SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations June-2025
DATA STRUCTURES AND ALGORITHMS
(Common to CSE & CSIT)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	List out the applications of a linked list.	CO1	L2	2M
	b	State the difference between stacks and Queue.	CO2	L1	2M
	c	Differentiate between AVL tree and Binary search tree.	CO3	L1	2M
	d	What is collision? List out the Collision Resolution Techniques.	CO4	L4	2M
	e	Difference between quick sort and heap sort	CO5	L4	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Explain the three fields of double linked list.	CO1	L3	5M
	b	List and explain the advantages and disadvantages of circular linked list.	CO1	L2	5M

OR

3	a	Explain the applications of linked lists.	CO1	L4	5M
	b	Write an algorithm to perform the following operations on a single linked list.i) Insert new node at the beginning of list. ii) Count the number of nodes.	CO1	L3	5M

UNIT-II

4	a	What is a stack? What are various operations that can be performed on them? Explain with an example	CO2	L4	5M
	b	What are the drawbacks of queues? Discuss in detail about the circular queues.	CO2	L2	5M

OR

5	a	What is a dequeue? What are the various operations that can be performed on them? Explain	CO2	L3	5M
	b	Write a program to perform basic operations on stack.	CO2	L2	5M

UNIT-III

6	a	Explain the various representations of trees with example in detail.	CO3	L4	5M
	b	Define Binary Tree? Explain node structure and Representation of binary Tree.	CO3	L2	5M

OR

7	a	Explain Heap tree in detail	CO3	L2	6M
	b	Discus the Red-Black trees with an example.	CO3	L3	4M

UNIT-IV

8	a	Compare binary search and linear search techniques.	CO4	L3	6M
	b	Write and explain linear search procedure or algorithm with a suitable example.	CO4	L2	4M

OR

9		Explain the two graph traversals techniques	CO4	L4	10M

UNIT-V

10	a	Define Quick sort and explain it with Example	CO5	L4	5M
	b	Discuss about sorting by selection by sorting	CO5	L2	5M

OR

11		Explain about bubble sort with algorithm	CO5	L3	10M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations June-2025
COMPUTER NETWORKS
(Common to CSE & CSIT)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	List the layers in TCP/IP reference model.	CO1	L1	2M
	b	State the process of Stop and Wait ARQ.	CO2	L1	2M
	c	Quote optimality principle.	CO3	L2	2M
	d	What is the process of marshaling?	CO4	L1	2M
	e	State the purpose of SNMP.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Compare Connection oriented and connectionless service.	CO1	L4	5M
	b	Discover the design issues of layers.	CO1	L2	5M

OR

3	Explain in detail about TCP /IP Network model.	CO1	L2	10M

UNIT-II

4	Discuss bit-oriented HDLC Protocol with the elaborative explanation of its frames.	CO2	L2	10M

OR

5	a	Discuss about GO BACK N Protocol.	CO2	L2	5M
	b	Explain Selective repeat Protocol.	CO2	L2	5M

UNIT-III

6	a	Calculate the Shortest Path Algorithm considering an example.	CO3	L3	7M
	b	Explain Flooding concept	CO3	L2	3M

OR

7	Sketch and explain in detail about IPV4 protocol.	CO3	L5	10M

UNIT-IV

8	a	List the transport service primitives.	CO4	L1	6M
	b	Explain about the elements of transport layer.	CO4	L2	4M

OR

9	Correlate the various timers used by TCP to perform its various operations.	CO4	L2	10M

UNIT-V

10	a	List out the four main properties of HTTP.	CO5	L1	2M
	b	Illustrate in detail about function and structure of e-mail protocol.	CO5	L3	8M

OR

11	a	Name the basic functions of E-Mail.	CO5	L1	3M
	b	Write about TELNET.	CO5	L5	7M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. I Year I Semester Supplementary Examinations June-2025
CHEMISTRY
(Common to CSE, CSIT & ECE)

Time: 3 Hours   Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Write schrodinger wave equation	CO1	L1	2M
	b	Define entropy	CO3	L1	2M
	c	Define hard water and soft water.	CO3	L1	2M
	d	Define conducting polymers.	CO4	L1	2M
	e	What is flame photometry? Name few metals which can be easily detected by this method.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	Explain pi- molecular orbitals of benzene with neat sketch.	CO1	L2	10M

OR

3	Explain the crystal field splitting of orbital's in octahedral, tetrahedral and square planar fields in complexes.	CO1	L2	10M

