O.P.Code: 20EC0402	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations July/August-2024

ELECTRONIC DEVICES AND CIRCUITS

(Electronics & Communication Engineering)

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

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

		UNIT-I			
1	**a**	Discuss the effect of temperature on V-I characteristics of a PN Junction Diode.	**CO1**	**L1**	**6M**
	b	Define Break down voltage and cut in voltage and give the typical values of cut-in voltage for Si and Ge diodes.	**CO3**	**L1**	**2M**
	c	When a reverse bias is applied to a germanium PN Junction Diode, the reverse saturation current at room temperature is 0.3μA. Determine the current flowing in the diode when 0.15V forward bias is applied at room temperature.	**CO3**	**L3**	**4M**
		OR			
2	**a**	Construct the Positive and Negative Diode Clippers and explain with neat waveforms.	**CO4**	**L3**	**4M**
	b	What is a Clamper circuit? Describe about positive and negative clampers with neat circuit diagram.	**CO4**	**L1**	**6M**
	c	Design a Biased positive series clipper to clip the sinusoidal voltage waveform at +2 volts. The sinusoidal waveform has peak to peak amplitude of 10 volts.	**CO6**	**L3**	**2M**
		UNIT-II			
3	**a**	With a neat circuit diagram and waveforms, illustrate the working of a Bridge rectifier.	**CO3**	**L2**	**4M**
	b	A 5KΩ load is fed from a bridge rectifier connected across a transformer secondary whose primary is connected to 460V, 50 Hz supply. The ratio of number of primary turns to secondary turns is 2:1. Estimate DC load current, ripple voltage and PIV rating of diode.	**CO5**	**L4**	**4M**
	c	Derive the expressions for Average DC Voltage, RMS Value of voltage, DC Output Power and AC input Power for a Half Wave Rectifier.	**CO5**	**L3**	**4M**
		OR			
4	**a**	A Half Wave Rectifier is supplied from a 230V, 50 Hz supply with a step-down ratio of 3:1 to a resistive load of 10kΩ. The diode forward resistance is 75Ω while transformer secondary is 10Ω. Calculate maximum, average, RMS values of current, DC output voltage, efficiency of rectification and ripple factor.	**CO5**	**L4**	**4M**
	b	Draw the circuit diagram of a Half Wave Rectifier and explain its operation with the help of waveforms	**CO4**	**L1**	**4M**
	c	Define the following terms: i) Ripple factor ii) Efficiency iii) Peak inverse voltage iv) Transformer utilization factor	**CO2**	**L1**	**4M**
		UNIT-III			
5	**a**	Define a transistor. Draw the circuit symbols of PNP and NPN transistor and label all terminals.	**CO1**	**L1**	**2M**
	b	Explain the construction of NPN transistor with a neat diagram.	**CO1**	**L2**	**5M**
	c	If the base current in a transistor is 20μA when the emitter current is 6.4mA, what are the values of α and β? Also calculate the collector current.	**CO2**	**L2**	**5M**
		OR			

6	a	With neat diagram, explain the Input and Output characteristics of a BJT in CB Configuration. Explain Early effect.	CO3	L2	5M
	b	Define the following terms: i) Emitter efficiency ii) Transport factor iii) Large signal current gain	CO2	L1	3M
	c	For a transistor, the leakage current is 0.1μA in CB configuration, while it is 19μA in CE configuration. Find α & β of the transistor?	CO2	L2	4M

UNIT-IV

7	a	List the different types of Biasing a Transistor and explain the Fixed Bias of a Transistor.	CO3	L2	6M
	b	Determine the expression for stability factor, S for fixed bias circuit and list its disadvantages.	CO5	L3	6M

OR

8	a	Calculate the values of Resistors in a fixed bias circuit using the following specifications: ICQ=9.2mA, VCEQ=4.4.v, hfe=1115, VBE=0.7v & VCC=9v.	CO6	L3	6M
	b	Define and Explain Thermal Runaway and Thermal Resistance.	CO2	L2	6M

UNIT-V

9	a	Using low frequency h-parameter model, evaluate the expressions for voltage gain, current gain, input impedance and output admittance for a BJT Amplifier in CE configuration.	CO4	L2	6M
	b	A CE amplifier is driven by a voltage source of internal resistance Rs= 800Ω and the load impedance of RL=1000Ω. The h-parameters are hie=1k, hfe=50, hoe = 25μA/V and hre = 2 x 10-4. Find current gain, voltage gain, input impedance and output impedance using exact analysis.	CO5	L3	6M

OR

10	a	Analyze CE amplifier with emitter resistance using simplified h-parameter model.	CO5	L4	6M
	b	Draw the circuit diagram of JFET Common Source amplifier with voltage divider bias for bypassed Rs and determine the expression for input impedance, output impedance and voltage gain.	CO5	L3	6M

***** END *****

O.P.Code: 20EC0446	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
ANALOG ELECTRONIC CIRCUITS
(Elecrrical & Electronics Engineering)

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

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

UNIT-I

1	a	Derive the expression for De-sensitivity (D).	CO1	L1	6M
	b	A voltage series negative feedback amplifier has a voltage gain without feedback of A=1000, input resistance Ri=6 kΩ, output resistance Ro =40 kΩ and feedback ratio β=0.01. Calculate the voltage gain Af, input resistance and output resistance of the amplifier with feedback.	CO3	L3	6M
		OR			
2	a	Define feedback and illustrate the basic concept of Feedback with suitable block diagram.	CO1	L2	6M
	b	Compare the performance of feedback amplifier.	CO1	L4	6M

UNIT-II

3	a	Define Oscillator and explain its principle of operation.	CO1	L2	6M
	b	Determine the frequency of oscillations when an RC phase shift oscillator has R=100 kΩ, C=0.01μF and RC = 2.2 kΩ. Also calculate frequency of oscilation if capacitor values changes to C = 0.1 μF.	CO4	L3	6M
		OR			
4	a	Interpret the various types of oscillators.	CO1	L3	6M
	b	Explain in detail about the crystal oscillator and mention the expression for its frequency of oscillation.	CO1	L2	6M

UNIT-III

5	a	Explain the basic information and pin configuration of an op-amp.	CO1	L2	6M
	b	For an Non-inverting amplifier, R1= 5kohm, Rf=20 kΩ with input voltage Vi = 1V and a load resistance of R_L= 5 kΩ is connected to the output terminal. Calculate i)Vo ii)ACL iii) i_L and iv) load current io indicating proper direction of flow.	CO4	L3	6M
		OR			
6	a	Derive the expression for gain of inverting amplifier.	CO5	L3	6M
	b	Draw and explain frequency response of practical op-amp.	CO1	L2	6M

UNIT-IV

7	a	Explain sample and hold circuit using op-amp.	CO1	L2	6M
	b	Design an inverting adder circuit using an op-amp to get the output expression as Vo=- (0.1V1+V2+10V3), Where V1,V2 and V3 are the inputs.	CO3	L3	6M
		OR			
8	a	Derive the equation for pulse width of the monostable multivibrator using op-amp.	CO4	L3	6M
	b	Calculate the frequency of oscillation for an astable multivibrator having R2=10 kΩ,R1=8.6 kΩ,Rf=100 kΩ and C=0.01 μF .	CO4	L4	6M

UNIT-V

9	a	Explain the first order high pass butter worth filter with a neat circuit diagram.	CO2	L2	6M
	b	An 8-bit Analog to Digital converter has a supply voltage of +12 volts. Calculate: (i) The voltage step size for LSB. (ii) The value of analog input voltage for a digital output of 01001011.	CO4	L4	6M
		OR			
10	a	Explain the weighted resistor DAC with a neat diagram.	CO2	L2	6M
	b	Design an inverted R-2R ladder DAC for digital input word 001.	CO4	L3	6M

***** END *****

O.P.Code: 20CE0160	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
FLUID MECHANICS & HYDRAULIC MACHINERY
(Mechanical Engineering)

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

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

UNIT-I

1	a	Differentiate kinematic viscosity and dynamic viscosity. Give their dimensions.	CO1	L4	6M
	b	A plate 0.025mm at a distance from a fixed plate moves at 60 cm/sec and requires a force of 2 N/m2. Determine viscosity between the plates.	CO1	L3	6M

OR

2	a	List out different types of manometers. Explain about piezometer in detail.	CO1	L1	6M
	b	An inverted U – tube manometer is connected to two horizontal pipes A and B through which water is flowing. The vertical distance between the axes of these pipes is 30cm. When an oil of specific gravity 0.8 is used as a gauge fluid, the vertical heights of water columns in the two limbs of the inverted manometer (when measured from the respective center lines of the pipes) are found to be same and equal to 35 cm. Determine the difference of pressure between the pipes.	CO1	L3	6M

UNIT-II

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

OR

4	a	water is flowing through a pipe of 5 cm diameter under a pressure of 29.43 N/cm2 (gauge) and with mean velocity of 2.0 m/s. Find the total head or total energy per unit weight of the water at a cross section, which is 5m above the datum line.	CO2	L3	4M
	b	A 300 mm diameter pipe carries water under a head of 20 m with a velocity of 3.5 m/s. if the axis of the pipe turns through 45°, find the magnitude and direction of the resultant force at the bend.	CO2	L3	8M

UNIT-III

5		An orifice meter with orifice diameter 15 cm is inserted in a pipe of 30cm diameter. The pressure difference measured by mercury oil in differential manometer on the two sides of the orifice meter gives a reading of 50 cm of mercury. Find the rate of flow of file of specific gravity 0.9 when the coefficient of discharge of the orifice meter is 0.64.	CO3	L3	12M

OR

6		Derive the expression for head loss in pipes due to friction by using Darcy- Weisbach equation.	CO3	L3	12M

UNIT-IV

7		A jet of water moving at 12 m/s impinges on vane shaped to deflect the jet through 120° when stationary. If the vane is moving at 5 m/s, find the angle of the jet so that there is no shock at inlet. What is the absolute velocity of the jet at exit in magnitude and direction and the work done per second per unit weight of water striking per second? Assume that the vane is smooth.	CO4	L1	12M

OR

8	a	Describe the different types of hydroelectric power stations.	CO4	L2	6M
	b	Discuss the factors to be considered for selection of site for hydroelectric power plant.	CO4	L2	6M

UNIT-V

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

OR

10	a	The internal and external diameters of the impeller of a centrifugal pump are 200 mm and 400 mm respectively. The pump is running at 1200 rpm. The vane angles of the impeller at inlet and outlet are 20° and 30° respectively. The water enters the impeller radially and velocity of flow is constant. Determine the work done by the impeller per unit weight of water.	CO5	L3	8M
	b	What is priming process?	CO5	L1	4M

