-----|----|----|
| 8 | a Generalize K-Means algorithm in Machine Learning. | CO4 | L6 | 6M |
| | b Demonstrate Hierarchical Clustering with simple example? | CO4 | L2 | 6M |

UNIT-V

- | | | | | |
|---|---|-----|----|----|
| 9 | a Explain the following terms
i. Reinforcement learning ii. Density Estimation | CO5 | L2 | 6M |
| | b Explain Histogram Estimator with simple example? | CO5 | L2 | 6M |

OR

- | | | | | |
|----|--|-----|----|----|
| 10 | a Illustrate Condensed Nearest Neighbor in reinforcement learning? | CO5 | L3 | 6M |
| | b Assess in detail about partially observables states in learning? | CO5 | L5 | 6M |

*** END ***

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year II Semester Supplementary Examinations April-2026
POWER SYSTEM OPERATION AND CONTROL
(Electrical and Electronics Engineering)

Time: 3 Hours

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

Max. Marks: 60

UNIT-I

- 1 a Briefly explain the incremental fuel cost of a thermal power station. CO1 L2 4M
 b The fuel-cost functions of two generating units are given as: CO1 L3 8M
 $C_1 = 1.5 + 20P_{G1} + 0.1P_{G1}^2$ (Rs/hr),
 $C_2 = 1.9 + 30P_{G2} + 0.1P_{G2}^2$ (Rs/hr).
 If the total generation demand is 2000MW, determine the economic load scheduling of the two units.

OR

- 2 Explain the method of generation allocation considering the effect of CO1 L3 12M
 transmission line losses.

UNIT-II

- 3 a Explain the classification of hydro power plants with a neat diagram. CO2 L2 8M
 b State the necessity of connecting two different plants to supply the same CO2 L1 4M
 load.

OR

- 4 Briefly explain the short-term hydro-thermal scheduling problem. CO2 L2 12M

UNIT-III

- 5 List the parts of a speed governor system and explain each part with a CO3 L2 12M
 neat sketch.

OR

- 6 Two generating stations, A and B have full-load capacities of 200 MW CO3 L3 12M
 and 75 MW respectively. They are inter-connected through a induction motor / synchronous generator set (Plant-C) rated at 25 MW located near station A. The speed regulations of A, B and C are 5%, 4% and 3% respectively. The loads on bus-bars A and B are 75 MW and 30 MW respectively. Determine the load taken by Plant-C and indicate the direction of power flow.

UNIT-IV

- 7 Draw the typical block diagram of a two-area system inter-connected CO4 L3 12M
 system and explain each block.

OR

- 8 For an isolated area with the following data, capacity of 4000 MW, CO4 L3 12M
 Frequency of 50 Hz, operating at a load of 2500 MW, speed regulation constant is 2 Hz/pu MW. Inertia constant is 5sec. A 2% of load change takes place for a 1% of change in frequency. Find,

- i) maximum step change that will limit the steady-state frequency deviation not exceed to not more than 0.2 Hz.
 ii) the frequency deviation as a function of time following a step load change.

UNIT-V

- 9 a Describe series compensation used in transmission lines. CO5 L2 6M
 b A short transmission line with impedance $(2 + j3) \Omega$ interconnects two CO5 L3 6M
 power stations namely A and B, both operating at 11 KV with equal voltage magnitude and phase. To transfer 25 MW at 0.8 p.f. lagging from A to B, determine the voltage boost required at station-A.

OR

- 10 a Explain the limitations of series compensation. CO5 L2 6M
 b Define surge impedance loading and derive the necessary equations. CO5 L2 6M

*** END ***

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

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

BIG DATA ANALYTICS

(Common to CSIT & CSE)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|--|-----|----|----|
| 1 | a | Examine the different types of digital data with examples. | CO1 | L3 | 6M |
| | b | Discuss Big Data in terms of three dimensions, volume, variety and velocity. | CO1 | L4 | 6M |

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 2 | a | Explain the difference between structure, unstructured and semi-structure data with an examples. | CO1 | L3 | 6M |
| | b | List the Top challenges facing big data. | CO1 | L2 | 6M |