UNIT-II

4	Define Entropy.Entropy changes in reversible and irreversible process.	CO2	L1	10M

OR

5	Discuss in detail about electrochemical or wet corrosion.	CO2	L2	10M

UNIT-III

6	a	What is Priming and Foaming?	CO3	L1	5M
	b	Explain sludge and Scale formation in boilers.	CO3	L2	5M

OR

7	Describe the Zeolite or permutit process for softening of water. what are the advantages and disadvantages of zeolite process.	CO3	L2	10M

UNIT-IV

8	a	Distinguish between thermoplastics &thermosetting plastics.	CO4	L4	5M
	b	Give the preparation,properties & uses of Nylon 6, 6.	CO4	L2	5M

OR

9	What are conducting polymers? How are they classified? Write the synthesis And engineering applications of conducting polymers.	CO4	L4	10M

UNIT-V

10	Give an account on principle and instrumentation of IR spectroscopy Explain stretching and bending vibrations.	CO5	L2	10M

OR

11	Discuss the principle, instrumentation and applications of Transmission electron microscopy.	CO5	L2	10M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations June-2025
BIOLOGY FOR ENGINEERS
(Common to EEE, CE, AGE & ME)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	What is cell?	CO1	L1	2M
	b	Define Habitat.	CO1	L1	2M
	c	What is cell cycle?	CO2	L1	2M
	d	What are polysaccharides?	CO3	L1	2M
	e	What is sterilization?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	What are Model organisms? Give brief notes on any three model organisms.	CO1	L1	5M
	b	Explain mode of excretion in Urioteliic organisms.	CO1	L2	5M

OR

3	a	Draw labeled diagram of Animal cell as seen in Electron microscope. Comment on functions of cell organelles.	CO1	L1	5M
	b	Illustrate in detail about the concept of taxonomic hierarchy.	CO1	L2	5M

UNIT-II

4	a	Define gene Interaction. Give brief account on Dominant Epistasis with suitable example.	CO2	L1	5M
	b	Explain Meiosis with diagrammatic representation.	CO2	L2	5M

OR

5	a	Give an account on Down's syndrome.	CO2	L2	5M
	b	Write about Turners syndrome.	CO2	L2	5M

UNIT-III

6	a	Describe the enzyme action and kinetics.	CO3	L2	5M
	b	What are lipids? Classify and explain different types of lipids.	CO3	L2	5M

OR

7	a	What are the macro molecules and its types? Write the functions of macro molecules.	CO3	L1	6M
	b	Biological classification of amino acids and their importance.	CO3	L2	4M

UNIT-IV

8	a	Explain genetic code & Degeneracy of genetic code.	CO4	L2	6M
	b	Write full form of M-RNA & TRNA & their functions.	CO4	L2	4M

OR

9	a	Discuss the functions & Structure of Proteins.	CO4	L2	5M
	b	Explain gene- complementation and recombination.	CO4	L2	5M

UNIT-V

10	a	Describe Krebs cycle.	CO5	L2	5M
	b	What is microscopy? Explain different types of microscopy.	CO5	L2	5M

OR

11	a	Give an account on energy yielding and energy consuming reactions?	CO5	L2	5M
	b	Explain using a graph: (i) Lag phase (ii) Log phase (iii) Stationary phase (iv) Death phase of microorganisms.	CO5	L2	5M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations June-2025
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Define speed of response and fidelity.	CO1	L2	2M
	b	State the need of a time base generator.	CO2	L1	2M
	c	Mention the applications of function generator.	CO3	L1	2M
	d	What are the different errors occurred in bridges?	CO4	L1	2M
	e	Name one passive and active sensors.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Explain about static characteristics of measuring instrument.	CO1	L2	5M
	b	Define the terms in dynamic characteristics i) Speed of Response ii) Fidelity iii) Lag.	CO1	L2	5M

OR

3	a	How do we determine the performance characteristics (static & dynamic) of an instrument?	CO1	L2	7M
	b	Explain the process of calibration.	CO1	L2	3M

UNIT-II

4	a	Discuss in detail, the construction and working of a Trigger sweep generator.	CO3	L2	5M
	b	Explain with a diagram how phase can be measured using a Lissajous method.	CO2	L3	5M

OR

5	a	Draw the neat diagrams of horizontal deflection systems and explain briefly about their working.	CO2	L2	5M
	b	State the standard specifications of a sample CRO.	CO3	L2	5M

UNIT-III

6	a	Discuss in detail about pulse generator .	CO4	L2	5M
	b	Explain the method of generating Random noise.	CO4	L2	5M