***** END *****

O.P.Code: 20CE0104	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
SURVEYING & GEOMATICS
(Common to CE & AGE)

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

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

UNIT-I

1	a	As a surveyor, explain the duties of a surveyor.	CO1	L1	6M
	b	What are the different tape corrections and how are they applied?	CO1	L1	6M

OR

2	a	Explain, with a neat sketch; explain the prismatic compass by indicating its parts.	CO1	L2	6M
	b	A steel tape was 20 m long at 20°C when supported throughout its length under a pull of 98 N. A line was measured with this tape under a pull of 157 N and at a mean temperature of 32°C and found to be 880 m long. The cross-sectional area of the tape = 0.03 cm2, and its total weight = 6.8 N. For steel, ∝ = 11 X 10-6 per℃ and E for steel = 20.58 X 106 N/cm2. Compute the true length of the line if the tape was supported during measurement at every 20 m.	CO1	L3	6M

UNIT-II

3		The following readings have been taken from a page of an old-level book. It is required to reconstruct the page. Fill up the missing quantities and apply the usual checks.	CO2	L3	12M

Station	BS	IS	FS	Rise (+)	Fall (-)	RL	Remarks
1	3.125					?	B.M
2	?		?	1.325		125.505	CP
3		2.320			0.055	?	
4		?		?		125.850	
5	?		2.655		?	?	CP
6	1.620		3.205		2.165	?	CP
7		3.652			?	?	
8			?			123.090	T.B.M

OR

4	a	Mention the uses of contour in civil engineering works.	CO2	L2	6M
	b	Define contour interval, horizontal equivalent and contour gradient.	CO2	L1	6M

UNIT-III

5	a	How do you measure the horizontal angles between various points by reiteration method?	CO3	L2	6M
	b	What are the different errors in theodolite work? How are they eliminated?	CO3	L1	6M

OR

6	a	Determine the values of stadia constants from the following observations.			CO3	L3	6M

Instrument Station	Staff reading on	Distances (m)	Stadia readings	
			Lower	Upper
O	A	150	1.250	2.750
	B	200	1.000	3.000
	C	250	0.750	3.250

	b	Write a note on movable hair method in tacheometric surveying with neat sketch.			CO3	L1	6M

UNIT-IV

7	a	Draw a neat sketch of reverse curve and explain it.			CO4	L1	5M
	b	Briefly explain the field procedure of setting out of curve by two theodolite methods.			CO4	L2	7M

OR

8		A compound curve is made up of two arcs of radii 480 m and 620 m. The deflection angle of the combined curve is 106^0 and that of the first arc of radius 480 m is 58^0. The chainage of the first tangent point is 848.55 m. Find the chainage of the point of intersection, common tangent point, and forward tangent point.			CO4	L3	12M

UNIT-V

9	a	Explain with sketch the principle of EDM instrument.			CO5	L2	5M
	b	Briefly explain the types of EDM instrument.			CO5	L2	7M

OR

10		Describe with sketch, the fundamental measurement of angles and distances by total station.			CO5	L2	12M

***** END *****

O.P.Code: 20EC0404	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
SIGNALS, SYSTEMS AND RANDOM PROCESSES
(Electronics & Communications Engineering)

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

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

UNIT-I

1	a	Sketch the following signals. (i) x(t)=2 u(t+2)- 2 u(t-3) (ii) x(t)=r(t)-r(t-1)-r(t-3)+r(t-4)	CO1	L3	6M
	b	Define Stable and Unstable systems with an example.	CO3	L2	6M
		OR			
2		Define and Explain the Following with an example. (i) Continuous time and Discrete time signals (ii) Energy and Power Signal. (iii) Periodic and Aperiodic Signal (iv) Deterministic and Non-Deterministic Signal.	CO1	L2	12M

UNIT-II

3	a	Derive the Trigonometric Fourier series coefficients.	CO2	L3	8M
	b	Define magnitude and phase response.	CO2	L1	4M
		OR			
4	a	Derive the Exponential Fourier series coefficient	CO2	L3	9M
	b	Explain the representation of a signal in exponential Fourier series.	CO2	L2	3M

UNIT-III

5	a	Describe the following responses of Systems. (i) Impulse Response. (ii) Step Response. (iii) Response of the System.	CO2	L2	6M
	b	Define linear time invariant and linear time variant system with necessary equations.	CO2	L1	6M
		OR			
6	a	Examine the convolution of the following signals by graphical method. x(t)=e-3t u(t) and h(t)=u(t+3)	CO4	L3	6M
	b	State and prove the following properties of Auto correlation function. (i) $R_{XX}(-\tau) = R_{XX}(\tau)$ (ii) $R_{XX}(0) = E[X^2(t)]$	CO4	L3	6M

UNIT-IV

7	a	Explain the concept of Joint probability.	CO6	L2	6M
	b	Explain the concept of Conditional probability.	CO6	L2	6M
		OR			
8		Let X is a continuous random variable with density function f X (x) = x/9+k 0<x<6 = 0 otherwise (i) Find 'k' (ii) Find p[2<x<5]	CO6	L3	12M

UNIT-V

9	a	Classify the Random Processes and explain briefly.	CO6	L2	6M
	b	Define and explain Stationary and Statistical Independence of Random process.	CO6	L2	6M

OR

10	a	Illustrate about Time averages of Random process.	CO6	L3	6M
	b	Prove that the Power Spectral Density of the derivative X(t) is equal to ω^2 times the Power Spectral Density of $S_{xx}(\omega)$.	CO6	L5	6M

***** END *****

O.P.Code: 20CE0164 | R20 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
MECHANICS OF SOLIDS
(Common to ME & AGE)

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

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

UNIT-I

1	a	Explain maximum principal strain theory.	CO1	L2	6M
	b	Explain maximum strain energy theory.	CO1	L2	6M

OR

2		Two brass rods and one steel rod together support a load as shown in fig. If the stresses in brass and steel are not to exceed 60 N/mm^2 and 120 N/ mm^2, find the safe load that can be supported. Take E for steel = 2x10.5 N/ mm^2 and for brass =1x105 N/ mm^2. The cross-sectional area of steel rod is 1500 mm^2 and of each brass rod is 1000 mm^2	CO1	L3	12 M

UNIT-II

3		A cantilever beam of length 3 m carries a uniformly distributed load of 1.5 KN/m run over a length of 2 m from the free end. Draw SFD and BMD for the beam.	CO2	L3	12 M

OR

4	a	Derive the simple bending equation.	CO2	L2	6M
	b	A square beam 20 mm x 20 mm in section and 2 m long is supported at the ends. The beam fails when a point load of 400 N is applied at the centre of the beam. What uniformly distributed load per metre length will break a cantilever of the same material 40 mm wide, 60 mm deep and 3 m long?	CO2	L3	6M

UNIT-III

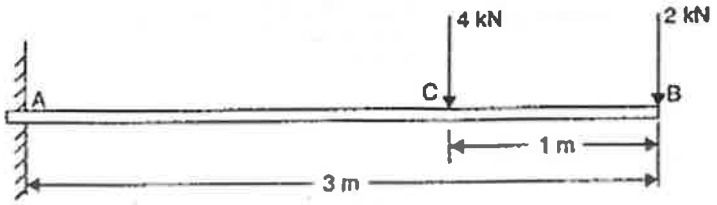
5	a	Derive shear stress distribution formula for circular section with a neat sketch.	CO2	L1	6M
	b	A circular beam of 100mm diameter is subjected to a shear force of 5KN. Calculate: (i) Average shear stress (ii) Maximum shear stress (iii) Shear stress at a distance of 40mm from N.A.	CO2	L3	6M

OR

6		A closely coiled helical spring made of 10 mm diameter steel wire has 15 coils of 100 mm mean diameter. The spring is subjected to an axial load of 100 N. Calculate : (i) The maximum shear stress induced, (ii) The deflection, and (iii) Stiffness of the spring. Take modulus of rigidity, C = 8.16 x 10^4 N/mm2	CO3	L3	12 M

UNIT-IV

7	A cantilever of length 3 in carries two point loads of 2 KN at the free end and 4 KN at a distance of 1 m from the free end. Find the deflection at the free end. Take E = 2 x 10^5N/mm^2 and I = 10^8 mm^4.	CO4	L3	12 M



OR

8	A column of timber section 15 cm x 20 cm is 6 metre long both ends being fixed. If the Young's modulus for timber =17.5 KN/mm^2, determine : (i) Crippling load and (ii) Safe load for the column if factor of safety = 3.	CO4	L3	12 M

UNIT-V

9	A copper cylinder, 90 cm long, 40 cm external diameter and wall thickness 6 mm has its both ends closed by rigid blank flanges. It is initially full of oil at atmospheric pressure. Calculate additional volume of oil which must be pumped into it in order to raise the oil pressure to 5 N/mm^2 above atmospheric pressure. For copper assume E= 1.0 x 10^5 N/mm^{2}and Poisson's ratio 1/3. Take bulk modulus of oil as K= 2.6 x 10^3N/mm^2.	CO5	L3	12 M

OR

10	Derive an expression for hoop and radial stresses across thickness of the thick cylinder.	CO5	L2	12M

***** END *****

O.P.Code: 20CE0103	R20	H.T.No.									

