Q.P. Code: 18HS0830 R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B. Tech I Year I Semester Supplementary Examinations November 2023
MATHEMATICS - I
(Common to All)

Time: 3 Hours Max. Marks: 60

PART-A
(Compulsory Questions)

1. **Answer the following questions.(5 X 2 = 10 Marks)**
   (a) Define symmetric and skew symmetric matrices. L1 2M
   (b) State Rolle's theorem. L2 2M
   (c) Evaluate $\lim_{(x,y)\to(0,0)} \frac{xy}{x^2+y^2}$. L3 2M
   (d) Examine the sequence $a_n = z^n$ for convergence. L4 2M
   (e) Obtain the Fourier constant c_0 for $f(x) = 1 - x^2$ in the interval $[-1, 1]$. L5 2M

PART-B
Answer any one complete question from each unit.(5 X 10 = 50 Marks)
Unit - I

2. (a) Find the rank of the matrix $A = \begin{bmatrix} 1 & 2 & 3 & 2 \\ 2 & 3 & 5 & 1 \\ 1 & 3 & 4 & 5 \end{bmatrix}$ by reducing to echelon from. L1 5M
   (b) Verify Cayley - Hamilton theorem for the matrix $A = \begin{bmatrix} 8 & -8 & 2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$ L2 5M

OR

3. Reduce the quadratic form $2x^2 + 2y^2 + 2z^2 - 2xy - 2yz + 2zx$ in to canonical form by orthogonal transformation and discuss its nature L3 10M

Unit - II

4. (a) Expand $f(x) = \tan x$ by using Maclaurin's series expansion. L3 5M
   (b) Expand $f(x) = \log_e x$ in the powers of $(x - 1)$ by using Taylor's series. L3 5M

OR

5. (a) Prove that $\int_0^\infty e^{-x^2}\, dx = \frac{\sqrt{\pi}}{2}$. L4 5M
   (b) Prove that $\int_0^1 \frac{x}{\sqrt{1-x^5}} dx = \frac{1}{5}\beta\left(\frac{2}{5}, \frac{1}{2}\right)$. L4 5M

Unit - III

6. (a) If $u = \frac{1}{\sqrt{x^2+y^2+z^2}}$, then prove that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = 0$. L5 5M
   (b) If $z = xy^2 + x^2y$ and $x = at^2, y = 2at$, then find $\frac{dz}{dt}$ as a total derivative. L5 5M

OR

7. (a) Examine the extreme values of $f(x, y) = x^4 + y^4 - 2x^2 + 4xy - 2y^2$. L2 5M
   (b) Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ and $z = x^2 + y^2 - 3$ at the point $(2, -1, 2)$. L2 5M

Unit - IV

8. (a) Test the convergence of the series $\sum \frac{1}{\sqrt{n}+\sqrt{n+1}}$. L2 5M
   (b) Discuss the convergence of the series $\sum \frac{n!}{(n^n)^2}$. L2 5M

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OR

9. (a) Discuss the convergence of the series $\sum \frac{1}{\sqrt{n}} \tan \frac{1}{n}$. L4 5M
   (b) Test the convergence of the series $\sum \log\left(1 + \frac{1}{n}\right)$. L4 5M

Unit - V

10. (a) Find the Fourier series of the function $f(x) = x$ in the interval $(-\pi, \pi)$. L2 5M
    (b) Obtain the Fourier series expansion of $f(x) = (\pi - x)^2$ in $0 < x < 2\pi$. L4 5M

OR

11. (a) Expand $f(x) = |x|$ as Fourier series in the interval $(-2, 2)$. L2 5M
    (b) Find the half range sine series of $f(x) = x^2$ in the interval $0 < x < 4$. L4 5M

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SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations November 2023

CHEMISTRY

(ECE & CSE)

Time: 3 hours Max.Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

(a)	Give any two difference between Bonding and anti bonding molecular orbitals	L2	2M
(b)	What is meant by corrosion	L1	2M
(c)	Define hard water and soft water	L3	2M
(d)	Define conducting polymers.	L3	2M
(e)	What are the differences between atomic and molecular spectroscopy	L2	2M

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT – I

2.	Write down the Schrodinger wave equation for the wave mechanical model of an atom. Give the significance of wave function.	L3	10M
	OR		
3.	Explain the crystal field splitting of orbital's in octahedral, tetrahedral complexes.	L3	10M

UNIT – II

4.	Define cell potential. Derive Nernst equation for the calculation of cell emf. What are its applications?	L2	10M
	OR		
5.	Explain various factors influencing the rate of corrosion?	L3	10M

UNIT - III

6.	Describe the estimation of hardness by EDTA method.	L4	10M
	OR		
7.	Explain with a neat sketch the various steps involved in municipal solid waste water treatment.	L5	10M

UNIT - IV

8.	a)	Describe a fabrication method used for thermoplastics.	L3	10M
	b)	Write the preparation, properties uses of Bakelite.		
		OR		
9.		What are conducting polymers? Write the synthesis And engineering applications of conducting polymers.	L3	10M

UNIT - V

10.	Explain principle and instrumentation of UV-visible spectroscopy.	L3	10M
	OR		
11.	Give applications of IR-Spectroscopy and UV- visible Spectroscopy.	L4	10M

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations November 2023
ENGINEERING GRAPHICS & DESIGN
(ECE & CSE)

Time: 3 hours Max.Marks: 60

(Answer all five units, 5 x 12 =60 Marks)

UNIT – I

1.	a)	Draw an ellipse having major axis is equal to 100 mm and the minor axis is equal to 70 mm. Use the concentric circle method.	L2	6M
	b)	Draw a parabola having a distance of 50 mm between the focus and directrix. Draw a normal and tangent to the parabola at a point 35 mm from the focus.	L2	6M

OR

2.	(a)	Draw the involute of an equilateral triangular of side 20 mm.	L2	5M
	(b)	Draw the involute of a circle of side diameter 50 mm. Draw a tangent and normal to the curve at a distance of 100 mm from the centre of the circle.	L3	7M

UNIT – II

3.		Draw the projections of the following points, keeping the distance between the projectors as 25mm on the same reference lines. A – 20mm above HP and 30mm in front of VP B – 20mm above HP and 30mm behind VP C – 20mm below HP and 30mm behind VP D – 20mm below HP and 30mm in front of VP E – On HP and 30mm in front of VP F – On VP and 20mm above HP G – Lying on both HP and VP	L3	12M

OR

4.		Draw the projections of a straight line AB of 70 mm long, in the following positions: a) parallel to both HP and VP and 20 mm from each. b) Parallel to and 20 mm above the HP and on VP c) Parallel to and 30 mm in front of VP and on HP	L4	12M

UNIT - III

5.		A square plane ABCD of side 30mm, is parallel to HP and 20 mm away from it. Draw the projections of the plane, when (i) two of its sides are parallel to VP and (ii) and one of its side is inclined at 30^0 to VP.	L4	12M

OR

6.		A pentagonal prism of base side 30mm and axis 60mm has one of its rectangular faces on the HP and the axis inclined at 60 degree to the VP. Draw its projections.	L4	12M

UNIT - IV

7.		A square pyramid of base 40 mm and axis 60 mm long, Its base lies on VP , with its axis parallel to HP. A cut sectional plane, 60 degree to VP and it pass 10mm away from the axis. Draw the projections sectional front view.	L4	12M

OR

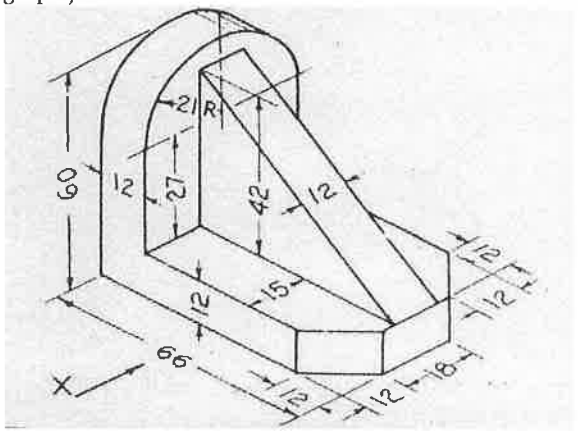
8.		A cone of base 50 mm diameter and height 65 mm rests with its base on HP. A section plane perpendicular to VP and inclined at 30 degree to HP bisects the axis of the cone. Draw the development of the lateral surface of the truncated cone.	L4	12M