UNIT-II

- | | | | | | |
|---|---|---|-----|----|----|
| 3 | a | Illustrate the HDFS concepts. | CO2 | L4 | 6M |
| | b | Explain the block, name node and data node in Hadoop file system. | CO2 | L3 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 4 | a | What is an interface? Establish the Hadoop system interfaces. | CO2 | L4 | 6M |
| | b | Discuss about the Hadoop Archives and its Limitations. | CO2 | L2 | 6M |

UNIT-III

- | | | | | | |
|---|---|---|-----|----|----|
| 5 | a | List and explain the different types of failures in YARN. | CO3 | L4 | 6M |
| | b | Describe the Default MapReduce Job. | CO3 | L2 | 6M |

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 6 | | Describe the Shuffle and Sort operations in Map side and Reduce side. | CO3 | L3 | 12M |
|---|--|---|-----|----|-----|

UNIT-IV

- | | | | | | |
|---|--|--|-----|----|-----|
| 7 | | Examine the Relational Operators in Pig Latin. | CO4 | L3 | 12M |
|---|--|--|-----|----|-----|

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 8 | a | Evaluate the Expressions and types in Pig Latin | CO4 | L3 | 6M |
| | b | Evaluate Data Processing Operators in Pig Latin. | CO4 | L3 | 6M |

UNIT-V

- | | | | | | |
|---|--|------------------------------------|-----|----|-----|
| 9 | | Illustrate Hive table with example | CO5 | L2 | 12M |
|---|--|------------------------------------|-----|----|-----|

OR

- | | | | | | |
|----|---|---------------------------------|-----|----|----|
| 10 | a | Differentiate Hbase over RDBMS. | CO5 | L2 | 6M |
| | b | Explain about IBM Big SQL. | CO5 | L3 | 6M |

*** END ***

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

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

DIGITAL SIGNAL PROCESSING

(Electronics & Communications Engineering)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|---|-----|----|----|
| 1 | a | What is the DFT expression and Relate the DFT to the Z-Transform. | CO1 | L1 | 6M |
| | b | Compute the 4-point DFT for the sequence and plot magnitude and phase response. | CO1 | L3 | 6M |

$$x(n) = 1; 0 \leq n \leq 2$$

$$= 0; \text{ otherwise}$$

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 2 | | Compute DFT of the sequence $x(n) = \{1,1,1,1,1,1,0\}$ using Radix-2 DIT-FFT algorithm. | CO1 | L3 | 12M |
|---|--|---|-----|----|-----|

UNIT-II

- | | | | | | |
|---|---|---|-----|----|----|
| 3 | a | Explain the steps in the design of an analog Chebyshev low pass filter. | CO2 | L2 | 6M |
| | b | Design an analog filter using Chebyshev approximation for the specifications $\alpha_p = 3\text{dB}$ and $\alpha_s = 16\text{dB}$; $f_p = 1\text{KHz}$ and $f_s = 2\text{KHz}$. | CO2 | L3 | 6M |

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 4 | a | Describe impulse invariant method of designing IIR filter. | CO2 | L2 | 6M |
| | b | Construct the Direct form I and Direct form II, of the LTI System described by the equation $y(n) = -\frac{3}{8}y(n-1) + \frac{3}{32}y(n-2) + \frac{1}{64}y(n-3) + x(n) + 3x(n-1)$ | CO1 | L3 | 6M |

UNIT-III

- | | | | | | |
|---|---|---|-----|----|----|
| 5 | a | Explain the Fourier Series method of Designing FIR Filters. | CO3 | L2 | 6M |
| | b | Distinguish between FIR and IIR Filter. | CO3 | L4 | 6M |

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 6 | a | Explain the design steps of FIR filters using windows. | CO3 | L2 | 6M |
| | b | Construct the cascade realization of FIR Filters for the function $H(Z) = (1 + 2z^{-1} - z^{-2})(1 + z^{-1} - z^{-2})$ | CO3 | L3 | 6M |

UNIT-IV

- | | | | | | |
|---|---|---|-----|----|----|
| 7 | a | What is quantization of analog signals? Derive the expression for the quantization error. | CO4 | L1 | 6M |
| | b | Discuss in detail the errors resulting from rounding and truncation. | CO5 | L2 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 8 | a | Conclude on steps to prevent limit cycle oscillations? Explain. | CO4 | L5 | 6M |
| | b | What is a dead band of a filter? Explain. | CO4 | L1 | 6M |