OR

7	a	With a neat sketch explain the operation of arbitrary waveform generator.	CO4	L2	5M
	b	What are the different specifications of arbitrary waveform generator?	CO4	L2	5M

UNIT-IV

8	a	Discuss the working principle of Q-meter & its applications.	CO3	L2	5M
	b	Write short note on interference &explain noise reduction techniques.	CO6	L2	5M

OR

9	a	Describe in detail about EMI & EMC with suitable examples.	CO3	L2	5M
	b	Explain the working principle & operation of Capacitance & Inductance bridge circuit.	CO5	L2	5M

UNIT-V

10	a	Discuss about Sensors and Transducers.	CO5	L1	5M
	b	How to convert linear variable displacement into electrical voltage using transducer.	CO5	L2	5M

OR

11	a	With a neat sketch, explain the operation of piezo-electric transducers in detail.	CO5	L2	5M
	b	Briefly discuss about Velocity transducers.	CO5	L2	5M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June-2025
ADVANCED WELDING PROCESSES
(Mechanical Engineering)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Difference Between Solid State Welding and Fusion Welding.	CO1	L1	2M
	b	Explain the TIG welding Process.	CO2	L1	2M
	c	Explain the Pulsed current.	CO3	L1	2M
	d	Define the Explosive Welding.	CO4	L2	2M
	e	What is mean by Soldering.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Give the applications of gas welding.	CO6	L1	5M
	b	What are the different types of electrode motions and positions in SMAW welding?	CO1	L2	5M

OR

3	How can you classify heavily coated low carbon arc welding electrodes? Explain its importance.	CO1	L2	10M

UNIT-II

4	a	Name the types of weld backing methods for SAW and explain anyone.	CO2	L1	5M
	b	Explain the addition of filler metal in TIG welding.	CO2	L2	5M

OR

5	Discuss the process variables in Metal active Gas (MAG).	CO2	L2	10M

UNIT-III

6	a	Define duty cycle of a welding power source and explain its role in the selection of a power source.	CO3	L2	5M
	b	Explain the general characteristics of a transformer.	CO3	L3	5M

OR

7	Discuss the friction welding process variables.	CO3	L2	10M

UNIT-IV

8	Write short notes on seam welding and projection welding process with neat sketch.	CO4	L2	10M

OR

9	a	What are the methods of diffusion welding and explain?	CO4	L1	5M
	b	With a neat sketch describe the flash butt welding process.	CO4	L3	5M

UNIT-V

10	What are the different types of vacuum systems for Electron beam electron welding process (EBW).	CO5	L2	10M

OR

11	Discuss the process variables in Electron beam electron welding process.	CO5	L2	10M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations June-2025
INTRODUCTION TO FLUID MECHANICS
(Common to AGE & CE)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Define Manometer.	CO1	L1	2M
	b	Define streak line?	CO2	L1	2M
	c	Define discharge of a fluid.	CO3	L1	2M
	d	Write the expression for flow through pipes in parallel.	CO4	L1	2M
	e	Define turbulent flow.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2. Derive expressions for the total pressure and centre of pressure for an inclined plane surface submerge in the liquid.   CO1   L3   10M

OR

3. a State Pascal's law. What do you understand the terms Absolute, Gauge, atmospheric & vacuum pressure?   CO1   L3   5M

   b What is the gauge pressure at a point 3m below the free surface of a liquid having a density 1.53×10^3 kg/m^3.If the atmospheric pressure is equivalent to 750mm of mercury? The Specific gravity of mercury is 13.6 and density of water = 1000 kg/m^3 CO1   L2   5M

UNIT-II

4. Show that the product of equi- streamline and equi- potential line is " -1" and define flow net,equi-potential line , equi -stream lines?   CO2   L2   10M

OR

5. The velocity vector in a fluid flow V= 4x3i-10x2yj+2tk, find the velocity and acceleration of a fluid particle at (2, 1, 3) at time t=1.   CO2   L3   10M

UNIT-III

6. What is Euler's equation of motion? How do you obtain Bernoulli's equation from it? Name the different forces present in a fluid flow.   CO3   L2   10M

OR

7. A horizontal venture meter with 30cm diameter inlet and 10cm throat is used for measuring the flow of water through a pipeline. If pressure in pipe is 1.5kpa and the vacuum pressure at the throat is 40cm of mercury, calculate the rate of flow. It may be presumed that 5% of differential head is lost between the pipe main and the throat section. Also make calculations for the discharge co-efficient take specific weight of water = 10kN/m^3 CO3   L3   10M