UNIT - V

9.	(a)	Draw the isometric projection of a hexagonal prism of base side 30 mm and axis 70mm. The prism rests on its base on the HP with an edge of the base parallel to the VP.	L3	6M
	(b)	Draw the isometric projection of the frustum of a cone of base diameter 60 mm ,top diameter 30mm,and height 55mm.	L3	6M

OR

10.		Draw three views of the blocks shown pictorially in figure according to first angle projection.	L4	12M



SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023
MATHEMATICS-III
(ECE)

Time: 3 hours Max.Marks: 60

PART-A
(Compulsory Questions)

1. **Answer the following; (5 X 2 = 10 Marks)**

(a)	State Trapezoidal rule.	L1	2M
(b)	Explain the Euler's method for solving an initial value problem.	L1	2M
(c)	State the convolution theorem.	L1	2M
(d)	State finite Fourier sine transform of $f(x)$ in $(0,l)$.	L1	2M
(e)	Define a partial differential equation and give an example.	L1	2M

PART- B
(Answer all five units, 5 x 10 =50 Marks)
UNIT - I

2. State Newton's forward and backward interpolation formulae and hence compute $f(1.75)$ and $f(2.25)$ from the following table. L3 10M

x:	1.7	1.8	1.9	2.0	2.1	2.2	2.3
$f(x)$:	5.474	6.050	6.689	7.389	8.166	9.025	9.974

OR

3. (a) Find the positive root of $x\log_{10}^{x}=1.2$ using bisection method. L3 5M
   (b) Find by Newton-Raphson method correct to 4 places of decimals the root between 0 and 1 of the equation $3x-\cos x=1$. L3 5M

UNIT - II

4. Using Runge-Kutta method of order 4, solve $\frac{dy}{dx}=\frac{y^2-x^2}{y^2+x^2}$ with $y(0)=1$ at $x=0.2, 0.4$. L3 10M

OR

5. Solve by Taylor's series $\frac{dy}{dx}=\log(xy)$ for $y(1.1)$ and $y(1.2)$, given $y(1)=2$. L3 10M

UNIT - III

6. Find the Laplace transform of the function. L4 10M

$$f(t)=2e^{-3t}\sin t+3e^{t}\sin 4t-4e^{-t}\cosh 6t+7\sqrt{t}.$$

OR

7. (a) Find the Laplace transform of the function $f(t)=\begin{cases}\sin\omega t, 0<t<\frac{\pi}{\omega}\\ 0, \quad \frac{\pi}{\omega}<t<\frac{2\pi}{\omega}\end{cases}$ L5 5M

   (b) Solve by transforms $y''+4y'+3y=e^{-t}, y(0)=y'(0)=1$. L4 5M

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UNIT - IV

8. Find the Fourier transform of $f(x)=\begin{cases}1, for\,|x|<1\\ 0, for\,|x|>1\end{cases}$. Hence evaluate $\int_0^{\infty}\frac{\sin x}{x}dx$. L4 10M

OR

9. Find Fourier Sine transform and Fourier Cosine transform of $2e^{-5x}+5e^{-2x}$. L3 10M

UNIT - V

10. (a) Solve $x(y^2-z^2)p+y(z^2-x^2)q-z(x^2-y^2)=0$. L3 5M
    (b) Solve $\frac{\partial^3 z}{\partial x^3}-4\frac{\partial^3 z}{\partial x^2\partial y}+5\frac{\partial^3 z}{\partial x\partial y^2}-2\frac{\partial^3 z}{\partial y^3}=e^{2x+y}$. L5 5M

OR

11. Solve one dimensional wave equation by method of separation of variables and hence find all the possible solutions. L5 10M

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Q.P. Code: 18EC0401 **R18**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

ELECTRONIC DEVICES

(ECE)

Time: 3 hours Max.Marks: 60

PART-A

(Compulsory Questions)

1.		Answer the following; (5 X 2 = 10 Marks)		
	(a)	Define barrier potential.	L2	2M
	(b)	What is rectifier?	L1	2M
	(c)	What are the different configurations of BJT?	L3	2M
	(d)	What are the salient features of hybrid parameters?	L2	2M
	(e)	Mention the advantages of FET?	L3	2M

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT – I

2.	(a)	What is a PN Junction? Explain the formation of depletion layer in a PN junction.	L2	5M
	(b)	Discuss the differences between Ideal Diode and Practical Diode.	L3	5M
		OR		
3.		With neat diagrams, explain forward and reverse biasing of a PN Junction diode. Draw its V-I Characteristics.	L2	10M

UNIT – II

4.		Draw the circuit diagram of half wave rectifier and explain its operation with the help of waveforms.	L1	10M
		OR		
5.		Derive the expressions for Average DC current, Average DC Voltage, RMS Value of Current, DC Power Output and AC Power Input of a Half Wave Rectifier.	L1	10M

UNIT - III

6.		Discuss the Input and Output characteristics of a BJT in CE Configuration. Indicate the regions of operations in the output characteristics.	L4	10M
		OR		
7.	a)	Discuss the operation of NPN transistor with diagram.	L5	5M
	b)	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.	L4	5M

UNIT - IV

8.	a)	Why hybrid model is used for the analysis of BJT amplifier at low frequencies? Draw the hybrid model for CE transistor and derive the parameters.	L4	5M
	b)	Compare the CE, CB and CC transistor amplifier parameters.	L2	5M
		OR		
9.		Using low frequency h-parameter model, derive the expressions for voltage gain, current gain, input impedance and output admittance for a BJT Amplifier in CE configuration.	L3	10M

UNIT - V

10.	a)	Describe the construction and working principle of N-channel JFET	L3	8M
	b)	Mention the applications of JFET.	L5	2M
		OR		
11.		With the help of neat diagram, explain the operation and characteristics of n-channel enhancement type MOSFET.	L5	10M

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Q.P. Code: 18EC0402 R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

DIGITAL SYSTEM DESIGN

(ECE)

Time: 3 hours Max.Marks: 60

PART-A

(Compulsory Questions)

1.		Answer the following; (5 X 2 = 10 Marks)		
	(a)	State the Demorgan's theorem.	L1	2M
	(b)	Draw a Half Adder circuit and mention its truth table.	L2	2M
	(c)	Compare Synchronous & Asynchronous counters.	L3	2M
	(d)	Draw the structure of PAL	L3	2M
	(e)	State the basic statement used in behavioral Modelling.	L1	2M

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT - I

2.	(a)	Explain about the Binary Codes.	L2	5M
	(b)	Perform the following using BCD arithmetic. i) $(79)_{10} + (177)_{10}$ ii) $(481)_{10} + (178)_{10}$	L4	5M

OR

3.	(a)	Obtain the Dual and complement to the following Boolean expressions. i) F=AB+A (B+C) + B' (B+D) ii) F=A+B+A'B'C iii)F=A'B+A'BC'+A'BCD+A'BC'D'E	L5	5M
	(b)	Express the Boolean function F= A+B'C as a sum of minterms.	L4	5M

UNIT - II

4.		Obtain (i) Sum of products form and (ii) Product of sums form for F=x'z'+y'z'+yz'+xy.	L4	10M

OR

5.	(a)	Explain about carry look ahead adder with suitable diagram.	L3	5M
	(b)	Design & implement a Full Adder using Decoder and two OR gates.	L5	5M

UNIT - III

6.		Draw and explain 4-bit Universal shift register.	L5	10M

OR

7.	(a)	Implement D-FF using JK FF with its truth table.	L5	5M
	(b)	Design and implement a BCD Ripple counter using JK Flip Flops.	L4	5M

UNIT - IV

8.		Design a BCD to excess 3 code converter using suitable PLA.	L5	10M

OR

9.	(a)	Briefly introduce the content addressable memory.	L2	5M
	(b)	Implement NOT, NAND and NOR operation using CMOS logic.	L4	5M