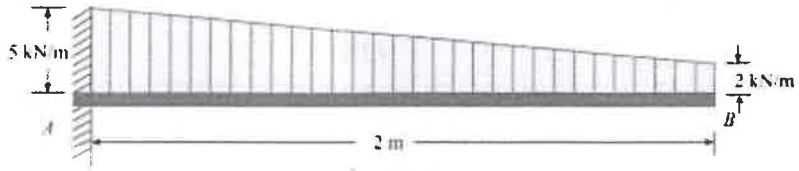
SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
STRENGTH OF MATERIALS
(Civil Engineering)

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

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

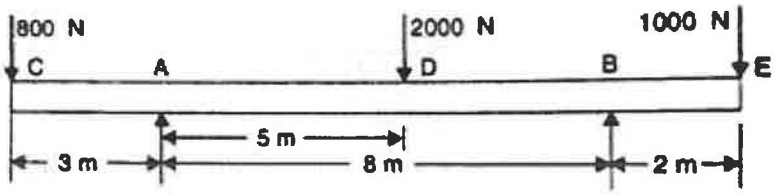
UNIT-I

1	a	Define shear force and bending moment.	CO1	L1	4M
	b	A cantilever beam of 2 m span is subjected to a gradually varying load from 2kN/m to 5 kN/m as shown in figure. Draw the shear force and bending moment diagrams for the beam.	CO1	L3	8M



OR

2		Draw the S.F. and B.M. diagrams for the beam which is loaded as shown in figure. Determine the points of contraflexure within the span AB.	CO1	L3	12M



UNIT-II

3		List the assumptions made in deriving the flexure formula. Derive the equation $\frac{\sigma}{y} = \frac{M}{I} = \frac{E}{R}$	CO2	L2	12M

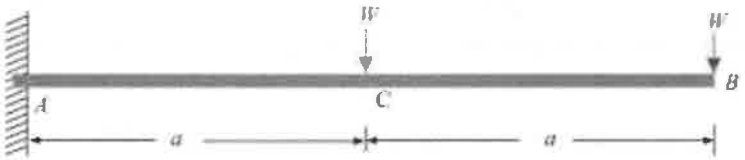
OR

4		A cast iron water pipe of 500 mm inside diameter and 20 mm thick is supported over a span of 10 m. Find the maximum stress in the pipe metal, when the pipe is runningfull. Take density of cast iron as 70.6 kN/m^3 and that of water as 9.8 kN/m^3.	CO2	L4	12M

UNIT-III

5		A solid circular shaft transmits 75 kW power at 200 r.p.m. Calculate the shaft diamctcr, if the twist in thc shaft is not to exceed 1o in 2 metres length of shaft, andshear stress is limited to 50 N/mm2. Take C = 1 x 10^5 N/mm2.	CO3	L1	12M

OR

6		For a close-coiled helical spring subjected to an axial load of 300 N having 12 coils of wire diameter of 16 mm, and made with coil diameter of 250 mm, find: (i) Axial defection; (ii) Strain energy stored; (iii) Maximum torsional shear stress in the wire.	CO3	L2	12M
		UNIT-IV			
7		A timber beam of rectangular section has a span of 4.8 m and is simply supported at its ends. It is required to carry a total load of 45kN uniformly distributed over the whole span. Find the value of the breadth (b) and depth (d) of the beam, if maximum bending stress is not to exceed 7 Mpa and maximum deflection is limited to 9.5 mm.Take E for the timber as 10.5 GPa.	CO4	L4	12M
		OR			
8		A cantilever of length 2a is carrying a load of W at the free end, and another load of W at its centre as shown in the figure. Determine, by Moment Area Method, the slope and deflection of the cantilever at the free end 	CO4	L3	12M
		UNIT-V			
9	a	What are the assumptions made in Euler's theory?	CO5	L1	4M
	b	Find the ratio of buckling strength of a solid column to that of a hollow column of the same material and having the same cross –sectional area. The internal diameter of the hollow column is half of its external diameter. Both the columns are hinged andthe same length.	CO5	L3	8M
		OR			
10		A bar of length 4 m when used as a simply supported beam and subjected to a udl of 30 kN/m over the whole span, deflects 15 mm at the centre. Determine the crippling loads when it is used as a column with following end conditions: (i) Both ends pinjoined (ii) One end fixed and other end hinged (iii) Both ends fixed	CO5	L4	12M

***** END *****

O.P.Code: 20HS0812	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations July/August-2024
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Common to ECE, EEE & ME)

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

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

UNIT-I

1	a	Describe Elasticity of Demand. Explain factore governing Elasticity of Demand?	CO1	L1	6M
	b	Discuss in detail survey methods of demand forecasting.	CO1	L2	6M

OR

2	a	What is Managerial Economics? Briefly explain the role of managerial economics in business decision making.	CO1	L2	6M
	b	Define the term "Law of Demand? Explain its exceptions.	CO1	L4	6M

UNIT-II

3	a	Write a short note on Least cost combination of inputs and MRTS.	CO2	L3	6M
	b	A Firm has a fixed cost of Rs 50000/- Selling price per unit Rs 50 and variable cost per unit Rs 25/- present level of production is 3500/- units. i) Calculate BEP in volume and value. ii) Findout margin of safety iii) What is the change in BEP and margin of safety if Fixed cost increases from Rs50000/- to Rs 60000/-.	CO2	L4	6M

OR

4	a	Explain the managerial significance and key terms of BEP?	CO2	L2	6M
	b	Write a short note on Economies of scale and Dis-Economies of scale.	CO2	L3	6M

UNIT-III

5	a	What is meant by perfect competition? Explain its features .	CO3	L2	6M
	b	Explain Various pricing techniques in details.	CO3	L2	6M

OR

6	a	Write a short notes on new economic environment and Explain LPG.	CO3	L4	6M
	b	Illustrate the price and output determination in case of monopoly .	CO3	L2	6M

UNIT-IV

7	a	Explain advantages and disadvantages of NPV.	CO4	L2	6M
	b	The cost of the project is Rs.10,00,000, which has an expected life of five years. The cash inflow for the next five years are Rs.3,20,000, Rs.3,80,000, Rs.3,00,000, Rs 3,00,000 and Rs.2,60,000 respectively Determine payback period.	CO4	L5	6M

OR

8	a	Define Capital budgeting. Explain its importance and limitations.	CO4	L2	6M
	b	From the following particles of two machines each costing Rs 2,50,000/- suggest which is the best machines and why ?	CO4	L5	6M

Years	1	2	3	4
Machine-X	90,000	1,60,000	1,20,000	70,000
Machine-Y	1,60,000	1,20,000	90,000	50,000

Calculate: i) Pay Back Period ii) Accounting rate of Return,

UNIT-V

9	a	Elucidate the importance of accounting.	CO5	L2	6M
	b	X company's Current assets Rs. 5,00,000; current liabilities are Rs. 3,00,000 and closing stock is Rs. 1,00,000 calculate current ratio and quick ratio and analyze them.	CO5	L5	6M

OR

10	a	Write short notes on Inventory Turnover Ratio and Inventory holding periods. And also calculate with following data. A Firm sold goods worth Rs 5, 00,000 and its gross profit is 20 percent of sales value. The inventory at the beginning of the year was Rs 16000 and at end of the year was Rs 14000.	CO5	L5	6M
	b	Write short notes on interest coverage ratio.	CO5	L2	6M

***** END *****

O.P.Code: 20ME0315	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
HEAT & MASS TRANSFER
(Agricultural Engineering)

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

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

UNIT-I

1	a	What is Fourier's law of conduction? State the assumption and essential feature of it.	CO1	L1	6M
	b	Define the following terms i)Thermal Conductivity ii) Thermal Resistance	CO1	L1	6M
		OR			
2		Derive the general heat conduction equation in Cartesian coordinate.	CO1	L3	12M

UNIT-II

3	a	Obtain the expression of heat conduction through hollow cylinder	CO2	L3	6M
	b	A spherical shaped vessel of 1.4 m diameter is 90 mm thick. Find the rate of heat leakage, if the temperature difference between the inner and outer surface is 220°C. Thermal conductivity of the material of the sphere is 0.083 W/m °C.	CO2	L4	6M
		OR			
4	a	Sketch various types of fins. Give examples of use of fins in various engineering applications..	CO2	L1	6M
	b	Calculate the amount of energy required to solder together two very long pieces of bare copper wire 1.5 mm diameter with solder that melts at 190 °C. The wires are positioned vertically in air at 20 °C. Assume that the heat transfer coefficient on the wire surface is 20 W/m2 °C and thermal conductivity of wire alloy is 330 W/m °C.	CO2	L4	6M

UNIT-III

5	a	Define Nusselt number, Prandtl number and their significance.	CO3	L1	6M
	b	Air stream at 24 °C is flowing at 0.4 m/s across a 100 W bulb at 130 °C. If the bulb is approximately by a 65 mm diameter sphere. Calculate i. The heat transfer rate, ii. The percentage of power lost due to convection	CO3	L4	6M
		OR			
6		Calculate the heat transfer from a 60 W in candescent bulb at 115 °C to ambient air at 25 °C. Assuming the bulb as a sphere of 50 mm diameter. Also, find the percentage of power lost by free convection. The correlation is given by: Nu = 0.60 (Gr.Pr)1/4.	CO3	L4	12M

UNIT-IV

7	a	Define Radiation heat transfer .	CO4	L1	6M
	b	Define the term absorptivity, reflectivity and transmittivity of radiation.	CO4	L1	6M
		OR			
8	a	Explain the concept of black body .	CO4	L1	6M
	b	Explain the surface emissive properties. .	CO4	L1	6M

UNIT-V

9	Derive the expression for Logarithmic Mean Temperature Difference (LMTD) in case of parallel flow.	CO5	L3	12M

OR

10	The flow rate of hot and cold water streams running through a parallel flow heat exchanger are 0.2 kg/s and 0.5 kg/s respectively. The inlet temperatures on the hot and cold sides are 75 °C and 20 °C respectively. The exit temperature of hot water is 45 °C. If the individual heat transfer coefficients on the both sides are 650 W/m2 °C, calculate the area of heat exchanger.	CO5	L4	12M

***** END *****

O.P.Code: 20HSO845	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. II Year I Semester Supplementary Examinations July/August-2024

MATHEMATICAL AND STATISTICAL METHODS

(Common to CSM, CAD, CAI, CCC, CIC**)**

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

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

UNIT-I

1	a	By the principle of mathematical induction, show that $3^{4n+2}+5^{2n+1}$ is a multiple of 14, for all positive integral value of n including zero.	CO1	L1	6M
	b	Prove by the principle of mathematical induction for all n in Z, $P(n)=1+\frac{1}{1+2}+\frac{1}{1+2+3}+....+\frac{1}{1+2+3+....n}=\frac{2n}{n+1}$	CO1	L5	6M

OR

2	a	Find the general solution of $63x-23y=-7$. Using Euclidean algorithm	CO1	L3	6M
	b	Examine whether the Linear Diophantine equation (LDE) $12x+13y=14$ is solvable. Write general solution if solvable.	CO1	L4	6M

UNIT-II

3	a	Solve the system of linear equations $3x+13y\equiv 8(\text{mod } 55)$; $5x+21y\equiv 34 \text{ (mod } 55)$.	CO2	L3	6M
	b	State Euler theorem and find the value of $(107)^{121}(\text{mod } 100)$	CO2	L3	6M

OR

4	a	Find $\sigma(570)$ and $\tau(675)$, where $\sigma(n)$ denotes the sum of the divisors and τ(n) denotes number of divisors.	CO2	L3	6M
	b	If $\phi(n)$ denotes the number of positive integers less than or equal to n, then find (i) $\phi(200)$ (ii) $\phi(420)$ (iii) $\phi(1020)$	CO2	L3	6M