UNIT-IV

8. Derive the expression for head loss in pipes due to sudden enlargement and sudden contraction formula.   CO4   L3   10M

| 9 | Siphon of diameter 200 mm connects two reservoirs having a difference in elevation of 20 m. The length of the siphon is 500 m and the summit is 3.0 m above the water level in the upper reservoir. The length of the pipe from upper reservoir to the summit is 100 m.Determine the discharge through the siphon and also pressure at the summit. Neglect minor losses. The co efficient of friction is 0.005. | CO4 | L3 | 10M |

UNIT-V

| 10 | Derive the equation for the flow of viscous fluid between two parallel plates? When plates are fixed. | CO5 | L3 | 10M |

OR

| 11 | An oil of viscosity 0.1 Ns/m^2 and relative density 0.9 is flowing through a circular pipe of diameter 50mm and length 300 m. The rate of flow of fluid through a circular pipe is 3.5 lit/sec. Find the pressure drop in a length of 300m and also the shear stress at the pipe wall? | CO5 | L3 | 10M |

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. I Year I Semester Supplementary Examinations June-2025
ENGINEERING MECHANICS
(Civil Engineering)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	What are the different types of Beams?	CO1	L2	2M
	b	Define Kinetic Friction.	CO2	L1	2M
	c	Define centroid.	CO3	L1	2M
	d	Define Polar Moment of Inertia.	CO4	L1	2M
	e	What are the types of vibrations?	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2   A simply supported beam AB of span 4.5 m is loaded as shown in Fig.   CO1 L3 10M
Find the support reactions at A and B.

1.

OR

3   A beam ABCDE hinged at A and supported on rollers at D, is   CO1 L3 10M
loaded as shown in Fig.4. Find the reactions at A and D

UNIT-II

4   Two blocks W_1 and W_2 resting on two inclined planes are connected by a   CO2 L3 10M
horizontal bar AB as shown in Fig.. If W_1 is equals 1000 N, determine the
maximum value of W_2 for which the equilibrium can exists. The angle of
limiting friction is 20_0 at all rubbing faces.

OR

5   A body, resting on a rough horizontal plane, required a pull of 180 N   CO2 L4 10M
inclined at 30° to the plane just to move it. It was found that a push of 220
N inclined at 30° to the plane just moved the body. Determine the weight
of the body and the coefficient of friction.

6   A uniform lamina shown in Fig. 11 consists of a rectangle, a circle and a   **CO3**   **L3**   **10M**
triangle. Determine the center of gravity of the lamina. All dimensions
are in mm.
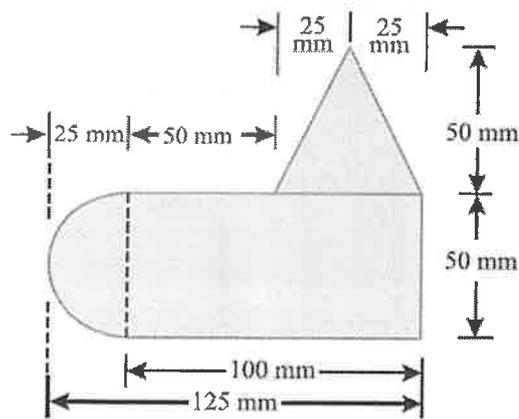
OR

7   An I-section as shown in Fig.19 has the following dimensions in mm   **CO3**   **L3**   **10M**
units:
Bottom flange = 300 × 100
Top flange = 150 × 50
Web = 300 × 50
Determine mathematically the position of center of gravity of the section.
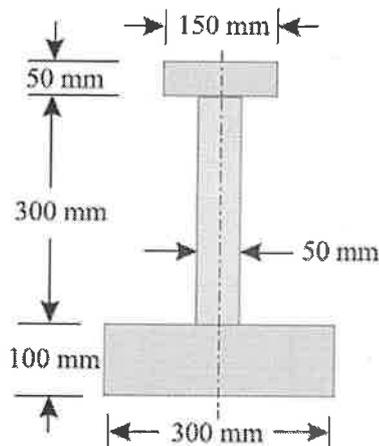
8   A rectangular hole is made in a triangular section as shown in Fig.   **CO4**   **L3**   **10**
Determine the moment of inertia of the section about X-X axis passing   **M**
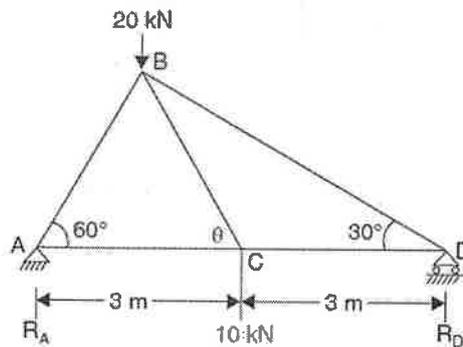through its center of gravity and the base BC.
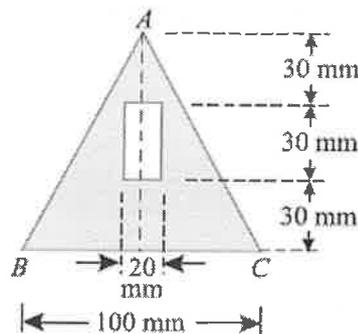
OR