UNIT - V

10.	(a)	Write a VHDL program for a 4X1 MUX.	L3	5M
	(b)	Explain various data objects in VHDL. Give necessary examples.	L2	5M

OR

11.	(a)	Draw and explain in detail the VHDL design flow.	L5	5M
	(b)	Explain about Simulation and Synthesis processes in VHDL.	L5	5M

Q.P. Code: 18EC0403 **R18**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

SIGNALS & SYSTEMS

(ECE)

Time: 3 hours Max.Marks: 60

PART-A

(Compulsory Questions)

1.		Answer the following: (5 X 2 = 10 Marks)		
	(a)	Define causal and non-causal signals?	L2	2M
	(b)	State parsvel's theorem?	L1	2M
	(c)	What is band pass filter?	L3	2M
	(d)	Write the properties of autocorrelation of power signals.	L2	2M
	(e)	What are the advantages and limitations of Z-transform?	L3	2M

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT – I

2.		Explain the classification of signals in detail.	L2	10M
		OR		
3.		Check whether the systems are time invariant or not.	L3	10M
		a) $y(t) = x(-2t)$		
		b) $y(t) = e^{2x(t)}$		
		c) $y(n) = x(n) + nx(n-2)$		
		d) $y(n) = x^2(n-2)$		
		e) $y(n) = sin[x(n)]$		

UNIT – II

4.		State and explain the properties of the Continuous time Fourier series.	L2	10M
		OR		
5.		Derive the Discrete Fourier transform of a non-periodic signal from discrete Fourier series of periodic signal.	L2	10M

UNIT - III

6.		What is meant by Sampling? Explain the sampling theorem with derivation in detail.	L1	10M
		OR		
7.	a)	A system produces an output $(t) = e^{-t}\,u(t)$ for an input of $x(t) = e^{-2t}\,u(t)$. Determine the impulse response and frequency response of the system.	L3	5M
	b)	A system produces an output $y(t) = e^{-3t}\,u(t)$ for an input of $x(t) = e^{-5t}\,u(t)$. Determine the impulse response and frequency response of the system.	L3	5M

UNIT - IV

8.		Explain the concept of Convolution and list the properties of Convolution in detail.	L1	10M
		OR		
9.		List the graphical procedure to perform convolution.	L2	10M

UNIT - V

10.	a)	What is meant by ROC? List the properties of ROC in Z transform.	L2	5M
	b)	List the Advantages and limitation of Z transform.	L2	5M
		OR		
11.		Explain the properties and theorems of Laplace transform.	L2	10M

Q.P. Code: 18EE0211 R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November 2023

CONTROL SYSTEMS

(EEE & ECE)

Time: 3 hours Max.Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

(a)	What is feedback? What type of feedback is employed in control systems?	L2	2M
(b)	Define accelerating error constant?	L1	2M
(c)	What is centroid? How the centroid is calculated?	L3	2M
(d)	Write the expression for resonant peak and resonant frequency?	L3	2M
(e)	What is Diagonalize matrix?	L2	2M

PART- B

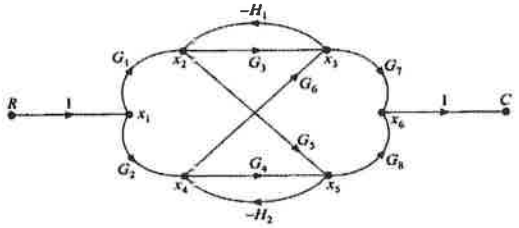
(Answer all five units, 5 x 10 =50 Marks)

UNIT – I

2. For the mechanical system shown in the figure draw the force-voltage and force-current analogous circuits. L6 10M

OR

3. Obtain the transfer function of the system whose signal flow graph is shown below. L3 10M



UNIT – II

4. (a) Measurements conducted on a servo mechanism, show the system response to be $c(t) = 1+0.2e^{-60t} - 1.2e^{-10t}$ When subject to a unit step input.Obtain an expression for closed loop transfer function, determine the undamped natural frequency, damping ratio? L3 5M

(b) For servo mechanisms with open loop transfer function given below what type of input signal give rise to a constant steady state error and calculate their values. L3 5M

$G(s)H(s)=\frac{10}{S^2(S+1)(S+2)}$.

OR

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5. (a) A For servo mechanisms with open loop transfer function given below what type of input signal give rise to a constant steady state error and calculate their values. L3 5M

$G(s)H(s)=\frac{20(S+2)}{S(S+1)(S+3)}$

(b) Consider a unity feedback system with a closed loop transfer function $\frac{C(S)}{R(S)}=\frac{KS+b}{(S^2+aS+b)}$. Calculate open loop transfer function G(s). Show that steady state error with unit ramp input is given by $\frac{(a-K)}{b}$ L3 5M

UNIT - III

6. With the help of Routh's stability criterion find the stability of the following systems represented by the characteristic equations: L5 10M

a) $s^4 + 8s^3 + 18s^2 + 16s + 5 = 0$.

b) $s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0$.

OR

7. Sketch the root locus of the system whose open loop transfer function is L3 10M

$G(s)\,H(s) = \frac{K(S+9)}{S(S^2+4S+11)}$

UNIT - IV

8. Sketch the Bode plot for the system having the following transfer function L3 10M

$G(s) = \frac{15(S+5)}{S(S^2+16S+100)}$

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. L3 10M

UNIT - V

10. (a) State the properties of State Transition Matrix. L1 5M

(b) Diagonalize the following system matrix $A = \begin{pmatrix} 0 & 6 & -5 \\ 1 & 0 & 2 \\ 3 & 2 & 4 \end{pmatrix}$ L3 5M

OR

11. (a) Find the state model of the differential equation is $\dddot{y}+2\ddot{y}+3\dot{y}+4y=u$ L2 5M

(b) Diagonalize the following system matrix $A = \begin{pmatrix} 0 & 1 & 0 \\ 3 & 0 & 2 \\ -12 & -7 & -6 \end{pmatrix}$ L1 5M

Q.P. Code: 18ME0315 R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November 2023

THERMAL ENGINEERING

(MECH)

Time: 3 hours Max.Marks: 60

PART-A

(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)

(a)	Write the function of a carburetor.	L1	2M
(b)	Define volumetric efficiency of an air compressor.	L2	2M
(c)	What is the purpose of reheating in a vapour power cycle?	L2	2M
(d)	What do you mean by nozzle choking?	L2	2M
(e)	Define degree of reaction for a steam turbine.	L2	2M

PART- B

(Answer all five units, 5 x 10 =50 Marks)

UNIT – I

2.	a)	Classify the IC engines based on any six categories.	L2	5M
	b)	Draw the valve timing diagram of a 4-stroke Diesel engine and explain salient features.	L2	5M

OR

3.		Following observations were recorded during a test on a single cylinder oil engine: Bore = 300 mm, Stroke = 450 mm, Speed = 300 rpm, IMEP = 6 bar, Net brake load = 1.5 kN, Brake drum diameter = 1.8 m and Brake rope diameter = 2 cm. Calculate: i) Indicated power, ii) Brake power and iii) Mechanical efficiency.	L3	10M

UNIT – II

4.	a)	Explain the working of a single stage single acting reciprocating air compressor with a neat sketch.	L2	5M
	b)	Derive the expression for work required by a single stage compressor neglecting clearance volume.	L2	5M

OR

5.		A single stage reciprocating air compressor is required to compressor 1 kg of air from 1 bar to 4 bar. The initial temperate is 27^0C. Compare the work requirement in the following cases. i) Isothermal compression. ii) Compression with $PV^{1.2}$ = Constant. iii) Isentropic compression.	L3	10M

UNIT - III

6.	a)	Explain the simple Rankine cycle with the help of T-S and h-s diagrams.	L2	6M
	b)	What do you understand by the mean temperature of heat addition?	L2	4M

OR

7.		A regenerative cycle operates with steam supplied at 30 bar and 300^0 C and condenser pressure of 0.08 bar. The extraction points for two heaters (one closed and one open) are at 3.5 bar and 0.7 bar respectively. Calculate the thermal efficiency of the plant, neglecting pump work.	L3	10M