UNIT-III

5	a	The mean and the standard deviation of a population are 11795 and 14054 respectively. If n=50, find 95% confidence interval for the mean? And what is the maximum error we can assert at 95% confidence level? The value of Z at 0.025 is 1.96.	CO4	L3	6M
	b	Find the Maximum Likelihood estimator of the parameter θ of the distribution given by $f(x,\theta)=\frac{1}{\alpha!\,\theta^{\alpha+1}}x^{\alpha}e^{\frac{-x}{\theta}}, 0<x<\infty$ Where α is known, based on a sample of size n.	CO4	L5	6M

OR

6	a	Find 95% confidence limits for the mean of a normality distributed population from which the following sample was taken 15, 17, 10, 18, 16, 9,7,11,13 ,14. The value of t for 9 degrees of freedom at 5% level of significance is 2.262.	CO4	L3	6M
	b	Prove that maximum Likelihood estimate of the parameter α of a population having density function $L(\alpha)=f(x,\alpha)=\frac{2}{\alpha^2}(\alpha-x);\ 0<x<\alpha$ for a sample of unit size is 2x , x being the sample value. Show also that the estimator is not unbiased.	CO4	L5	6M

UNIT-IV

7	a	Suppose a communication system transmits the digits 0 and 1 through many stages. At each state the probability that the same digit will be received by the next stage as transmitted, is 0.75. What is the probability that a 0 is entered at the first stage is received as a 0 in the 5^{th} stage?	CO5	L1	6M
	b	Let $P=\begin{pmatrix} \frac{3}{4} & \frac{1}{4} \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix}$ be the transition probability matrix of a two state Markov chain. Find the stationary probabilities of the chain.	CO5	L3	6M
		OR			
8		Let $\{X_n : n=1,2,3....\}$ be a Markov chain with state space S = {0, 1, 2} and one step transition probability matrix $P=\begin{bmatrix} 0 & 1 & 0 \\ \frac{1}{4} & \frac{1}{4} & \frac{1}{2} \\ 0 & 1 & 0 \end{bmatrix}$ (i) Is the chain ergodic? Explain. (ii) Find the invariant probabilities	CO5	L2	12M

UNIT-V

9		A petrol pump station has 4 pumps. The service times follow the exponential distribution with mean of 4 minutes and car arrive for service in a poison process at the rate of 30 cars per hour. (i) What is the probability that an arrival would have to wait in line? (ii) Find the average waiting time in the queue, average time spent in the system and the average number of cars in the system. (iii) For what percentage of time would a pump be idle on an average?	CO6	L3	12M
		OR			
10		A car servicing station has two bays where service can be offered simultaneously. Due to space limitation only four cars are accepted for servicing. The arrival pattern is Poisson with 12 cars per day. The service time in both the bays is exponentially distributed with μ=8 cars per day per bay. Find the average number of cars in the service station the average number of cars waiting to be serviced and the average time spends in the system.	CO6	L3	12M

***** END *****

O.P.Code:	R20	H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
NUMERICAL METHODS, PROBABILITY & STATISTICS
(Mechanical Engineering)

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

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

UNIT-I

1	a	Describe the formula for square root of a number by Newton – Raphson formula.	CO2	L2	2M
	b	Find out the square root of 25 given $x_0 = 2.0$, $x_1 = 7.0$ using Bisection method.	CO2	L3	10M

OR

2	a	Write the formula for Newton's forward interpolation.	CO1	L1	2M
	b	From the following table values of x and $y=tan\ x$. Interpolate the values of y when $x=0.12$ and $x=0.28$.	CO1	L5	10M

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		Evaluate by Taylor's series method, find an approximate value of y at x=0.1and 0.2 for the D.E. $y'' + xy = 0\ ;\ y(0) = 1\ , y'(0) = 1/2$.	CO3	L5	12M

OR

4		Using R-K method of 4th order, solve $\frac{dy}{dx} = x^2 - y$, y(0)=1. Find y(0.1) and y(0.2) .	CO3	L3	12M

UNIT-III

5		Compute Karl Pearson and Bowley's coefficient of Skewness to the following data:	CO4	L6	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

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. 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?	L1	CO4	6M
	b	Determine (i) $P(B/A)$ (ii) $P(A/B^C)$ if A and B are events with $P(A)=\frac{1}{3}$ $P(B)=\frac{1}{4}$, $P(AUB)=\frac{1}{2}$.	L5	CO4	6M

UNIT-IV

7		A random variable X has the following probability function:	L5	CO5	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	a	Define Probability density function.	L1	CO5	2M
	b	If a continuous random variable x has the distribution function $F(x) = \begin{cases} 0 \ if \ x \leq 1 \\ k(x-1)^4 \ ; 1 < x \leq 3 \\ 0 \ ; \ x > 3 \end{cases}$, then find the value of k and the probability density function of x.	L6	CO5	10M

UNIT-V

9	a	Derive the Variance of Binomial distribution.	L2	CO5	4M
	b	Fit a Binomial distribution to the following frequency distribution:	L5	CO5	8M

x	0	1	2	3	4	5
f	2	14	20	34	22	8

OR

10	Ten competitors in a musical test were ranked by the three judges A,B and C in the following order:	L3	CO6	12M

Ranks by A	1	6	5	10	3	2	4	9	7	8
Ranks by B	3	5	8	4	7	10	2	1	6	9
Ranks by C	6	4	9	8	1	2	3	10	5	7

Using rank Correlation coefficient method, discuss which pair of judges has the nearest approach to common likings in music.

***** END *****

O.P.Code: 20HSO832	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
PROBABILITY, NUMERICAL METHODS AND TRANSFORMS
(Electrical & Electronics Engineering)

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

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

UNIT-I

1	a	Out of 15 items 4 are not in good condition 4 are selected at random. Find the probability that (i)All are not good (ii)Two are not good	CO1	L2	6M
	b	Three students A,B,C are in running race. A and B have the same Probability of winning and each is twice as likely to win as C. Find the Probability that B or C wins.	CO1	L2	6M

OR

2	a	State Baye's theorem	CO1	L1	2M
	b	In a bolt factory machines A,B,C manufacture 20%,30% and 50% of the total of their output and 6%,3% and 2% are defective. A bolt is drawn at random and found to be defective. Find the probabilities that it is manufactured from (i) Machine A (ii)Machine B (iii) Machine C.	CO1	L2	10M

UNIT-II

3		By applying Bisection method to find a positive root of $x^3 - x - 1 = 0$ correct to two decimal places.	CO2	L2	12M

OR

4	a	Using Newton's forward interpolation formula and the given table of values obtain the value of f(x) when x=1.2	CO2	L3	6M

x	1.1	1.3	1.5	1.7	1.9
$f(x)$	0.21	0.69	1.25	1.89	2.61

	b	Use Newton's backward interpolation formula to find $f(32)$ given $f(25)=0.2707, f(30)=0.3027, f(35)=0.3386, f(40)=0.3794$.	CO2	L2	6M

UNIT-III

5	a	Write the formula for 4th order R-K method.	CO3	L1	2M
	b	Using modified Euler's method to find $y(0.2) and\ y(0.4),\ given\ y^1 = y + e^x\ , y(0) = 0$	CO3	L3	10M

OR

6	a	Compute $\int_0^{\pi/2} sinx\ dx$ using Trapezoidal rule	CO3	L2	6M
	b	Calculate $\int_0^4 e^x dx$ by Simpson's $\frac{3}{8}$rule with 12 sub divisions	CO3	L2	6M

UNIT-IV

7	a	Find $L\{e^{-3t} sinh3t\}$	CO4	L2	6M
	b	Find the Laplace transform of $f(t) = \frac{1-\cos at}{t}$	CO4	L2	6M

OR

8	a	Find the Inverse Laplace transform of $\frac{1}{s(s^2+a^2)}$	CO4	L2	6M
	b	Using Convolution theorem, Find $L^{-1}\left\{\frac{1}{(s+a)(s+b)}\right\}$	CO4	L3	6M

UNIT-V

9	Solve the differential equation $\frac{d^2x}{dt^2}+2\frac{dx}{dt}+x=3te^{-t}$ using Laplace Transform given that $x(0)=4;\frac{dx}{dt}=0.at,t=0$	CO5	L3	12M

OR

10	Solve the difference equation using Z –transform, $y_{n+2}-3y_{n+1}+2y_n=0$ *given that* $y_0=0,y_1=1$	CO5	L3	12M

***** END *****

Q.P.Code: 20EC0405 | R20 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
ANALOG COMMUNICATIONS
(Electronics & Communications Engineering)

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

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

UNIT-I

1	a	Define Communication and brief about different types of communications.	**CO1**	**L1**	**6M**
	b	A modulating signal 10 $sin\ (2\pi \times 103\ t)$ is used to modulate a carrier signal 20 $sin\ (2\pi \times 104\ t)$. Compute the modulation index, % of modulation index, frequency of sideband components and their amplitudes. What will be the bandwidth of modulated signal?	**CO1**	**L3**	**6M**

OR

2	a	Explain the need for Modulation.	**CO1**	**L2**	**6M**
	b	How a modulating signal can be detected using envelope detector? Explain.	**CO2**	**L2**	**6M**

UNIT-II

3	a	Illustrate the functionality of Ring modulator for generation of DSB-SC wave.	**CO2**	**L3**	**8M**
	b	Calculate the Transmission bandwidth of DSB-SC wave & power saving.	**CO2**	**L3**	**4M**

OR

4	a	With a neat block diagram explain the operation of phase discrimination method using SSB and list the drawbacks.	**CO2**	**L1**	**8M**
	b	Determine the total power content of DSB-SC and SSB-SC. Assume the amplitude and frequency of modulating signal is 6V and 10kHz respectively, amplitude and frequency of carrier signal is 12V and 700kHz.	**CO2**	**L4**	**4M**

UNIT-III

5	a	Define FM and derive the expression with necessary waveforms.	**CO3**	**L1**	**6M**
	b	Explain the generation of FM using Reactance Modulator.	**CO3**	**L1**	**6M**

OR

6	a	Explain and draw the block diagram of FM transmitter.	**CO4**	**L2**	**6M**
	b	Demonstrate the working principle of PLL.	**CO4**	**L2**	**6M**

UNIT-IV

7	a	Sketch and explain the functionality of each block in Super-heterodyne FM receiver.	CO6	L5	9M
	b	Write a short note on double spotting and tracking.	CO6	L3	3M

OR

8	a	Define Noise and its classification	CO5	L1	2M
	b	Prove that the figure of merit for SSB-SC is 1.	CO5	L5	10M

UNIT-V

9	a	Explain the generation of PAM with mathematical analysis.	CO3	L2	4M
	b	Briefly discuss about the frequency division multiplexing.	CO2	L2	8M

OR

10	a	Discuss about channel capacity theorem.	CO6	L2	4M
	b	An analog signal band limited to 10KHZ is quantized eight levels of a PCM system with probabilities 1/2, 1/4, 1/5, 1/5, 1/10, 1/10, 1/20, 1/20. Find Entropy & Rate of information.	CO6	L3	8M

***** END *****

O.P.Code: 20CI0601 | R20 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
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	Explain the operating system structures.	CO1	L1	6M
	b	Discuss in briefly about Protection and Security.	CO1	L2	6M
		OR			
2	a	Discuss about User and Operating System Interface.	CO1	L2	6M
	b	Distinguish between Multitasking and Multiprogramming.	CO1	L4	6M

UNIT-II

3	a	Describe the Inter Process Communication in client-server systems.	CO2	L1	6M
	b	Consider the following processes, with the length of CPU burst time given below	CO2	L5	6M

Process	Burst Time	Priority
P1	6	3
P2	3	2
P3	9	4
P4	4	1

Calculate the average waiting time and average turnaround time for each of the above Scheduling algorithm.