9   Find the moment of inertia of a T-section with flange as 150 mm × 50   **CO4**   **L4**   **10M**
mm and web as 150 mm × 50 mm about X-X and Y-Y axes through the
center of gravity of the section as shown in fig.

|←——150 mm——→|

①

50 mm

②

150 mm

→|50 mm|←
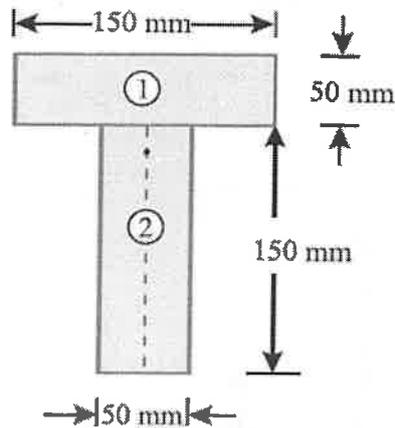
UNIT-V

10   Determine the forces in all the members of the truss shown in Fig.   **CO5**   **L4**   **10M**

20 kN

B

A   60°   θ   30°   D

C

|←— 3 m —→|←— 3 m —→|

R_A 10 kN R_D

OR

11   Fig shows a framed structure of 4 m span and 1.5 m height subjected to   **CO5**   **L4**   **10M**
two-point loads at B and D.
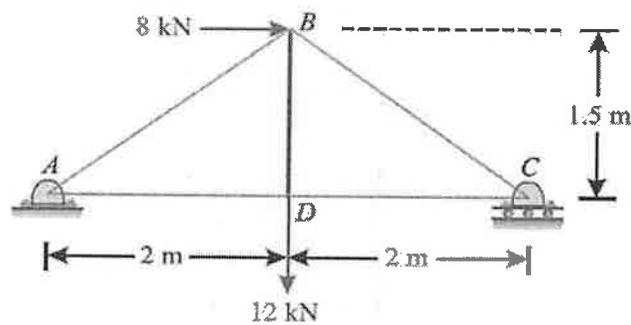
8 kN ——→ B ----------------

A   1.5 m

C

D

|←— 2 m —→|←— 2 m —→|

12 kN

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year I Semester Supplementary Examinations June-2025
CONTROL SYSTEMS
(Common to EEE & ECE)

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

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

|					
1	a	What is block diagram? What are the basic components of block diagram?	CO1	L2	2M
	b	Define accelerating error constant.	CO2	L1	2M
	c	What is centroid? How the centroid is calculated?	CO3	L2	2M
	d	What are the frequency domain specifications?	CO4	L1	2M
	e	Write the formula for solutions of state equation.	CO5	L2	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Compare open loop and closed loop control systems based on different Aspects.	CO1	L2	6M
	b	Distinguish between Block diagram Reduction Technique and Signal Flow Graph.	CO1	L3	4M

OR

3	For the system represented in the given figure, determine transfer function	CO1	L3	10M

C(S)/R(S).
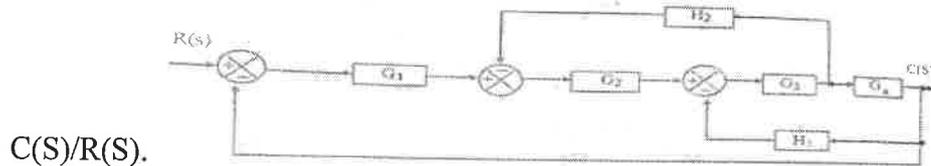
UNIT-II

4	Define steady state error. Derive the static error components for Type 0, Type 1 &Type 2 systems.	CO2	L3	10M

OR

5	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	L4	10M

UNIT-III

6	With help of Routh's stability criterion find the stability of the following systems represented by the characteristic equations: (a) $s^5 + s^4 + 2 s^3 + 2 s^2 + 3s + 5 = 0$ (b) $9s^5 - 20s^4 + 10 s^3 - s^2 - 9s - 10 = 0$	CO3	L4	10M