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UNIT - IV

8.	a)	Explain the working of various types of nozzles with neat sketches.	L2	5M
	b)	The dry sat steam at a pressure of 5 bar is expanded sentropically in a convergent nozzle to a pressure of 1 bar and dryness fraction of 0.94. Find the velocity of steam at the exit of the nozzle.	L3	5M

OR

9.		Dry saturated steam enters a steam nozzle at a pressure of 15 bar and is discharged at a pressure of 2 bar. If the dryness fraction of discharged steam is 0.96, what will be final velocity of steam? Neglect initial velocity. If 10% of heat drop is lost in friction, find the percentage reduction in the final velocity.	L3	10M

UNIT - V

10.		In a D-Lavel turbine, the steam enters the wheel through a nozzle with a velocity of 500 m/s and at an angle of 20^0 to the direction of motion of the blade. The blade speed is 200 m/s and the exit angle of the moving blade is 25°. Find the inlet angle of the moving blade, exit velocity of steam and its direction and work done per kg of steam.	L3	10M

OR

11.	a)	Explain the working of an Impulse turbine through pressure and velocity diagrams.	L2	5M
	b)	List out various losses Involved in steam turbines? Explain them briefly.	L2	5M

Q.P. Code: 18ME0336 R18

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
REFRIGERATION & AIR CONDITIONING
(MECH)

Time: 3 hours Max. Marks: 60

PART-A
(Compulsory Questions)

1. Answer the following; (5 X 2 = 10 Marks)
   (a) State Refrigeration and applications of refrigeration. L2 2M
   (b) What are the functions of compressor in vapour compression refrigeration system? L2 2M
   (c) List the factors to be considered while selecting a refrigeration system? L3 2M
   (d) Define Dew point Depression. L1 2M
   (e) What are the materials used for duct. L2 2M

PART- B
(Answer all five units, 5 x 10 =50 Marks)
UNIT - I

2. A refrigerator working on Bell Coleman cycle operates between pressure limits of 1.05 bar and 8.5 bar. Air is drawn from the cold chamber at 10 ° C, compressed and then it is cooled to 30 ° C before entering the expansion cylinder. The expansion and compression follows the law $PV^{1.3}$= constant. Determine the theoretical C.O.P of the system. L4 10M

OR

3. (a) What are the limitations of Carnot cycle of refrigeration? L2 5M
   (b) Describe the working principle of Regenerative Air refrigeration system with neat sketch. L3 5M

UNIT - II

4. The temperature limits of an ammonia refrigerating system are 25° C and -10 ° C. If the gas is dry at the end of compression, calculate the coefficient of performance of the cycle assuming no under cooling of the liquid ammonia. Use the following table for properties of ammonia. L5 10M

TEMPERATURE ° C	LIQUID HEAT (KJ / KG)	LATENT HEAT (KJ / KG)	LIQUID ENTROPY (KJ / KG K)
25	298.9	1166.94	1.1242
-10	135.37	1297.68	0.5443

OR

5. (a) State the desirable properties of refrigerants. L2 5M
   (b) What is an azetrope? Give some examples to indicate its importance. L2 5M

UNIT - III

6. Explain with a neat sketch the working of lithium-bromide vapour absorption system. L3 10M

OR

7. (a) Differentiate between vapour absorption and vapour compression refrigeration systems. L3 5M
   (b) Comparison between two fluid VAR system and three fluid VAR system . L3 5M

Q.P. Code: 18ME0336 R18

UNIT - IV

8. A room has a sensible heat gain of 24 KW and a latent heat gain of 5.2 KW and it has to be maintained at 26 ° C DBT and 50 % RH.180 m^3 / min of air is delivered to the room. Determine the state of supply of air. L4 10M

OR

9. Write short notes of the following processes with psychometric chart. L3 10M
   (i) Sensible hearting.
   (ii) Sensible cooling.
   iii) Heating and de humidification processes.
   iv) Relative humidity.

UNIT - V

10. Discuss the working of summer air conditioning system with neat sketch. L3 5M

OR

11. The main air supply duct of an air conditioning system is 800 mm X 600 mm in cross section and carries 300 m^3 / min of standard air. It branches into two ducts of cross section 600 mm X 500 mm and 600 mm X 400 mm. If the mean velocity in the larger branch is 480 m / min. Find (i) Mean velocity in the main duct and the smaller branch (ii) mean velocity pressure in each duct. L5 10M

Q.P. Code: 19HS0830 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR

(AUTONOMOUS)

B. Tech I Year I Semester Supplementary Examinations November 2023

ALGEBRA AND CALCULUS

(Common to All)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1	a)	Find the rank of the matrix $A = \begin{bmatrix} 1 & 2 & 3 & 2 \\ 2 & 3 & 5 & 1 \\ 1 & 3 & 4 & 5 \end{bmatrix}$ by reducing to echelon from.	L1	6M
	b)	Verify Cayley – Hamilton theorem for the matrix $A = \begin{bmatrix} 8 & -8 & 2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$	L2	6M

OR

2		Reduce the quadratic form $2x^2 + 2y^2 + 2z^2 - 2xy - 2yz + 2zx$ in to canonical form by orthogonal transformation and discuss its nature.	L5	12M

UNIT-II

3	a)	Verify Rolle's theorem for the function $f(x) = \frac{\sin x}{e^x}$ in the interval$(0,\ \pi)$.	L4	6M
	b)	Verify Lagrange's mean value theorem for the function $f(x) = \log_e x$ in $[1,\ e]$.	L4	6M

OR

4	a)	Expand $f(x) = \tan x$ by using Maclaurin's series expansion.	L3	6M
	b)	Expand $f(x) = \sin x$ in the powers of $(x - \pi/2)$ by using Taylor's series expansion.	L3	6M

UNIT-III

5	a)	If $u = \frac{1}{\sqrt{x^2+y^2+z^2}}$, then prove that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = 0$.	L4	6M
	b)	If $z = xy^2 + x^2y$ and $x = at^2$, $y = 2at$, then find $\frac{dz}{dt}$ as a total derivative.	L4	6M

OR

6	a)	If $u = x^2 - 2y$, $v = x + y + z$, $w = x - 2y + 3z$, then find $J\left(\frac{u,v,w}{x,y,z}\right)$.	L1	6M
	b)	Find the maximum and minimum values of the function $f(x,y) = x^3 + y^3 - 3axy$.	L1	6 M

UNIT-IV

7	a)	Evaluate $\int_0^5 \int_0^{x^2} x(x^2 + y^2)\, dy\, dx$.	L5	6M
	b)	Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} \frac{1}{\sqrt{1-x^2-y^2-z^2}} dz dy dx$.	L5	6M

OR

8	a)	Change the order of integration and evaluate $\int_0^\infty \int_x^\infty \frac{e^{-y}}{y} dy dx$.	L4	6M
	b)	Calculate the volume of the solid bounded by the planes $x = 0$, $y = 0$, $z = 0$ and the plane $x + y + z = a$.	L4	6M

UNIT-V

9	a)	Prove that $\int_0^\infty e^{-x^2}\, dx = \frac{\sqrt{\pi}}{2}$.	L3	6M
	b)	Prove that $\int_0^1 \frac{x}{\sqrt{1-x^5}} dx = \frac{1}{5}\beta\left(\frac{2}{5}, \frac{1}{2}\right)$.	L3	6M

OR

10		Show that $\int_0^1 \frac{x^2}{\sqrt{1-x^4}} dx \times \int_0^1 \frac{1}{\sqrt{1-x^4}} dx = \frac{\pi}{4}$	L5	12 M

Q.P. Code: 19HS0848 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B. Tech I Year I Semester Supplementary Examinations November 2023
ENGINEERING PHYSICS
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1	a)	Define gradient of a scalar field.	L1	4M
	b)	Show that F = -grad V.	L4	8M
		OR		
2	a)	Define inertial and non-inertial frame of reference.	L1	4M
	b)	State and explain Kepler's laws of planetary motion.	L4	8M

UNIT-II

3		Define the three elastic moduli. Derive the relation between them.	L1	12M
		OR		
4		Obtain an expression for energy stored per unit volume in stretched wire.	L4	12M

UNIT-III

5	a)	Explain reverberation.	L2	5M
	b)	Derive Sabine's formula for reverberation time.	L4	7M
		OR		
6	a)	Describe the piezoelectric effect.	L2	4M
	b)	Explain the production of ultrasonics by piezoelectric method.	L2	8M