OR

4	a	What is CPU scheduling? Explain types of Scheduling and Scheduling Criteria in detail.	CO2	L1	6M
	b	Discuss briefly about the Process scheduling.	CO2	L2	6M

UNIT-III

5	a	Explain the methods for handling deadlocks.	CO3	L2	6M
	b	Explain the solution for Dining-Philosophers Problem.	CO3	L2	6M
		OR			
6	a	Write the properties and limitations of semaphores.	CO3	L1	6M
	b	Explain in detail about producer consumer problem.	CO3	L4	6M

UNIT-IV

7	a	What is paging? Explain in detail about paging.	CO4	L2	6M
	b	Explain Structure of page table.	CO4	L2	6M
		OR			
8	a	Consider the following page reference string:2,1,0,3,4,0,0,0,2,4,2,1,0,3,2.How many page faults would occur if the working set policy were used with a window size of 47.Show when each page fault would occur clearly.	CO4	L5	8M
	b	Discuss swapping memory management.	CO4	L5	4M

UNIT-V

9	a	Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous was at cylinder 125. The queue of pending requests, in FIFO order, is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130 Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms? i) LOOK ii) C-SCAN iii) C-LOOK.	CO5	L5	6M
	b	Write an elaborate note on RAID.	CO5	L4	6M
		OR			
10	a	Explain File access methods in detail.	CO5	L2	6M
	b	Compare the C-LOOK and C-SCAN disk scheduling algorithms.	CO5	L4	6M

***** END *****

O.P.Code: 20CE0109	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
FLUIDMECHANICS
(Civil Engineering)

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

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

UNIT-I

1		The space b/w two square parallel plates filled with oil. Each side of the plate is 60 cm. The thickness of oil film is 12.5. The upper plate which moves at 2.5m/sec requires a force 98.1 N to maintain the speed. Determine the i) Dynamic viscosity of oil in poise. ii) Kinetic viscosity of the oil in stokes, If the specific gravity of the oil 0.95.	**CO1**	**L3**	**12M**

OR

2	**a**	State Pascal's law and Derive pressure variation in liquid at rest.	**CO1**	**L2**	**6M**
	b	Two horizontal plates are placed 1.25cm apart, the space between them filled withoil of viscosity 14 Poise. Calculate the Shear Stress in oil if upper plate is moved with velocity of 2.5 m/sec.	**CO1**	**L3**	**6M**

UNIT-II

3		Derive Continuity Equation in 3-Dimensional flow.	**CO2**	**L3**	**12M**

OR

4		The velocity vector in a fluid flow is given as $V = 4x^3i - 10x^2yj + 2$. Find the velocity and acceleration of fluid particles at (2 , 1 , 3) at time t = 1.	**CO2**	**L3**	**12M**

UNIT-III

5		Derive the Euler's equation of motion along a stream line with assumptions.	**CO3**	**L3**	**12M**

OR

6	**a**	The water is flowing through a pipe having diameter of 20 cm and 10 cm at section & 2 respectively. The rate of flow through pipe is 35 lit/sec. The section 1 is6m above the datum and section 2 is 4m above the datum. If the pressure at the section 1 is 39.24 N/cm^2 . Find the intcnsity of prcssurc at thc scction 2.	**CO4**	**L3**	**6M**
	b	Derive the Expression for velocity measurement by Pitot tube.	**CO4**	**L3**	**6M**

UNIT-IV

7	A horizontal pipe line 40m long is connected to the water tank at one end and discharges freely into the atmosphere at the other end. For the first 25 m of its length from the tank pipe is 150mm and its dia is suddenly enlarged to 300mm. the height of water level in the tank is 8m above the center of pipe considering all losses of head which cover occur. Determine the rate of flow. Take f = 0.01, for both sections of the pipe?	**CO4**	**L3**	**12M**

OR

8	A syphon is Ø 200mm connects two reservoirs having a difference in elevation of 20m. The length of the syphon is 500m and the summit is 3m above the water level in the upper reservoir. The length of the pipe from upper reservoir to the summit is 100m. Determine the discharge through the syphon & also pressure at the summit.Neglect minor losses. The coefficient of the friction f = 0.005?	**CO5**	**L3**	**12M**

UNIT-V

9	What is dimensionless number? Explain different types of numbers.	**CO6**	**L2**	**12M**

OR

10	Calculate i) pressure gradient along flow ii) average velocity iii) discharge for an oil of viscosity 0.02 Ns/m^2 flowing between two stationary parallel plates 1m wide maintained 10mm apart. The velocity between plates is 2m/s.	**CO6**	**L3**	**12M**

***** END *****

O.P.Code: 20HS0864	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations July/August-2024
HUMAN VALUES AND PROFESSIONAL ETHICS
(Common to CSIT, CSE, CSM, CAD, CAI, CCC, CIC, CE & AGE)

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

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

UNIT-I

1	a	Explain the term virtue and integrity. What are the different accounts of integrity?	CO1	L1	6M
	b	What is work ethic? Discuss briefly the various elements of it.	CO1	L2	6M
		OR			
2	a	List some time wasters identified by Engineers.	CO1	L1	6M
	b	What is meant by spirituality? How does it differ from religion?	CO1	L1	6M

UNIT-II

3	a	What are the various types of Characteristics in Engineering Ethics.	CO2	L1	6M
	b	Elaborate the steps in confronting moral dilemmas.	CO2	L2	6M
		OR			
4	a	Describe utilitarianism and two versions of utilitarianism.	CO2	L2	6M
	b	List out various differences between duty ethics and right ethics.	CO2	L1	6M

UNIT-III

5	a	What are Codes of Ethics?	CO3	L1	6M
	b	What are limitations of codes of ethics?	CO3	L1	6M
		OR			
6	a	Define a law. What does balanced outlook on law emphasize upon?	CO3	L1	6M
	b	How law and ethics are related to each other?	CO3	L2	6M

UNIT-IV

7	a	Write the factors that influence the perception of risk.	CO4	L1	6M
	b	What are the job related risks?	CO4	L1	6M
		OR			
8	a	Write minimum three arguments in favor and against unions.	CO4	L1	6M
	b	What types of information should be kept confidential?	CO4	L2	6M

UNIT-V

9	a	Discuss the issues concerned with the right to privacy while using the computers.	CO5	L2	6M
	b	Discuss an engineer's involvement in weapons work. Why do some engineers refuse to do war works?	CO5	L2	6M
		OR			
10	a	Discuss about the role of codes of ethics by the Institute of Electrical & Electronics Engineers.	CO5	L2	6M
	b	List out the advantages, disadvantages and benefits of CSR.	CO5	L1	6M

***** END *****

O.P.Code: 20ME0305	R20	H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
THERMAL ENGINEERING
(Mechanical Engineering)

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

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

UNIT-I

1	a	With the help of neat sketch explain the working principle of single stage Reciprocating air compressor.	CO1	L2	6M
	b	With the help of neat sketch explain the working principle of multi stage reciprocating air compressor with effect of intercooler.	CO1	L2	6M
		OR			
2	a	With the help of neat sketch, explain the working of roots blower and vane type blower.	CO1	L2	6M
	b	A single stage reciprocating air compressor is required to compress 80 m3 of air from 1 bar abs to 10 bar abs. Find the work to be supplied if the law of expansion is PV1.25=Constant.	CO1	L3	6M

UNIT-II

3		With the help of neat sketch describe the working of Closed Cycle Brayton cycle.	CO2	L2	12M
		OR			
4		Explain various methods of Improving Brayton Cycle Efficiency.	CO2	L2	12M

UNIT-III

5	a	Define the following terms (i) Degree of super saturation (ii) Degree of intercooling	CO3	L1	6M
	b	How do you classify the condensers and describe about Surface condenser with a neat sketches.	CO3	L3	6M
		OR			
6		A steam nozzle passes 0.3kg/s when the inlet conditions are 14 bar and 3000C and final pressure is 2.5bar.Assume that the expansion is isentropic and inlet velocity is negligible. Determine throat area, exit area, dryness fraction and exit velocity. Take n=1.3 for superheated steam.	CO3	L3	12M

UNIT-IV

7	a	Draw and explain the velocity triangle of reaction turbine.	CO4	L1	6M
	b	Derive an expression for work done in reaction turbine.	CO4	L3	6M
		OR			
8		The following data refers to a single stage impulse turbine; Steam velocity = 800m/s; Blade speed=300m/s; Nozzle angle=200; Blade outlet angle=250. Neglecting effect of friction, calculate the power developed by the turbine for the steam flow rate of 25Kg/s. Also calculate the axial thrust on the bearings.	CO4	L4	12M

UNIT-V

9	a	Explain the Working Principle of 2-Stroke Engine.	CO5	L2	6M
	b	Briefly explain the Working Principle of 4-Stroke SI Engine.	CO5	L2	6M
		OR			
10		Briefly explain the method of Measuring the following (i) Fuel Consumption. (ii) Air intake (iii) Exhaust gas composition (iv) Brake power (v) Indicated power (vi) Friction power.	CO5	L3	12M

***** END *****

O.P.Code: 20AG0702	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
GREENHOUSE TECHNOLOGY
(Agricultural Engineering)