OR

7	Sketch the root locus of the system whose open loop transfer function is $G(s) H(s) = \frac{K(S^2+6S+25)}{S(S+1)(S+2)}$	CO3	L4	10M

UNIT-IV

8	a	Define and derive the expression for resonant frequency.	CO4	L3	5M
	b	Draw the magnitude bode plot for the system having the following transfer function: $G(s) H(s) = \frac{2000(S+1)}{S(S+10)(S+40)}$	CO4	L3	5M

OR

9	Obtain the transfer function of Lead Compensator, draw pole-zero plot and write the procedure for design of Lead Compensator using Bode plot.	CO4	L4	10M

10   Obtain a state model for the system whose Transfer function is given by   CO5   L3   10M

$$G(s)\,H(s) = \frac{(7S^2+12S+8)}{(S^3+6S^2+11S+9)}$$

OR

11   a   Find state variable representation of an armature controlled D.C.motor.   CO5   L3   5M

    b   A state model of a system is given as: CO5   L4   5M

$$\dot{X} = \begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ -6 & -11 & -6 \end{pmatrix} X + \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} U \text{ and } Y = (1 \quad 0 \quad 0)X$$

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations June-2025
ELECTROMAGNETIC THEORY AND TRANSMISSION LINES
(Electronics and Communications Engineering)

Time: 3 Hours   Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	List various charge distributions.	CO1	L1	2M
	b	Define Biot-Savart's law.	CO2	L1	2M
	c	Define In consistency of Ampere's law.	CO3	L1	2M
	d	Define Poynting theorem.	CO4	L1	2M
	e	What are the secondary constants of a line?	CO6	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Evaluate the two Maxwell's equations for electrostatic fields and state them.	CO3	L5	8M
	b	List Maxwell equations for electrostatic fields in integral form.	CO3	L1	2M

OR

3	a	Define Electric Potential. Find the electric potential for a point charge is located at origin.	CO2	L1	7M
	b	Determine the Relationship between E and V.	CO2	L5	3M

UNIT-II

4	a	Explain about magnetic scalar and vector potential for Magneto-statics.	CO2	L2	5M
	b	An infinitely filamentary wire carries a current of 2A in the +z direction. Calculate B at (-3,4,7).	CO2	L3	5M

OR

5		Find H for a straight current carrying conductor using Biot Savart's law and Ampere's Circuit law.	CO2	L1	10M

UNIT-III

6	a	Determine the Expressions for inconsistency of Ampere's law.	CO3	L5	8M
	b	Why ampere's Law is In-consistent.	CO2	L1	2M

OR

7	a	Prove that one of the Maxwell's equation is $\nabla \times E = -dB/dt$.	CO2	L5	6M
	b	In free space, H= 10 sin(ωt-100x)ay A/m. Calculate Jd, E.	CO3	L3	4M

UNIT-IV

8		Explain the followings with an expression. i) Linear polarization ii) Circular polarization iii) Elliptical polarization	CO5	L2	10M

OR

9	a	Explain and derive the characteristics of wave propagation in free space.	CO3	L2	5M
	b	Given that E=40cos(100t-3x)ay V/m , Determine the direction of wave propagation, velocity of the wave, wave length.	CO4	L3	5M

10 a Evaluate the equation for Input Impedance of the transmission line. CO6 L5 5M
    b A Certain transmission line 2m long operating at ω = 106 rad/s has CO6 L3 5M
       α=8bd/m, β=1 rad/m, and Z0=60+j40Ω. If the line is connected to a
       source of 10 angle(00) V, Zg = 40Ω and terminated by a load of
       20+j50Ω, determine the input impedance.

OR

11 a Relate SWR and reflection coefficient. CO6 L2 5M
    b Explain the applications of transmission lines. CO6 L2 5M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year I Semester Supplementary Examinations June-2025
DIGITAL SIGNAL PROCESSING
(Electronics & Communications Engineering)

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

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Distinguish between linear and circular convolution.	CO1	L2	2M
	b	Describe impulse invariant method of designing IIR filter.	CO2	L1	2M
	c	What is the basis for Fourier series method of FIR filter design? Why truncation is necessary?	CO3	L1	2M
	d	What is Dead band of a filter?	CO5	L1	2M
	e	Mention the applications of PDSP's	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)
UNIT-I

2		Determine the 8 point DFT of the sequence x(n)={1,1,1,1,1,1,0,0}	CO1	L5	10M

OR

3	a	State and prove the following properties of DFT i) Linearity ii) Periodicity	CO1	L5	5M
	b	Compare DFT and FFT algorithms.	CO1	L5	5M