UNIT-IV

7		What is a simple harmonic oscillator? Derive the equation of motion simple harmonic oscillator.	L4	12M
		OR		
8	a)	Distinguish between damped and forced oscillations with suitable examples.	L4	6M
	b)	Explain the phenomenon of resonance and write the applications of resonance in various fields.	L4	6M

UNIT-V

9	a)	What are nanomaterials? Explain the basic principles of nanomaterials.	L1	6M
	b)	Outline the properties of nanomaterials that are affected due to increased surface area to volume ratio.	L2	6M
		OR		
10	a)	Describe any one method of fabrication of nanomaterials.	L2	8M
	b)	Write any four applications of nanomaterials.	L1	4M

Q.P. Code: 19CS0501 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations November 2023

PYTHON PROGRAMMING

(ECE & CSE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Explain about the input and output statements or methods with example.	L1	12M
		OR		
2	a)	What is dictionary? Explain the methods available in dictionary.	L1	6M
	b)	Differentiate between the tuple and sets in python.	L2	6M

UNIT-II

3		List various types of operators in Python and write any 4 types of operators.	L4	12M
		OR		
4	a)	Write a python program to print factorial of a given number.	L6	6M
	b)	Implement Python program to find sum of natural numbers.	L6	6M

UNIT-III

5	a)	Differentiate keyword and default arguments.	L2	12M
	b)	Differentiate global and local variables.		
		OR		
6		What is inheritance? Illustrate types of inheritance with python code.	L1	12M

UNIT-IV

7		What is module? How to create that module explain with program.	L3	12M
		OR		
8		What is user defined exception and explain with example program.	L2	12M

UNIT-V

9		Demonstrate about the GUI programming in Python.	L2	12M
		OR		
10		What is mean by Functional Programming? Write about map and filter in Python.	L1	12M

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations November 2023
ENGINEERING MECHANICS
(CE & MECH)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1 A system of connected flexible cable shown in Fig.1 is supporting two vertical forces 200 N and 250 N at points B and D. Determine the forces in various segments of the cable. L3 12M

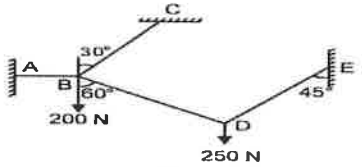


Fig 1

OR

2 a) State and prove parallelogram law of forces. L1 6M
b) State and prove Lami's theorem. L2 6M

UNIT-II

3 Block A of mass 30 kg rests on block B of mass 40 kg as shown in Fig.2. Block A is restrained from moving by a horizontal rope tied at point C, what force P applied to the plane inclined at 30o with horizontal is necessary to start block B down the plane. Take coefficient of friction for all surfaces as 0.35. L1 12M

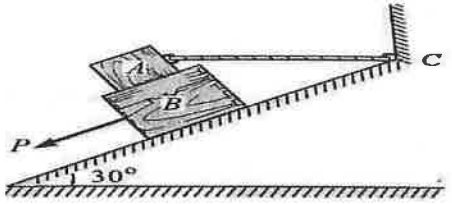


Fig 2

OR

4 State laws of friction. L2 6M
Explain the following a) Limiting Force and b) Kinetic Friction L2 6M

UNIT-III

5 A semicircle of 90 mm radius is cut out from a trapezium as shown in Fig.3 Find the position of the center of gravity of the figure. L4 12M

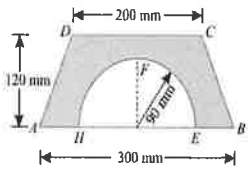


Fig. 3

OR

6 An I-section is made up of three rectangles as shown in fig 4. Find the moment of inertia of the section about the horizontal axis passing through the centre of gravity of the section. L5 12M

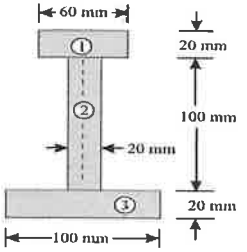


Fig. 4

UNIT-IV

7 Find the moment of inertia of the lamina with a circular hole of 30 mm diameter about the axis AB as shown in Fig.5 L5 12M

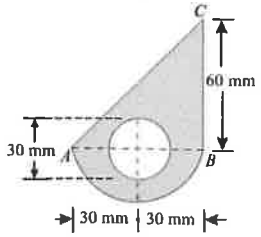


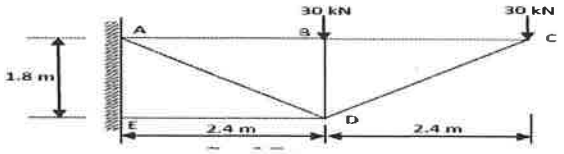
Fig. 5

OR

8 Prove the parallel axis theorem in the determination of moment of inertia of areas with the help of a neat sketch. L3 12M

UNIT-V

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



OR

10 a) State the assumptions made in the analysis of pin jointed trusses L3 6M
b) Explain the various types of vibrations. L3 6M

Q.P. Code: 19ME0302 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations November 2023

ENGINEERING GRAPHICS

(ECE & CSE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		Construct a cycloid, given the diameter of the generating circle as 40 mm. Draw the tangent to the curve at a point on it, 35 mm from the line.	L3	12M
		OR		
2	a)	Construct a parabola with base 60 mm and length of the axis 40 mm. Draw a tangent to the curve at point 20 mm from the base using rectangular method.	L3	6M
	b)	The major and minor axes of ellipse are 120 mm and 80 mm. Draw the ellipse by using concentric circles method.	L2	6M

UNIT-II

3		Draw the projections of the following points, keeping the distance between the projectors as 25mm on the same reference lines. A – 20 mm above HP and 30 mm in front of VP B – 20 mm above HP and 30 mm behind VP C – 20 mm below HP and 30mm behind VP D – 20 mm below HP and 30 mm in front of VP E – On HP and 30mm in front of VP F – On VP and 20 mm above HP G – Lying on both HP and VP	L1	12M
		OR		
4		A regular pentagon of 30 mm side is resting on one of its edges on H.P, which is inclined at 450 to V.P. Its surface is inclined at 300 to H.P. Draw its projections.	L3	12M

UNIT-III

5		Draw the projections of a hexagonal prism of side of base 25 mm and axis 60 mm long, when it is resting on one of its corners of the base on H.P. The axis of the solid is inclined at 450 to H.P.	L2	12M
		OR		
6		A pentagonal pyramid, with side of base 30mm and axis 60 mm long, is resting with its base on H.P and one of the edges of its base is perpendicular to V.P. It is cut by a section plane, parallel to H.P and passing through the axis at a point 35 mm above the base. Draw the projections of the remaining solid.	L3	12M

UNIT-IV

7		A cylinder of base diameter 40 mm and axis 55 mm long is resting on its base on HP.Its cut by a section plane perpendicular to VP and inclined at 45o to HP.The section plane is passing through the top end of an extreme generator of the cylinder. Draw the development of lateral surface of the cut cylinder.	L2	12M

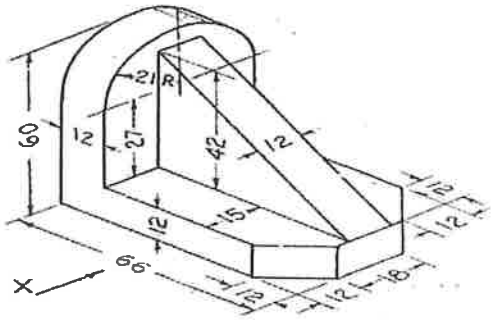
Q.P. Code: 19ME0302 R19

OR

8		A vertical square prism of base 50 mm side , is penetrated by a horizontal square prism of base 40 mm side such that, the axis interest. The axis of the horizontal prism is parallel to V.P and the faces of the both the prisms are equally inclined to V.P. Draw the projections of the two prisms, showing the lines of intersection.	L3	12M

UNIT-V

9		Draw the isometric view of a pentagonal pyramid side of base 25 mm and axis 60 mm long. The pyramid is resting on its base on H.P, with an edge of the base away from the observer and parallel to V.P.	L3	12M
		OR		
10		Draw three views of the blocks shown pictorially in figure according to first angle projection	L3	12M



SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR

(AUTONOMOUS)

II B. Tech I Semester Supplementary Examinations Nov 2023

PROBABILITY, NUMERICAL METHODS AND TRANSFORMS

(EEE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		In a bolt factory machines A, B, C manufacture 30%, 20% and 50% of the total of their output and 3%, 6% 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.	L1	12M

OR

2	a)	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.	L3	6M
	b)	Six persons in a group 20 are teachers. If three persons are selected at random, determine the probability that all engineers and the probability that at least one being an engineer.	L5	6M

UNIT-II

3		What is the root of the equation $xe^x = 5$ using Regula-falsi method	L1	12M

OR

4	a)	Using Newton's forward interpolation formula and the given table of values.	L3	6M

x	1.1	1.3	1.5	1.7	1.9
$f(x)$	0.31	0.69	2.25	2.89	3.61

Obtain the value of $f(x)$ when $x=1.4$.

	b)	From the following table values of x and y=tan x. Find the values of y when x=0.12 and x=0.28.	L1	6M

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

UNIT-III

5		Tabulate y(0.1), y(0.2) and y(0.3) using Taylor's series method given that $y' = y^2 + x$ and y(0) = 1.	L2	12M

OR

6	a)	Evaluate $\int_3^7 x^2 \log x dx$ using Trapezoidal rule and Simpson's $\frac{1}{3}$ rule by taking 10 sub divisions.	L5	6M
	b)	Calculate $\int_0^4 e^x dx$ by Simpson's $\frac{3}{8}$ rule with 12 sub divisions.	L3	6M

UNIT-IV

7		Applying Laplace transform to solve $y'' - 3y' + 2y = 4t + e^{3t}$. $y(0) = 1, y'(0) = 1$	L3	12M

OR

8	a)	Show that $\int_0^\infty t^2 e^{-4t} . \sin 2t \, dt = \frac{11}{500}$, Using Laplace transform.	L4	6M
	b)	Find $L^{-1}\left\{\log\left(\frac{s-a}{s-b}\right)\right\}$	L1	6M

UNIT-V

9		Solve $y_{n+2} + 2y_{n+1} + y_n = n$. Using the Z -transform given that $y_0 = y_1 = 0$	L6	12M

OR

10	a)	Find $Z\left\{\frac{1}{(n+2)(n-1)}\right\}$	L1	6M
	b)	Evaluate $Z^{-1}\left[\frac{z^2}{(z-1)(z-3)}\right]$, Using Convolution theorem.	L5	6M

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November 2023
NUMERICAL METHODS AND TRANSFORMS
(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1 Find a positive root of x3-x -1 = 0 correct to two decimal places by Bisection method. L3 12M

OR

2 a) Find a real root of the equation xtanx+1=0 using Newton - Raphson method. L3 6M

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.* L2 6M

UNIT-II

3 Tabulate y(0.1), y(0.2) and y(0.3) using Taylor's series method given that $y^1 = y^2 + x$ and y(0) = 1. L3 12M

OR

4 a) Solve by Euler's method $\frac{dy}{dx} = \frac{2y}{x}$ given y(1)=2 and find y(2). L2 6M

b) Evaluate $\int_0^1 \frac{1}{1+x} dx$ by Trapezoidal rule. L2 6M

UNIT-III

5 a) Find the Laplace transform of *f(t)= coshat sinbt.* L5 6M

b) Find $L^{-1}\left\{\frac{3s-2}{s^2-4s+20}\right\}$ by using first shifting theorem. L5 6M

OR

6 Using Laplace transform method to solve $y^{11} - 3y^1 + 2y = 4t + e^{3t}$ where $y(0) = 1, y^1(0) = 1$ L5 12M

UNIT-IV

7 Find the Fourier series to represent the function $f(x) = x^2$ for $-\pi < x < \pi$ and hence show that L3 12M

(i) $\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} - - - - - = \frac{\pi^2}{12}$, (ii) $\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} - - - - = \frac{\pi^2}{6}$.

OR

8 a) Find the half range sine series expansion of $f(x) = x^2$ when $0 < x < 4$. L2 6M

b) Find half range Fourier cosine series of $f(x) = (x-1)^2$ in $0 < x < 1$. L3 6M

UNIT-V

9 Find the Fourier transform of f(x) $= \begin{cases} a^2 - x^2, |x| < a \\ 0, |x| > a > 0 \end{cases}$ Hence show that L3 12M

$$\int_0^\infty \frac{\sin x - x\cos x}{x^3} dx = \frac{\pi}{4}.$$

OR

10 a) Find the finite Fourier sine transform of f(x),defined by L3 6M

$$f(x) = \begin{cases} x, & 0 \le x \le \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} \le x \le \pi \end{cases}$$

b) Find the inverse finite Fourier sine transform of f(x),If $F_s(n) = \frac{16(-1)^{n-1}}{n^3}$, where n is a positive integer and 0 < x < 8. L3 6M

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Q.P. Code: 19EC0421 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

MICROPROCESSORS AND MICROCONTROLLERS

(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		With a neat sketch explain the operation of Microprocessor Controlled Temperature System.	L3	12M

OR

2	a)	With a neat sketch explain any example of a microcomputer system.	L3	6M
	b)	Explain different types of instructions supported by μP.	L2	6M

UNIT-II

3		Illustrate the following instructions of 8085 microprocessor with an example. **i)** Arithmetic instructions. **ii)** Stack control instructions.	L3	12M

OR

4	a)	Explain the concept of De-multiplexing the Bus AD7-AD0.	L2	6M
	b)	Explain timing and control signals are generated in 8085 μP.	L2	6M

UNIT-III

5	a)	Interpret the functionality of port no 3 of 8051 μC.	L5	6M
	b)	Interpret the functionality of each pin in 8051 μC.	L5	6M

OR

6	a)	How a serial communication and parallel communication is recommended in 8051 μC.	L5	6M
	b)	Explain the memory is organization in 8051 μC in detail.	L2	6M

UNIT-IV

7		List various addressing modes of 8051 microcontroller and explain them with an example each. Also, write a short note on bit manipulation instructions in 8051 μC.	L1	12M

OR

8	a)	Write an assembly program of 8051 μC to logically AND two 8-bit numbers and store the result in a memory location.	L2	6M
	b)	Examine the difference between Jump and Call instructions of 8051 μC with an example.	L3	6M

UNIT-V

9		With the help of a neat diagram, show the interfacing of 7- segment display with 8051 μC and explain its operation.	L3	12M

OR

10	a)	Illustrate the multiple interrupts of 8051 μC.	L3	6M
	b)	Draw the merits, demerits and applications of an LED display over an LCD.	L3	6M

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November- 2023
STRENGTH OF MATERIALS II
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		A cylindrical thin drum 80 cm in diameter and 3 m long has a shell thickness of 1 cm. If the drum is subjected to an internal pressure of 2.5 N/mm^2, Take E= 2x 10^5 N/mm^2 Poisson's ratio 0.25. Determine (i) change in diameter. (ii) change in length and (iii) change in volume.	L3	12M
		OR		
2		A thin cylindrical shell is 3m long and 1m in internal diameter. It is subjected to internal pressure of 1.2 MPa. If the thickness of the sheet is 12mm, find the circumferential stress, longitudinal stress, changes in diameter, length and volume . Take E=200 GPa and μ= 0.3.	L3	12M

UNIT-II

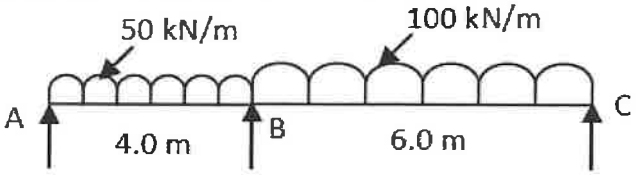
3		Derive kernel of section for (i) Rectangular section. (ii) Circular section. (iii)Hallow Circular sections.	L2	12M
		OR		
4	a)	Explain maximum shear stress theory.	L2	6M
	b)	Explain maximum shear strain energy theory.	L2	6M