UNIT-V

- | | | | | | |
|---|---|---|-----|----|----|
| 9 | a | Summarize the overview of digital signal processors. | CO6 | L2 | 6M |
| | b | Compare the various architectures employed in designing a digital signal processor. | CO6 | L2 | 6M |

OR

- | | | | | | |
|----|---|--|-----|----|----|
| 10 | a | Discuss the advantages and disadvantages of VLIW architecture. | CO6 | L2 | 6M |
| | b | Explain in detail the application of PDSP's in the field of communication systems. | CO6 | L2 | 6M |

*** END ***

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

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

WEB TECHNOLOGIES

(Common to CSE & CSIT)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|---|-----|----|----|
| 1 | a | Explain XHTML and Specify some new tags in XHTML? | CO1 | L3 | 6M |
| | b | Discuss in detail about Multimedia with an example. | CO1 | L2 | 6M |

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 2 | | Explain HTML 5.0 and mention the tag differences between HTML and HTML 5.0. | CO1 | L3 | 12M |
|---|--|---|-----|----|-----|

UNIT-II

- | | | | | | |
|---|--|--|-----|----|-----|
| 3 | | Define Function in JavaScript. Write a program using functions with arguments. | CO2 | L3 | 12M |
|---|--|--|-----|----|-----|

OR

- | | | | | | |
|---|---|--|-----|----|----|
| 4 | a | Develop a program using onclick Event in JavaScript. | CO2 | L3 | 6M |
| | b | What are the primitive data types in JavaScript? | CO2 | L2 | 6M |

UNIT-III

- | | | | | | |
|---|--|---|-----|----|-----|
| 5 | | Describe the servlet architecture and Execution of servlet for the program to display a welcome message on the client system. | CO3 | L3 | 12M |
|---|--|---|-----|----|-----|

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 6 | a | Difference between Generic Servlet and HttpServlet. | CO3 | L2 | 6M |
| | b | Describe DOM Event handling. | CO3 | L3 | 6M |

UNIT-IV

- | | | | | | |
|---|--|--|-----|----|-----|
| 7 | | Write a Java servlet Program to implement the Book Information using JDBC. | CO4 | L3 | 12M |
|---|--|--|-----|----|-----|

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 8 | a | Explain Regular expressions in PHP with an example. | CO4 | L2 | 6M |
| | b | Illustrate SAX –Transforming XML documents. | CO4 | L3 | 6M |

UNIT-V

- | | | | | | |
|---|--|--|-----|----|-----|
| 9 | | Explain the method of creating a web service client with an example. | CO5 | L3 | 12M |
|---|--|--|-----|----|-----|

OR

- | | | | | | |
|----|--|---|-----|----|-----|
| 10 | | Design simple application for accessing the data using XML. | CO5 | L4 | 12M |
|----|--|---|-----|----|-----|

*** END ***

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

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

MICROWAVE THEORY AND TECHNIQUES

(Electronics & Communications Engineering)

Time: 3 Hours

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

Max. Marks: 60

UNIT-I

- 1 a Describe the concept of dominant mode and degenerate mode with suitable examples. CO1 L1 6M
b Compute the expression for phase velocity. CO1 L2 6M

OR

- 2 a Express the equation for wave impedance in TE and TM waves. CO1 L2 6M
b Explain about various losses that occur in microwave transmission. CO1 L2 6M

UNIT-II

- 3 a Describe the cavity resonator with neat sketch and List it types & applications. CO2 L2 6M
b Demonstrate the working principle of strip line. CO2 L2 6M

OR

- 4 a Explain the working principle of Gyrator with neat sketch. CO2 L2 6M
b What is Isolator? Derive its S-matrix. CO2 L2 6M

UNIT-III

- 5 a Describe the Resistive Card attenuator with neat diagram ? CO3 L3 6M
b Explain the significance and formulation of S-matrix in detail. CO3 L2 6M

OR

- 6 a Derive the S-matrix for E-Plane Tee. CO3 L3 6M
b What are the types of directional coupler? Explain in detail. CO3 L3 6M

UNIT-IV

- 7 Explain the velocity modulation process in two cavity Klystron tube and derive the equation for velocity modulation. CO4 L3 12M