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

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

UNIT-I

1		Explain types of greenhouses based on utility and construction.	L1	CO1	12M
		OR			
2		Explain about polyethylene film greenhouses.	L2	CO1	12M
		UNIT-II			
3		Explain the types of active winter cooling systems with neat diagram.	L2	CO2	12M
		OR			
4		Briefly explain about Forced Ventilation with neat sketch.	L2	CO2	12M
		UNIT-III			
5		Explain about the fiberglass reinforced plastic rigid-panel covering material.	L2	CO3	12M
		OR			
6	a	Write difference between hammered and tempered glass.	L1	CO3	6M
	b	Write about polyvinyl chloride rigid film.	L1	CO3	6M
		UNIT-IV			
7		Explain in detail about heating systems.	L2	CO4	12M
		OR			
8	a	Explain about hand watering.	L2	CO4	6M
	b	Define irrigation in greenhouse.	L1	CO4	6M
		UNIT-V			
9	a	Write in detail about drying of agriculture produce.	L1	CO5	6M
	b	Explain about condition influencing returns.	L2	CO5	6M
		OR			
10		Explain the capital requirements with flowchart for protected agriculture.	L2	CO5	12M

***** END *****

O.P.Code: 20EE0204	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
ELECTROMAGNETIC FIELDS
(Electrical & Electronics Engineeering)

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

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

UNIT-I

1	a	Give the cartesian coordinates of the Point who's cylindrical are r=4, ϕ=45°& Z=2).	CO1	L3	6M
	b	Two points A (2,2,1) and B(3,-4,2) are given in the cartesian systems. Obtain the vector from A to B and a unit vector directed from A to B.	CO1	L3	6M
		OR			
2		Determine the divergence of these vector fields: i)$P=x^{-2}yz\ a_x + xz\ a_z$, ii) $Q= r \sin\phi\ a_r + r^2\ z\ a_\phi + z\cos\phi\ a_z$ and iii) $T= (1/r^2)\cos\theta\ a_r + r\sin\theta\cos\phi\ a_\theta + \text{Cos}\theta\ a_\phi$	CO1	L3	12M

UNIT-II

3	a	Determine the Electric filed intensity at P(-0.2, 0, -2.3) m due to a point charge of 5 nc at Q (0.2,0.1, -2.5) m in air.	CO2	L3	6M
	b	An infinitely long uniform line charge is located at y=3, Z=5. If ρ_L = 30 n C/m, find the filed intensity E at i) origin , ii) P(0,6,1) and iii) P (5,6,1).	CO2	L3	6M
		OR			
4		The Electric flux density is given as D= (r/4) a_r n C/m^2 in free space. Calculate: The Electric field intensity at r=0.25 m , The total charge within a sphere of r=0.25 m.	CO2	L3	12M

UNIT-III

5	a	Find the magnitude of D and P for a dielectric material in which E=0.15 mV/m and χ=4.25.	CO3	L3	6M
	b	Find the polarization in dielectric material with ε_r =2.8 if D=3*10^{-7} C/m^2.	CO3	L3	6M
		OR			
6		Two parallel conducting discs are separated by distance 5 mm at z=0 and z=5 mm.If V=0 and V=100 v at z=5 mm, find the charge densities on the disc.	CO3	L3	12M

UNIT-IV

7	a	Find the flux passing the portion of the plane $\phi=\pi/4$ defined by 0.01<r<0.05 m and 0<z<2 m. A current filament of 2.5 A is along the z axis in the a_z direction in free space.	CO4	L3	6M
	b	In cylindrical coordinates B= (2.0/r) a_ϕ tesla. Determine the magnetic flux ϕ crossing the plane surface defined by 0.5<r<2.5 m and 0<z<2m.	CO4	L3	6M
		OR			
8		Derive the expression for self-inductance of solenoid, toroid and coaxial cable.	CO4	L4	12M

UNIT-V

9		Explain faradays law of electromagnetic induction and there from derive maxwell's equation in differential and integral form.	CO5	L4	12M
		OR			
10		An area of 0.65 m^2 in the plane Z=0 encloses a filamentary conductor. Find the induced voltage if B= 0.05 cos 10^3 t (a_y+a_z)/$\sqrt{2}$ tesla.	CO5	L4	12M

***** END *****

O.P.Code: 20CS0507	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. II Year I Semester Supplementary Examinations July/August-2024

OPERATING SYSTEMS

(Common to CSE, CSM, CIC, CAD, CCC & CAI)

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

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

		UNIT-I			
1	**a**	List and discuss the different functions of an operating system.	**CO1**	**L1**	**8M**
	b	Explain different operations performed by the operating system.	**CO1**	**L2**	**4M**
		OR			
2	**a**	Distinguish distributed operating system with embedded operating system.	**CO1**	**L2**	**6M**
	b	What is operating system? Explain multi programming and time-sharing operating systems.	**CO1**	**L1**	**6M**
		UNIT-II			
3	**a**	Define Process? Describe process States with neat diagram.	**CO1**	**L1**	**6M**
	b	Explain about process Scheduling. list types of scheduling.	**CO1**	**L2**	**6M**
		OR			
4	**a**	Explain in detail about inter process communication.	**CO2**	**L2**	**6M**
	b	Discuss the essential properties of the following types of systems i)Shared Memory ii)Message Passing	**CO2**	**L2**	**6M**
		UNIT-III			
5	**a**	What is Monitor?explain with syntax.	**CO3**	**L2**	**6M**
	b	Write Short notes on Classical Problem of Synchronization.	**CO3**	**L1**	**6M**
		OR			
6	**a**	SimulateStarvation vs Deadlock.	**CO4**	**L6**	**6M**
	b	Write Short note on i)Mutual Exclusion. ii)Hold and Wait	**CO4**	**L3**	**6M**
		UNIT-IV			
7	**a**	Classify Thrashing.	**CO5**	**L4**	**6M**
	b	Givenpagereferencestring:1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3.Compar ethe number of page faults for LRU, FIFO and Optimal page replacement algorithm.	**CO5**	**L5**	**6M**
		OR			
8	**a**	What is Swapping? Explain with structure.	**CO5**	**L2**	**6M**
	b	Describe the advantages and disadvantages of swapping.	**CO5**	**L2**	**6M**
		UNIT-V			
9	**a**	What is File system Structure?	**CO6**	**L1**	**6M**
	b	Discuss the following file allocation methods i) Contiguous Allocation ii) Linked Allocation iii) Indexed Allocation.	**CO6**	**L2**	**6M**
		OR			
10	**a**	Define Cryptography, mention goals and components of cryptography.	**CO6**	**L1**	**6M**
	b	Explain about secret key and public key cryptography.	**CO6**	**L2**	**6M**

***** END *****

O.P.Code: 20HS0834	R20	H.T.No.									

24-7-24 FN

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
NUMERICAL METHODS AND TRANSFORMS
(Electronics & Communications Engineering)

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

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

UNIT-I

1		Using Newton-Raphson method, Find $\sqrt{28}$ and $\sqrt[3]{15}$	CO1	L3	12M
		OR			
2		Find the root of the equation $xlog10(x) = 1.2$ using False position method.	CO1	L3	12M

UNIT-II

3	a	State Euler's formula for differential equation.	CO2	L1	2M
	b	Using Euler's method, find an approximate value of y corresponding to $x = 0.2$ given that $\frac{dy}{dx} = x + y$, $y = 1$ when $x = 0$ taking $h = 0.1$.	CO2	L3	10M
		OR			
4		Using R-K method of 4th order find y(0.1) and y(0.2) given that $\frac{dy}{dx} = x + y, y(0) = 1$.	CO2	L3	12M

UNIT-III

5	a	Find the Laplace transform of $f(t) = cost.cos2t.cos3t$	CO3	L3	6M
	b	Find the Laplace transform of $\frac{1-cos\,at}{t}$.	CO3	L3	6M
		OR			
6	a	Find the Inverse Laplace transform of $\frac{1}{s(s^2+a^2)}$	CO3	L3	6M
	b	Find $L^{-1}\{\frac{s^2}{(s^2+4)(s^2+25)}\}$, using Convolution theorem.	CO3	L3	6M

UNIT-IV

7		Using Laplace transform method to solve $y'' - 3y' + 2y = 4t + e^{3t}$ where $y(0) = 1, y'(0) = 1$	CO4	L6	12M
		OR			
8	a	Write the formula for Half Range Fourier Cosine Series and sine Series.	CO4	L1	4M
	b	Find the half range cosine series expansion of $f(x) = x(2 - x)$in $0 \le x \le 2$.	CO4	L1	8M

UNIT-V

9		Find the Fourier sine and cosine transforms of $f(x) = \frac{e^{-ax}}{x}$ and deduce that $\int_0^\infty \frac{e^{-ax}-e^{-bx}}{x} sinpx\,dx = tan^{-1}\left(\frac{p}{a}\right) - tan^{-1}\left(\frac{p}{b}\right)$.	CO5	L1	12M
		OR			
10		Find the Fourier transform of $f(x) = \begin{cases} 1 ; \lvert x\rvert < a \\ 0 ; \lvert x\rvert > a \end{cases}$ and hence evaluate i) $\int_{-\infty}^{\infty} \frac{sinapcospx}{p} dp$ ii) $\int_{-\infty}^{\infty} \frac{sinp}{p} dp$ iii) $\int_0^{\infty} \frac{sinp}{p} dp$	CO5	L1	12M

*** END ***

O.P.Code: 20HS0812	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Common to CSE, CSIT & CE)

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		Define the elasticity of demand. List out and explain the factors governing elasticity of demand.	CO1	L4	12M
		UNIT-II			
3	a	What is Marginal rate of technical substitution?	CO2	L2	6M
	b	Evaluate the Cobb Douglas production function.	CO2	L4	6M
		OR			
4		Write short notes on Isoquants its features, Iso cost, least cost combination of inputs and MRTS.	CO2	L3	12M
		UNIT-III			
5	a	Discuss various characteristics of market.	CO3	L2	6M
	b	State the features of Imperfect competition.	CO3	L1	6M
		OR			
6	a	Define market and explain features of monopoly.	CO3	L1	6M
	b	What is meant by perfect competition? Explain its features.	CO3	L2	6M
		UNIT-IV			
7	a	Explain the major sources of Capital.	CO4	L2	6M
	b	What are advantages and disadvantages of Pay back Method.	CO4	L4	6M
		OR			
8		Define capital budgeting. Explain the various methods of Capital Budgeting	CO4	L2	12M
		UNIT-V			
9	a	What is meant by Ratio analysis?	CO5	L1	6M
	b	Explain briefly about various types of ratios.	CO5	L2	6M
		OR			
10	a	Elucidate the importance of accounting.	CO5	L2	6M
	b	State the concept of double entry book keeping.	CO5	L1	6M