UNIT-III

5		Derive pure torsion equation for a circular shaft with assumptions.	L2	12M
		OR		
6	a)	State the difference between twisting moment and bending moment	L3	6M
	b)	A solid steel shaft has to transmit 75 kW at 200 r.p.m. Taking allowable shear stress as 70 N/mm^2, find suitable diameter for the shaft, if the maximum torque trans-mitted at each revolution exceeds the mean by 30%.	L3	6M

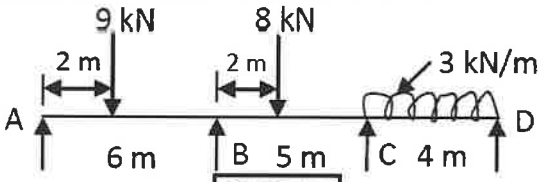
UNIT-IV

7		Analyze the beam and draw BMD and SFD	L3	12M



OR

8		Analyze the continuous beam ABCD shown in the figure below using theorem of three moments. Draw SFD and BMD.	L3	12M



UNIT-V

9		Explain the importance of curved beams in structures.	L2	12M
		OR		
10	a)	Calculate the stresses in curved beams and state the assumptions made in the analysis of curved beams.	L2	6M
	b)	What is specific speed, derive the equation for specific speed	L1	6M

Q.P. Code: 19EE0202 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

ELECTRICAL CIRCUITS-II

(EEE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

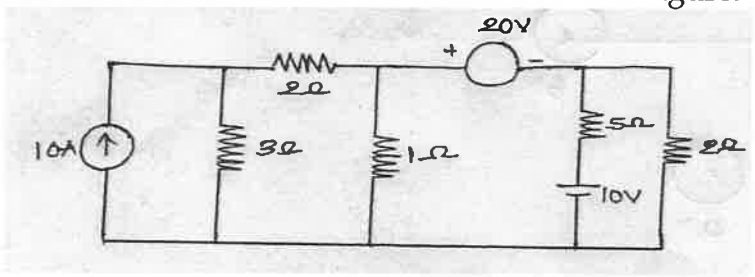
1	Derive the relationship between Phase and Line voltages, currents in delta connected load.	L3	12M
	OR		
2	A three phase balanced delta connected load of (4+j8) Ω is connected across a 400V, 3¢ balanced supply. Determine the phase currents and line currents. And also power drawn by the load. Assume RYB phase sequence.	L2	12M

UNIT-II

3	Derive the transient response of an RL circuit with Ac excitation.	L4	12M
	OR		
4	Derive the transient response of an RC circuit with AC excitation.	L4	12M

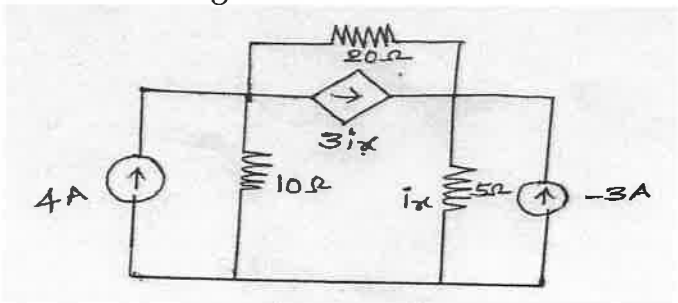
UNIT-III

5	Determine current in 5Ω resistor for the circuit shown in figure.	L5	12M



OR

6	Determine i_x for the following network.	L5	12M



UNIT-IV

7	Derive the expressions for Z-parameters in terms of ABCD parameters.	L3	12M
	OR		
8	Derive the expressions for Y-parameters in terms of ABCD parameters?	L3	12M

UNIT-V

9	A 1kΩ resistor is in series with a 500mH inductor. This series combination is in parallel with a 0.4μF capacitor. Express the equivalent s-domain impedance of these parallel branches as a rational functional.	L4	12M
	OR		
10	Find the signal y(t), the Laplace transform of signal which is $Y(S) = \frac{S^3+7S^2+18S+20}{S^2+5X+6}$	L4	12M

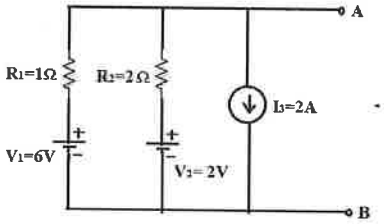
SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November 2023
NETWORK THEORY
(EEE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1	a)	Determine the equivalent current source between the terminals A and B.	L3	6M



	b)	State and prove Milliman's theorem.	L2	6M

OR

2	a)	Explain about Nodal analysis and write the steps for applying nodal analysis.	L2	6M
	b)	Calculate the current 'I' shown in below figure 1 by using Milliman's theorem.	L3	6M

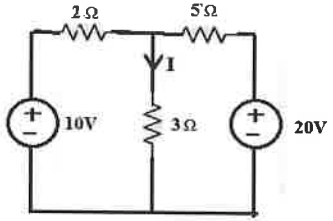


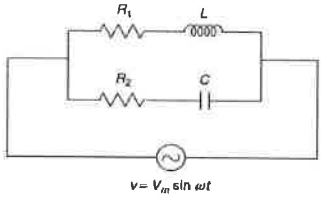
Figure 1

UNIT-II

3	a)	Explain about Quality factor and Band-width of Series resonance.	L2	6M
	b)	Design a High -pass filter having a cut-off frequency of 1kHz with a load resistance of 600Ω.	L4	6M

OR

4	a)	Derive the expression of resonant Frequency of the following circuit.	L4	6M



	b)	Explain about Series resonance with phasor diagrams.	L2	6M

UNIT-III

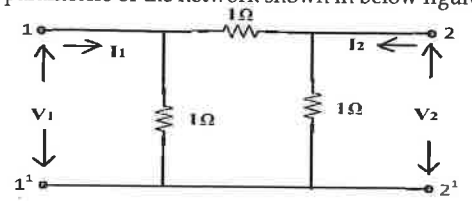
5	a)	A voltage V=300sin(314t). is applied at t=2.14msec to a series RC circuit having resistance of 10Ω and a capacitance of 200μF. Find an expression for current. Also, find the value of current 1msec after Switching-On.	L4	6M
	b)	Derive the Transient Response of series RC-circuit with D.C excitation.	L2	6M

OR

6	a)	Derive the Transient Response of Series RC circuit with A.C excitation.	L2	10M
	b)	Define steady state and transient state.	L1	2M

UNIT-IV

7	a)	Find the Z-parameters of the network shown in below figure.	L4	6M



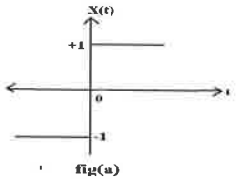
	b)	Explain about h-parameters in terms of y-parameters.	L2	6M

OR

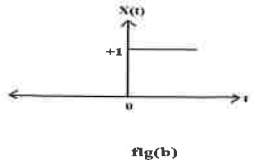
8	a)	The given ABCD parameters are, A=2, B=0.9, C=1.2, D= 0.5. Find Y-parameters.	L4	6M
	b)	Derive the expressions for Z-parameters in terms of ABCD-parameters.	L3	6M

UNIT-V

9	a)	Determine the Fourier transforms of the following waveforms shown in figure (a) and figure (b)	L4	10M



fig(a)

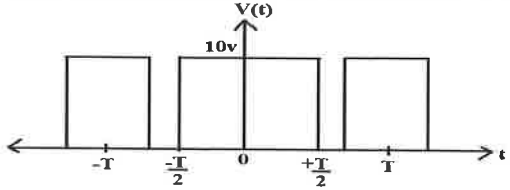


fig(b)

	b)	Write the expression for trigonometric form of Fourier series	L1	2M

OR

10	a)	Find the Fourier transform of a periodic pulse train shown in figure.	L4	6M



	b)	Explain about Line spectrum and Phase spectrum	L2	6M

Q.P. Code: 19CS0504 **R19**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November 2023
COMPUTER ORGANIZATION AND ARCHITECTURE
(CSE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Describe the Addressing Modes with neat sketch?	L4	12M
		OR		
2	a)	Describe various steps of instruction cycle?	L2	6M
	b)	Explain in detail about I/O unit and memory Unit?	L3	6M