OR

- 8 Discuss in detail about the working of Reflex Klystron with mechanism and modes of oscillation CO4 L3 12M

UNIT-V

- 9 a Discuss in detail about the microwave power measurement using Bolometric technique. CO5 L2 6M
b What are the precautions to be taken while setting up microwave bench for measurement of various parameters? Explain. CO5 L2 6M

OR

- 10 a Explain the measurement of Quality factor (Q) using Reflectometer method. CO5 L3 6M
b Describe the measurement of impedance using slotted line method. CO5 L2 6M

*** END ***

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

B.Tech III Year II Semester Supplementary Examinations April-2026
STRATEGIC MANAGEMENT

(Open Elective-IV)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|---|-----|----|----|
| 1 | a | Discuss the nature and significance of strategic management. | CO1 | L2 | 6M |
| | b | Elaborate the basic elements of strategic management process. | CO1 | L2 | 6M |

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 2 | | Discuss about environmental scanning and explain the process of environmental scanning. | CO1 | L3 | 12M |
|---|--|---|-----|----|-----|

UNIT-II

- | | | | | | |
|---|---|---|-----|----|----|
| 3 | a | What are the components of GE matrix? | CO2 | L2 | 6M |
| | b | Explain how value chain analysis could help in organizational analysis. | CO2 | L4 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 4 | a | Explain the application of TOWS matrix in strategy formulation. | CO2 | L3 | 6M |
| | b | Outline the Significance of Porter's Five Forces Analysis. | CO2 | L4 | 6M |

UNIT-III

- | | | | | | |
|---|--|---|-----|----|-----|
| 5 | | Explain about Corporate level Strategy elaborately. | CO3 | L4 | 12M |
|---|--|---|-----|----|-----|

OR

- | | | | | | |
|---|--|--|-----|----|-----|
| 6 | | Explain about retrenchment strategy and combination strategy used in an organization for profit maximization of a company. | CO3 | L3 | 12M |
|---|--|--|-----|----|-----|

UNIT-IV

- | | | | | | |
|---|--|--|-----|----|-----|
| 7 | | Explain briefly defensive strategies with suitable examples. | CO4 | L3 | 12M |
|---|--|--|-----|----|-----|

OR

- | | | | | | |
|---|--|---|-----|----|-----|
| 8 | | How to implement management of change in the workplace? | CO4 | L4 | 12M |
|---|--|---|-----|----|-----|

UNIT-V

- | | | | | | |
|---|--|--|-----|----|-----|
| 9 | | What are the salient techniques of strategic evaluation and control? | CO5 | L3 | 12M |
|---|--|--|-----|----|-----|

OR

- | | | | | | |
|----|--|--|-----|----|-----|
| 10 | | What is Benchmarking? Explain the role of a strategist in evaluating the performance using benchmarking. | CO5 | L4 | 12M |
|----|--|--|-----|----|-----|

*** END ***

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

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

MATLAB PROGRAMMING

(Open Elective-IV)

Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- | | | | | | |
|---|---|---|-----|----|----|
| 1 | a | What are the good programming practices for MATLAB? | CO1 | L1 | 6M |
| | b | Describe input and output commands used in MATLAB. | CO1 | L2 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 2 | a | Compare local variable and global variable in MATLAB. | CO1 | L4 | 6M |
| | b | Calculate first 10 numbers of Fibonacci series and Display on MATLAB. | CO1 | L3 | 6M |

UNIT-II

- | | | | | | |
|---|---|---|-----|----|----|
| 3 | a | Explain about polynomial operations using arrays with examples. | CO2 | L2 | 6M |
| | b | Define Empty array with 3 examples. | CO2 | L1 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 4 | a | Distinguish between array multiplication and matrix multiplication with an example. | CO2 | L5 | 6M |
| | b | Which function is used for high level graphical display of the structure of a cell array? | CO2 | L1 | 6M |

UNIT-III

- | | | | | | |
|---|---|--|-----|----|----|
| 5 | a | What are functions? what its types. (Built-in and User Defined). | CO3 | L1 | 6M |
| | b | Explain in detail about working with data files. | CO3 | L2 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 6 | a | Explain Nested function with an example. | CO3 | L2 | 6M |
| | b | Briefly explain importing and exporting excel data files in MATLAB. | CO3 | L2 | 6M |