UNIT-II

4	a	An LTI System is described by the difference equation y(n)+a_1y(n-1)= x(n)+b_1y(n-1). Determine its direct form I structure.	CO3	L5	5M
	b	Explain the steps to be followed to design an analog chebyshev low pass filter.	CO1	L5	5M

OR

5	a	Determine the transferfunction H(s) of analog Butterworth filter that has 2 dB passband attenuation at a frequency of 20 rad/sec and atleast 10 dB stopband attenuation at 30 rad/sec.	CO2	L5	7M
	b	Determine the order of analog Butterworth filter that has 2 dB passband attenuation at a frequency of 20 rad/sec and atleast 10 dB stopband attenuation at 30 rad/sec.	CO2	L5	3M

UNIT-III

6	a	Explain briefly how zeros are located in FIR Filter?	CO1	L5	4M
	b	Summarize the advantages and disadvantages of FIR Filters.	CO1	L4	3M
	c	List the desirable characteristics of the window.	CO1	L1	3M

OR

7	a	Construct the direct form realization of FIR Filters for the function $$H(z) = 1 + 2z^{-1} - 3z^{-2} - 4z^{-3} + 5z^{-4}$$	CO3	L6	5M
	b	State and explain the properties of FIR filters. State their importance	CO3	L5	5M

8	a	Summarize the various forms of representing the numbers in digital systems.	CO5	L2	5M
	b	Explain in detail the effects of input quantization error.	CO5	L5	5M

OR

9		Explain the characteristics of limit cycle oscillation with respect to the system described by the difference equation $y(n) = 0.7\ y(n-1) + x(n)$. Determine the dead band range of the system.	CO5	L5	10M

UNIT-V

10	a	What are the different buses of TMS320C5X and their functions?	CO6	L1	5M
	b	Brief about the overview of digital signal processors.	CO6	L4	5M

OR

11	a	Distinguish between the dual-access RAM and single-access RAM used in the on-chip memory of 5X.	CO6	L5	5M
	b	Discuss the advantages and disadvantages of VLIW architecture.	CO6	L1	5M

*** END ***

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations June-2025
PROBABILITY & STATISTICS
(Common to ME, CSE & CSIT)

Time: 3 Hours   Max. Marks: 60

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Suppose the Probability density of a random variable is given by $f(x) = \begin{cases} k(1-x^2), & for\ 0 < x < 1 \\ 0, & elsewhere \end{cases}$. Find the value of k.	CO1	L2	2M
	b	If the mean of a Poisson distribution is 1.8 then find $P(X > 1)$	CO2	L1	2M
	c	Obtain mode of the values 10, 12, 15, 20, 12, 16, 18, 15,12,10,16,20,12,24.	CO3	L1	2M
	d	Write normal equations to $y = a\,e^{bx}$	CO4	L2	2M
	e	Define Chi-square test.	CO5	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)
UNIT-I

2	a	Determine $(i)\ P\left(\dfrac{B}{A}\right)\ (ii)\ P\left(\dfrac{A}{B^c}\right)$ if A and B are events with $P(A) = \dfrac{1}{3}$, $P(B) = \dfrac{1}{4}$, $P(A \cup B) = \dfrac{1}{2}$.	CO1	L1	5M
	b	Find the mean and variance of the uniform probability distribution given by $f(x) = \dfrac{1}{n}$ for $x = 1,2,3\ldots\ldots n$	CO1	L2	5M

OR

3	The probability density function of a random variable X is $f(x) = \begin{cases} \dfrac{1}{2}\sin x, & for\ 0 \le x \le \pi \\ 0, & elsewhere \end{cases}$. Find the distribution's mean, mode, and median and also find the probability between 0 and $\pi/2$.	CO1	L3	10M

UNIT-II

4	a	Out of 800 families with 5 children each, how many would you expect to have (a) 3 boys (b) 5 girls(c) either 2 or 3 boys? Assume equal probabilities for boys and girls.	CO2	L3	5M
	b	If 2% of light bulbs are defective. Obtain the probability that (i) At least one is defective (ii) $P(1 < x < 8)$ In a sample of 100.	CO2	L2	5M

OR

5	In a sample of 1000 cases, the mean of certain tests is 14, and the standard deviation is 2.5. Assuming the distribution to be normal find (i) how many students score between 12 and 15. (ii) How many students score above 18? (iii) How many students score below 18?	CO2	L3	10M