***** END *****

O.P.Code: 20EE0202	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
ELECTRICAL MACHINES-I
(Electrical & Electronics Engineering)

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

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

UNIT-I

1	a	Explain the methods of improving commutation.	CO1	L3	6M
	b	Explain the term reactance voltage in DC generator	CO1	L3	6M
		OR			
2	a	Write short notes on inter poles of DC generator.	CO1	L1	6M
	b	A 400V 1000A lap wound dc machines has 10 poles and 860 armatures conductors. calculate the number of conductors in the pole face to give full compensation if the pole face covers 70% pole span.	CO1	L3	6M

UNIT-II

3	a	What are the conditions for voltage build-up of a shunt generator.	CO2	L3	6M
	b	Explain concept of EMF build-up of self-excited DC generator.	CO2	L3	6M
		OR			
4	a	What are the conditions for voltage build-up of a shunt generator.	CO2	L3	6M
	b	Explain the external characteristics of DC generator with neat sketch.	CO2	L3	6M

UNIT-III

5		Explain the characteristics of compound motor in detail.	CO3	L3	12M
		OR			
6	a	Explain the armature voltage control method for the Speed control of a DC Motor.	CO4	L2	6M
	b	A 200 V dc shunt motor running at 1000 rpm takes an armature current of 17.5A.it is required to reduce the speed to 600 rpm. What must be the value of resistance to be inserted in the armature circuit if the original armature resistance is 0.4 ohm. Take armature current to be constant during this process.	CO4	L3	6M

UNIT-IV

7		Explain 3 point starter in detail.	CO5	L3	12M
		OR			
8		Explain field's test for DC machine in detail.	CO5	L4	12M

UNIT-V

9	a	Compare PMBLDC with DC motor.	CO6	L2	6M
	b	Explain the construction and operation of universal motor.	CO6	L4	6M
		OR			
10	a	Explain the method of speed control of universal motor.	CO6	L4	6M
	b	Mention the applications of universal motors.	CO6	L2	6M

***** END *****

O.P.Code: 20EC0403	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
SWITCHING THEORY AND LOGIC DESIGN
(Electronics & Communications Engineering)

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

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

UNIT-I

1	a	State and Prove Consensus Theorem and Absorption Theorem of Boolean algebra.	CO1	L3	6M
	b	Simplify the given Boolean expression to a sum of 3 terms. A'C'D' +AC' +BCD + A'CD' + A'BC + AB'C'	CO2	L4	6M
		OR			
2		Describe and Prove the following Boolean laws: i) Commutative ii) Associative iii) Distributive	CO1	L3	12M

UNIT-II

3		Simplify the following Boolean function using Tabulation method, and realize its logic circuit with NAND gates and NOR gates. Y(A, B,C,D) = Σ(1,3,5,8,9,11,15)	CO2	L4	12M
		OR			
4	a	Develop the logic diagram for the following Boolean function using NAND and NOR gates. Y=(AB'+A'B)(C+D').	CO5	L3	6M
	b	Apply the K-Map technique to simplify the given Boolean expression in POS form using K-Map F(A,B,C,D) = Σ(1,2,4,5,9,12,13,14)	CO2	L4	6M

UNIT-III

5	a	Design & implement Full Adder using Decoder.	CO4	L3	6M
	b	Illustrate the following Boolean functions using decoder and OR gates. F1(A,B,C,D)=Σ(2,4,7,9) F2(A,B,C,D)= Σ(10,13,14,15)	CO5	L3	6M
		OR			
6	a	Explain a 2-bit Magnitude comparator and write down its design procedure.	CO3	L2	6M
	b	Outline a Full Adder and realize it with use of truth table.	CO5	L3	6M

UNIT-IV

7	a	Explain the working principle of JK Flip-Flop in detail. Also give its characteristic equation, Graphic symbol and Excitation equation.	CO3	L2	6M
	b	Derive the characteristic equations for D & T Flip-Flops.	CO2	L3	6M
		OR			
8		Explain about the following counters in detail. i) Ring counter ii) Johnson counter	CO3	L2	12M

UNIT-V

9		Illustrate the PAL for the following Boolean functions. (i) A(w,x,y,z) = Σm(0,2,6,7,8,9,12,13) (ii) B(w,x,y,z)) = Σm(0,2,6,7,8,9,12,13,14)	CO5	L3	12M
		OR			
10		Explain the following related to sequential circuits with suitable examples: i) State diagram ii) State table ii) State assignment	CO1	L2	12M

***** END *****

O.P.Code: 20CS0513 | R20 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
COMPUTER NETWORKS
(Common to CCC, CIC)

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

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

UNIT-I

1		Demonstrate the various layers of OSI model with neat sketch.	CO1	L2	12M
		OR			
2	a	Illustrate what are the data rate limits in computer networks.	CO1	L3	6M
	b	Discuss about different unguided media.	CO1	L2	6M

UNIT-II

3	a	Classify the Data Link Layer Design Issues.	CO2	L3	6M
	b	Summarize the Controlled access protocols which are Used in MAC sub layer.	CO2	L2	6M
		OR			
4		Desribe the Elementary data link protocolsin detail.	CO2	L2	12M

UNIT-III

5	a	Summarize the quality of service in network layer.	CO3	L2	6M
	b	Sketch and explain in detail about IPV6protocol.	CO3	L3	6M
		OR			
6		Apply Link State Routing algorithm to find the route and ages of Routers.	CO3	L3	12M

UNIT-IV

7	a	Elaborate each field of TCP segment header with neat diagram.	CO4	L2	6M
	b	Represent the congestion control in transport layer.	CO4	L2	6M
		OR			
8	a	List the transport service primitives.	CO4	L2	6M
	b	Generalize in detail about Remote Procedure Call.	CO4	L3	6M

UNIT-V

9	a	Explain in detail about SNMP.	CO5	L2	6M
	b	Justify WWW in application layer.	CO5	L3	6M
		OR			
10		Discuss about File Transfer Protocol with neat diagram.	CO5	L2	12M

***** END *****

O.P.Code: 20CS0505	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
DATABASE MANAGEMENT SYSTEMS
(Common to CSE, CSM, CAD, CAI & CSIT)

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

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

UNIT-I

1	a	Why is the use of data independence? Explain by listing some of its major advantages.	CO1	L4	6M
	b	Examine the logical database design (ER to Relational) with suitable examples.	CO2	L3	6M
		OR			
2		Construct ER Diagram for University(i.e. Banking system, Hospital management system, Railway Reservation system, Online Shopping).	CO2	L6	12M

UNIT-II

3		What is a Join? Discuss about various joins used in SQL.	CO1	L2	12M
		OR			
4	a	Create a sub query to establish the WHERE, ANY,AS and ALL sub queries with example.	CO1	L6	6M
	b	Define trigger.Differentiate row level and statement level triggers.	CO1	L3	6M

UNIT-III

5	a	Consider the relation scheme R = {E, F, G, H, I, J, K, L, M, M} and the set of functional dependencies {{E, F} -> {G}, {F} -> {I, J}, {E, H} -> {K, L}, K -> {M}, L -> {N} on R. What is the key for R?	CO3	L5	6M
	b	What is Normalization? List out the of purpose normalization.	CO3	L1	6M
		OR			
6		Explain in detail about 1NF, 2NF, 3NF and BCNF with example.	CO3	L2	12M

UNIT-IV

7	a	What is Schedule? Explain the serial schedule with examples.	CO4	L2	6M
	b	Compare serializibility and non-serializibility.	CO5	L5	6M
		OR			
8		Explain ACID properties and illustrate them through examples.	CO4	L2	12M

UNIT-V

9	a	What is Deadlock recovery? Explain the different methods in deadlock.	CO5	L2	6M
	b	Explain about failure with loss of non-volatile storage.	CO6	L2	6M
		OR			
10		Classify various levels of RAID with neat diagrams	CO6	L4	12M

***** END *****

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
PYTHON PROGRAMMING
(Common to CAI, CSM & CAD)

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

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

		UNIT-I			
1		Discuss the basic Tuple Operations with examples	**CO2**	**L2**	**12M**
		OR			
2	**a**	Discriminate about the Multi-Valued Data types with examples.	**CO2**	**L5**	**6M**
	b	What is a Dictionary? Explain the Methods available in the Dictionary	**CO2**	**L1**	**6M**
		UNIT-II			
3	**a**	Create a Python program to generate the multiplication table based on user input.	**CO1**	**L6**	**6M**
	b	Discuss the Membership and Identity operators with examples.	**CO2**	**L2**	**6M**
		OR			
4	**a**	Create a Python program to display the Fibonacci series.	**CO1**	**L6**	**6M**
	b	What are the different loop control statements available in Python? Explain with suitable examples.	**CO1**	**L1**	**6M**
		UNIT-III			
5	**a**	Create a Recursive function to find the factorial of a number	**CO3**	**L6**	**6M**
	b	Write a Python program to find the most digits in the entered number using the return statement.	**CO3**	**L1**	**6M**
		OR			
6	**a**	Demonstrate implementation of hierarchical inheritance in Python, with a program.	**CO4**	**L2**	**6M**
	b	Discuss about key word arguments with example.	**CO3**	**L2**	**6M**
		UNIT-IV			
7	**a**	Illustrate matching with example program.	**CO5**	**L5**	**6M**
	b	Explain the from import statement in modules.	**CO3**	**L5**	**6M**
		OR			
8		What is package in Python? Explain the use of packages in your program with an example code.	**CO6**	**L3**	**12M**
		UNIT-V			
9		Demonstrate about the GUI programming in Python a) Triangle b) Rectangle	**CO2**	**L5**	**12M**
		OR			
10	**a**	Write a Python program to demonstrate the file I/O Write a Python program to demonstrate the file I/O.	**CO2**	**L4**	**6M**
	b	Describe the Filters in python.	**CO6**	**L2**	**6M**

***** END *****

O.P.Code: 20CS0506	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Common to CSIT, CCC, CIC & CSE)