UNIT-IV

- | | | | | | |
|---|---|---|-----|----|----|
| 7 | a | How program is designed and developed in MATLAB? | CO4 | L1 | 6M |
| | b | Lists the requirements essential to producing plots that communicate effectively. | CO4 | L1 | 6M |

OR

- | | | | | | |
|---|---|---|-----|----|----|
| 8 | a | How does the subplot function will work in plotting graphs? | CO4 | L1 | 6M |
| | b | Explain about Exponential and Logarithmic functions. | CO4 | L2 | 6M |

UNIT-V

- | | | | | | |
|---|---|---|-----|----|----|
| 9 | a | Explain the Reduced Row Echelon Form with an example. | CO5 | L2 | 6M |
| | b | Explain Underdetermined Systems with an example. | CO5 | L2 | 6M |

OR

- | | | | | | |
|----|---|---|-----|----|----|
| 10 | a | For what cases left division method gives error? Explain. | CO6 | L2 | 6M |
| | b | Rewrite in brief about: | CO6 | L3 | 6M |
| | | i) Under determined system | | | |
| | | ii) over determined system | | | |

*** END ***

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

B.Tech II Year II Semester Supplementary Examinations April-2026
FORMAL LANGUAGES AND AUTOMATA THEORY
(Computer Science and Engineering)

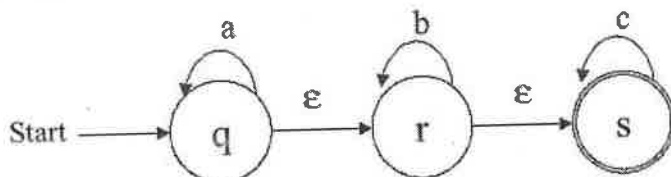
Time: 3 Hours

Max. Marks: 60

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

UNIT-I

- 1 Convert the following NFA with ϵ moves to DFA without ϵ moves by ϵ -closure method. CO1 L3 12M



OR

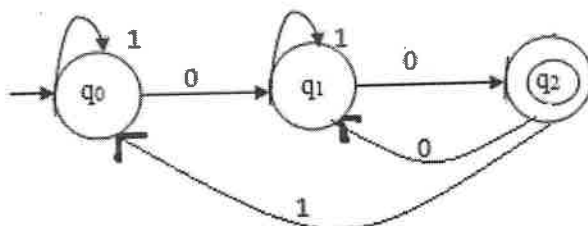
- 2 a Analyze and explain with example Chomsky Hierarchy. CO1 L4 6M
 b Design a Moore machine which determines the residue mod-3 for each binary string treated as binary integer. CO1 L3 6M

UNIT-II

- 3 a Construct an equivalent FA for the given regular expression $(0+1)^*(00+11)(0+1)^*$. CO2 L3 6M
 b Construct an equivalent FA for the given regular expression $10 + (0 + 11)0^*1$. CO2 L2 6M

OR

- 4 Explain about Arden's theorem, for constructing the RE from a FA with an example. CO2 L3 12M

**UNIT-III**

- 5 a Define Ambiguous grammar with an examples. CO3 L2 6M
 b Explain Left recursion and Left factoring. CO3 L3 6M

OR

- 6 a Evaluate simplification of the grammar for the following context free grammar.
 $S \rightarrow AaB/aaB$
 $A \rightarrow D$
 $B \rightarrow bbA/\epsilon$
 $D \rightarrow E$
 $E \rightarrow F$
 $F \rightarrow aS$ CO3 L4 8M
 b List the closure properties of CFLs. CO3 L2 4M

UNIT-IV

- 7 a Explain acceptance of PDA with empty stack. CO4 L3 6M
 b Construct an equivalent PDA for the following CFG. CO4 L4 6M

$S \rightarrow aAB \mid bBA$
 $A \rightarrow bS \mid a$
 $B \rightarrow aS \mid b$

OR

8 Construct a PDA that recognizes balanced parentheses. **CO4 L3 12M**

UNIT-V

9 Construct a Turing machine which multiplies two unary numbers. **CO5 L3 12M**

OR

10 a Illustrate Linear Bounded Automata. **CO5 L3 6M**

b Describe Instantaneous Description of Turing Machine. **CO5 L2 6M**

***** END *****