UNIT-III

6	a	Find the arithmetic mean to the following data	CO3	L1	5M

X	1	2	3	4	5
Y	5	8	10	12	6

	b	Find the mode to the following data	CO3	L1	5M

x	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f	4	13	21	44	33	22	7

OR

7	a	Obtain the rank correlation coefficient for the following data :	CO3	L3	5M

X	68	64	75	50	64	80	75	40	55	64
Y	62	58	68	45	81	60	68	48	50	70

	b	Evaluation of $\bar{X}, \bar{Y}$, and r, from the following regression equations, $20X - 9Y = 107$ and $4X - 5Y = -33$.	CO3	L5	5M

UNIT-IV

8	a	Obtain the parabola to the data given below	CO4	L2	5M

X	1	2	3	4	5
Y	10	12	8	10	14

	b	Find the curve of best fit of the type $y = ax^b$ to the following data by method of least squares, also calculate $y(2.5)$	CO4	L1	5M

X	1	2	4	6
Y	6	4	2	2

OR

9	a	A die was thrown 9000 times and of these 3220 yielded a 3 or 4. Is this consistent with the hypothesis that the die was unbiased?	CO4	L4	5M
	b	A sample of **64** students has a mean weight of **70** kg. Can this be regarded as a sample from a population with a mean weight of **56** kgs and a standard deviation of **25** kgs?	CO4	L4	5M

UNIT-V

10	a	In one sample of 8 observations the sum of the squares of deviations of the sample values from the sample was 84,4 and in the other samples of 10 observations, it was 102.6. Test whether this difference is significant at 5% level.	CO5	L4	5M
	b	Scores obtained in a shooting competition by 10 soldiers before and after intensive training are given below	CO5	L1	5M

Before	67	24	57	55	63	54	56	68	33	43
After	70	38	58	58	56	67	68	75	42	38

Test whether the intensive training is useful at a 0.05 level of significance.

OR

11	From the following data, find whether there is any significant liking in the habit of taking soft drinks among the categories of employees.	CO5	L4	10M

Soft Drinks \Employes	Clerks	Teachers	Officers
Pepsi	10	25	65
Thums up	15	30	65
Fanta	50	60	30

*** END ***

Q.P. Code: 18CS0516

R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations June-2025
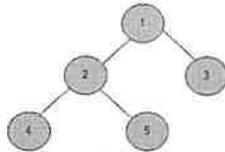**DESIGN AND ANALYSIS OF ALGORITHMS**
(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	What is asymptotic notation? Explain different types of notations with examples.	L1	2M
	b	Find the In order and preorder and post order tree traversal for the following .	L1	2M

	c	Define optimal solution.		2M
	d	What is graph coloring?	L1	2M
	e	Define class P.	L1	2M

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Classify the rules of Pseudo code for Expressing Algorithms.	L2	5M
	b	Solve the given function -If f(n)= 5n2+ 6n+ 4 then prove that f(n) is 0(n2).	L3	5M

OR

3	a	What do you mean by algorithm? List some of the properties of it.	L1	5M
	b	Apply the Master's theorem. Solve the following Recurrence relations. i) T(n) = 4T(n/2) + n ii) T(n) = 2T(n/2) + n log n	L3	5M

UNIT-II

|			
4	What is dividing and conquer strategy? Explain the working strategy of Binary Search and find element 60 from the below set by using the above technique: { 10, 20, 30,40,50, 60,70}. Analyze time complexity for binary search.	L2	10M

OR

5	a	Compare between BFS and DFS techniques.	L4	5M
	b	Solve an algorithm for techniques of binary trees with examples.	L3	5M

UNIT-III

6	Explain 0/1 knapsack problem by using dynamic programming with an examples.	L2	10M

OR

7	Construct an algorithm for All pairs of shortest path and calculate shortest path between all pairs of vertices by using dynamic programming method for the following graph.	L6	10M
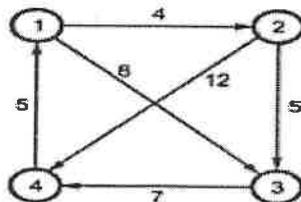
UNIT-IV

8	a	Explain the principles of FIFO branch and bound.	L2	5M
	b	Recall the graph coloring. Explain in detail graph coloring with an example.	L5	5M

OR

9	Distinguish in detail 8-queens problem using back tracking with state space tree.	L4	10M

UNIT-V

10	Construct the non-deterministic sorting algorithm and also analyze its complexity.	L6	10M

OR

11	Determine the classes NP-hard and NP-complete problem with example.	L5	10M

END