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

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

		UNIT-I			
1	**a**	Explain java buzz words in detail.	**CO1**	**L2**	**6M**
	b	What is mean by OOP? Illustrate the concepts of OOP?	**CO2**	**L3**	**6M**
		OR			
2	**a**	What is an array? Classify the types of arrays in java.	**CO1**	**L1**	**6M**
	b	Describe command line arguments? Develop a Java program to add two numbers using command line arguments.	**CO1**	**L6**	**6M**
		UNIT-II			
3	**a**	Define constructor? Classify the types of constructors in Java?	**CO2**	**L1**	**6M**
	b	Differentiate between the usages of static, final keywords with example.	**CO2**	**L4**	**6M**
		OR			
4	**a**	Show the application of final keyword with variable, method and class in detail with an example.	**CO2**	**L1**	**6M**
	b	Write a java program to find the factorial value of the given number using user defined package concept.	**CO2**	**L6**	**6M**
		UNIT-III			
5	**a**	Apply is alive() and join() method in multi threading java program to show its usage.	**CO4**	**L3**	**6M**
	b	Write a java program to create two threads and execute simultaneously.	**CO4**	**L6**	**6M**
		OR			
6	**a**	.Explain types of synchronization in detail.	**CO3**	**L2**	**6M**
	b	Write a java program to sort the given names into ascending order.	**CO4**	**L6**	**6M**
		UNIT-IV			
7		Create program illustrating following framework. i)Vector ii) Array List iii) Hash Table iv)Stack	**CO6**	**L6**	**12M**
		OR			
8		Discuss about the file input stream and file output stream in java with examples.	**CO4**	**L2**	**12M**
		UNIT-V			
9		Apply an AWT based calculator with basic operations using java.	**CO5**	**L2**	**12M**
		OR			
10	**a**	Describe reference to an instance method of an arbitrary object of a particular type.	**CO5**	**L2**	**6M**
	b	Interpret the usage of Date and Time API with an example program.	**CO6**	**L3**	**6M**

*** END ***

O.P.Code: 20AG0701	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
PRINCIPLES OF AGRONOMY & SOIL SCIENCE
(Agricultural Engineering)

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

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

		UNIT-I			
1	a	Explain the effect of Edaphic Factors on Crop Growth and Development.	CO1	L2	8M
	b	Distinguish between Manures and Fertilizers.	CO1	L2	4M
		OR			
2	a	List out and explain the Principles of Organic Farming in detail.	CO1	L1	8M
	b	Operational structure of National Programme for Organic Production.	CO1	L3	4M
		UNIT-II			
3	a	Define Parallel cropping and Companion cropping? What are the advantages and disadvantages of Intercropping.	CO2	L1	6M
	b	Define Crop Rotation and its Characteristics.	CO2	L1	6M
		OR			
4	a	Explain briefly about the key elements in Weed Management.	CO2	L2	7M
	b	Discuss Multi-tier Cropping System with examples and neat labelled diagram.	CO2	L4	5M
		UNIT-III			
5	a	Discuss the Factors affecting Weathering of Minerals with suitable examples and diagrams.	CO3	L2	8M
	b	Mention and explain the Factors affecting the porosity of soil.	CO3	L1	4M
		OR			
6	a	Categorize the soil structure and describe them with suitable diagrams	CO3	L3	8M
	b	Show the tabular form of textural Class names developed by U.S.Department of Agriculture	CO3	L1	4M
		UNIT-IV			
7	a	Explain the Role of Organic Matter in Soil Fertility.	CO4	L2	8M
	b	What are the factors affecting Ion Exchange.	CO4	L1	4M
		OR			
8	a	Descibe Carbon:Nitrogen Ratio in detail.	CO4	L2	6M
	b	What are the factors affecting Ion Exchange.	CO4	L1	6M
		UNIT-V			
9	a	Explain Criteria of Essentiality.	CO5	L2	4M
	b	Mention the functions and deficiency symptoms of Potassium and Phosphorous.	CO5	L3	8M
		OR			
10	a	List out and explain the common problems faced from using the poor quality water.	CO5	L1	4M
	b	Enlist the Toxicity symptoms of Nitrogen, Phosphorous, Iron, Manganese and Boron.	CO5	L2	8M

***** END *****

O.P.Code: 20ME0304	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
KINEMATICS OF MACHINERY
(Mechanical Engineering)

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

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

UNIT-I

1		Explain the classification of links and kinematic pairs in detail with neat sketch.	CO1	L2	12M
		OR			
2	a	Explain about the Mobility-Kutzbach criterion and Gruebler's criteria and why it is used? Show the proof?	CO1	L2	6M
	b	Define the Grashof's law and identify the mechanism produced by the followinglinkage.	CO1	L1	6M

UNIT-II

3	a	Explain with a neat sketch of the straight line motion Hart mechanism. Prove that it produces an exact straight line motion.	CO2	L1	6M
	b	Sketch and Describe the working of Peaucellier mechanism	CO2	L1	6M
		OR			
4		Sketch and Describe the Scott-Russell and Robert's straight-line motion mechanisms.	CO2	L1	12M

UNIT-III

5	a	Explain how the velocities of a slider and the connecting rod are obtained in a slider crank mechanism.	CO3	L2	6M
	b	Define rubbing velocity at a pin joint. What will be the rubbing velocity at pin joint when the two links move in the same and opposite directions?	CO3	L1	6M
		OR			
6	a	What are the various methods used for finding out acceleration of mechanism? Explain one of them.	CO3	L1	6M
	b	How the Velocity of a Point on a Link can find by Relative Velocity Method.	CO3	L1	6M

UNIT-IV

7	a	Explain with sketches the different types of followers.	CO4	L2	6M
	b	Write short notes on cams.	CO4	L1	6M
		OR			
8	a	Construct the displacement, velocity and acceleration diagrams for a followerwhen it moves with simple harmonic motion.	CO4	L5	6M
	b	Construct the displacement, velocity and acceleration diagrams for a follower when it moves with uniform Acceleration and retardation.	CO4	L5	6M

UNIT-V

9	a	Explain the terms relates to spur gear :(i) Module, (ii) Pressure angle, and (iii) Addendum.	CO5	L2	6M
	b	State and prove the law of gearing. Show that involute profile satisfies the conditions for correct gearing.	CO5	L1	6M
		OR			
10	a	What do you understand by the term 'interference' as applied to gears?	CO5	L1	6M
	b	Define the following terms relates to transmission of motion (i) Gear tooth contact ratio (ii) Condition for constant velocity ratio	CO5	L1	6M

***** END *****

O.P.Code: 20EE0203	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
GENERATION OF ELECTRICAL POWER
(Electrical & Electronics Engineering)

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

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

UNIT-I

1	a	State the advantages and disadvantages of hydro power plant.	CO2	L2	6M
	b	What are the factors considered, while selecting the site for a Hydro power station?	CO1	L1	6M
		OR			
2		Explain the important components of a hydro power station.	CO2	L2	12M

UNIT-II

3	a	Explain shielding and safety precautions in nuclear power plants.	CO3	L1	6M
	b	State the advantages and disadvantages of Nuclear power plant.	CO3	L1	6M
		OR			
4	a	Explain about the fast breeder reactor.	CO3	L2	6M
	b	Explain the operating mechanism of control rods in a nuclear power plants.	CO3	L2	6M

UNIT-III

5	a	What is the need for solar thermal energy storage?	CO4	L1	6M
	b	Explain solar pond with neat diagram.	CO4	L2	6M
		OR			
6	a	Explain Power-Speed characteristics.	CO4	L2	6M
	b	Explain Torque-Speed characteristics.	CO4	L2	6M

UNIT-IV

7	a	Explain the factors affecting bio-digestion of gas.	CO5	L2	6M
	b	Write some applications of biogas.	CO5	L2	6M
		OR			
8	a	How biomass conversion takes place?	CO5	L1	6M
	b	What is difference between biomass and biogas?	CO5	L1	6M

UNIT-V

9	a	Discuss Difference between two-part tariff and Three –part tariff.	CO6	L2	6M
	b	Define Flate rate, block rate tariff and power factor tariff.	CO6	L2	6M
		OR			
10	a	Explain different types of power factor tariff.	CO6	L1	6M
	b	The maximum demand of a consumer is 20 A at 220 V and his total energyconsumption is 8760 kWh. If the energy is charged at the rate of 20 paise perunit for 500 hours use of the maximum demand per annum plus 10 paise per unit for additional units, calculate : (i) annual bill (ii) equivalent flat rate.	CO6	L4	6M

*** END ***

O.P.Code: 20CS0504	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year I Semester Supplementary Examinations July/August-2024
COMPUTER ORGANIZATION & ARCHITECTURE
(Common to CSE, CSM, CIC, CAD, CCC, CSIT & CAI)

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

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

		UNIT-I			
1	**a**	List the types of Buses and Give the function of each Bus.	**CO1**	**L2**	**6M**
	b	Discuss about the Program Control I/O and Interrupt I/O.	**CO1**	**L2**	**6M**
		OR			
2		Assume that R1 = 400 , 270 in 400 Address, 600 in 500 Address Location. 890 in 600 Location. What is the Data in the Accumulator after the execution of the Instructions. (i) MOV A, R1 (Register Addressing Mode) (ii) MOV A, @ R1 (Register Indirect Addressing Mode) (iii) MOV A, 500 (Direct Addressing Mode) (iv) MOV A, @500 (In Direct Addressing Mode)	**CO3**	**L4**	**12M**
		UNIT-II			
3		Discuss the Multiplication algorithm with Shift and add method with suitable flowchart. Multiply the binary numbers (01011) and (01101) Using Shift and add method.	**CO3**	**L3**	**12M**
		OR			
4		Write an algorithm for the division of floating-point number and illustrate with an example.	**CO3**	**L4**	**12M**
		UNIT-III			
5	**a**	Discuss the any four Arithmetic Micro Operations.	**CO3**	**L3**	**6M**
	b	Draw and explain four bit parallel adder circuit.	**CO3**	**L2**	**6M**
		OR			
6	**a**	Define Routine and mapping in address sequencing.	**CO6**	**L2**	**6M**
	b	Describe the Address Sequencing for control memory with neat block diagram.	**CO4**	**L3**	**6M**
		UNIT-IV			
7	**a**	What is Virtual Memory? Discuss how address mapping using pages.	**CO4**	**L2**	**6M**
	b	Compare various types of Auxiliary memories.	**CO2**	**L2**	**6M**
		OR			
8		Illustrate the DMA controller with neat sketch and mention its advantages and disadvantages.	**CO6**	**L2**	**12M**
		UNIT-V			
9	**a**	Explain the following in the write through protocol. i) Update ii) Invalidation	**CO6**	**L2**	**6M**
	b	Explain in detail about the snoopy cache.	**CO6**	**L2**	**6M**
		OR			
10		Categorize and discuss various forms of parallel processing based on Flynn's Taxonomy with a neat sketch.	**CO5**	**L3**	**12M**

***** END *****