UNIT-II

3		Draw the flowchart for Multiplication of positive numbers and steps with an example.	L3	12M
		OR		
4	a)	Write about signed number, 1's complement, 2's complement with an example?	L3	6M
	b)	Describe about fixed and floating point representations.	L2	6M

UNIT-III

5	a)	Narrate the three- state bus buffers with neat sketch.	L4	6M
	b)	What is Hardwired Control? Explain in detail with a neat diagram.	L4	6M
		OR		
6	a)	Explain the way of constructing a 4-line common bus system with a neat diagram.	L4	6M
	b)	Write about Bus transfer with neat diagram.	L3	6M

UNIT-IV

7		What is Main Memory and what are the types in it, Explain in detail.	L2	12M
		OR		
8	a)	Explain briefly about Memory Hierarchy with neat sketch?	L4	6M
	b)	Explain about hit and miss in the memory?	L2	6M

UNIT-V

9		Define the hazards? Explain in detail about instruction hazards?	L3	12M
		OR		
10	a)	Draw 8×8 omega switching network with explanation?	L2	6M
	b)	Explain about 4-segment Instruction Pipeline with neat diagram.	L3	6M

Q.P. Code: 19CE0104 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

SURVEYING & GEOMATICS

(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Explain in detail the classifications of surveying.	L1	12M
		OR		
2		With neat sketch, explain the prismatic compass by indicating their parts.	L2	12M

UNIT-II

3		Describe in detail how you would proceed in the field for i. Profile leveling. ii. Interpolation of contour.	L2	12M
		OR		
4		What are the indirect methods of locating a contour? Write about any two methods.	L2	12M

UNIT-III

5	a)	Write about parts of the Transit Theodolite. Explain in detail.	L1	6M
	b)	What are the different errors in theodolite work? How are they eliminated?	L1	6M
		OR		
6		Derive an expression to find the height of an object by double plane method.	L5	12M

UNIT-IV

7		Describe with sketch the method of setting a simple circular curve by Rankine's deflection angle method.	L4	12M
		OR		
8		Two straight lines AC and CB, to be connected by a 30 curve, intersect at a chainage of 2760m. The WCBs of AC and CB are 45030′ and 75030′ respectively. Calculate all necessary data for setting out the curve by the method of offsets from the long chord.	L5	12M

UNIT-V

9		Explain with sketch the principle of EDM instrument.	L2	12M
		OR		
10		How will you measure the horizontal angle and vertical angle by using total station?	L3	12M

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Q.P. Code: 19EC0402 **R19**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November 2023
ELECTRONIC DEVICES AND CIRCUITS
(EEE & ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1	a)	Illustrate the action of PN junction diode under forward bias and reverse bias and sketch its V-I Characteristics.	L2	6M
	b)	A p-n junction germanium diode has a reverse saturation current of 0.10 μA at the room temperature of 27^{0}C. It is observed to be 30μA, when the room temperature is increased. Calculate the new room temperature. Also determine the current passing through the diode at this new temperature.	L5	6M
		OR		
2	a)	Define cut in voltage of a PN Junction diode and give its values for Si and Ge diodes.	L1	6M
	b)	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.	L5	6M

UNIT-II

3	a)	Draw the circuit diagram of a Half wave rectifier and explain its operation with the help of waveforms.	L1	6M
	b)	Determine the expressions for Average DC current, Average DC Voltage, RMS Value of Current, DC Power Output and AC Power input of a Half Wave Rectifier.	L4	6M
		OR		
4	a)	With neat circuit diagram and waveforms, illustrate the construction and working of Bridge rectifier.	L2	6M
	b)	With neat circuit diagram and waveforms, Explain the operation of Full wave rectifier with capacitor Filter and determine the expression for its ripple factor.	L2	6M

UNIT-III

5		Explain the Input and Output characteristics of a BJT in CE Configuration. Indicate the regions of operations in the output characteristics and list the applications in those regions.	L3	12M
		OR		
6	a)	Sketch the JFET Volt-Ampere Characteristics and determine FET parameters.	L1	6M
	b)	Compare the performance of BJT with FET.	L2	6M

UNIT-IV

7	a)	Determine the expressions for the stability factors S, S′ and S″ of a BJT Fixed bias.	L2	8M
	b)	What are the disadvantages of fixed bias circuit of BJT?	L1	4M
		OR		
8	a)	Define Transistor Biasing and explain the need for Biasing.	L1	6M
	b)	Explain the concept of DC and AC Load lines and discuss the criteria for fixing the Q-point.	L3	6M

UNIT-V

9		Using low frequency h-parameter model, Deduct the expressions for voltage gain, current gain, input impedance and output admittance for a BJT Amplifier in CE configuration.	L4	12M
		OR		
10	a)	Why hybrid model is used for the analysis of BJT amplifier at low frequencies? Draw the hybrid model for CE transistor and derive the hybrid parameters.	L3	6M
	b)	Discuss about the frequency response of an amplifier.	L3	6M

*****

Q.P. Code: 19CE0105 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November 2023
BUILDING MATERIALS AND CONSTRUCTION
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Explain the characteristics of good bricks and physical tests.	L3	12M
		OR		
2	a)	What are the methods of ad precautions of stones?	L2	6M
	b)	Explain any two types of seasoning of Timber.	L1	6M
		UNIT-II		
3		Write the manufacturing of wet and dry process of ordinary Portland cement with flow chart.	L3	12M
		OR		
4	a)	Explain the various types of cement produced in India.	L1	6M
	b)	Describe any two tests for fresh concrete.	L1	6M
		UNIT-III		
5	a)	What are steps involved in process of painting a plastered surface.	L1	6M
	b)	Explain the test procedure for aggregate impact value test.	L1	6M
		OR		
6	a)	Write the composition of paints and preparation of paint.	L1	6M
	b)	Describe painting wood surface, metal surface and defects in distemper.	L1	6M
		UNIT-IV		
7		What is function of foundation and requirements of good foundation?	L1	12M
		OR		
8	a)	Explain the types of bonds in stone masonry.	L2	6M
	b)	Distinguishes between mean brick and stone masonry.	L2	6M
		UNIT-V		
9		Draw a neat diagram of lintel and explain the parts of lintel.	L2	12M
		OR		
10	a)	Explain any two classifications of stairs.	L1	6M
	b)	Discuss the defects in plastering and pointing.	L1	6M

Q.P. Code: 19EC0403 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

SIGNALS, SYSTEMS AND RANDOM PROCESSES

(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		Explain the classification of signals in both continuous time and discrete time with suitable examples.	L2	12M
		OR		
2	a)	Discuss Energy and Power signals in detail.	L2	6M
	b)	Discuss whether the following systems are stable or not. (i) $y(t)=(t+5)u(t)$. (ii) $h(n)=a^n$ for $0<n<11$.	L3	6M

UNIT-II

3		State and prove any four properties of Continuous time Fourier transform?	L2	12M
		OR		
4	a)	Explain about representation of a signal in exponential Fourier series.	L2	6M
	b)	Evaluate the Fourier Transform of the following signals using. Properties (i) e^{-at} u(t). (ii) $\delta(t+2)+\delta(t+1)+\delta(t-1+\delta(t-2)$.	L3	6M

UNIT-III

5		Discuss the properties of linear time invariant systems.	L2	6M
		OR		
6	a)	Find the convolution of the following signal $x_1(t)= e^{-2t}\,u(t)$, $x_2(t)=e^{-4t}\,u(t)$.	L3	6M
	b)	The impulse response of a continuous-time system is expressed as $h(t)=e^{-2t}\,u(t)$. Find the Frequency response of the system.	L3	6M

UNIT-IV

7		State and prove the any four Properties Laplace Transform.	L2	12M
		OR		
8	a)	Find the Laplace transform for any three standard signals.	L2	6M
	b)	Explain the concept of random variable.	L2	6M

UNIT-V

9		Define ACF? State and explain any four properties of ACF?	L2	12M
		OR		
10	a)	The power spectral density of a stationary random process is given by $S_{xx}(\omega) = \begin{cases} A & ; \quad -k < \omega < k \\ 0 & ; \quad \text{otherwise} \end{cases}$ Find the auto correlation function.	L3	6M
	b)	Prove that the PSD of the derivative X(t) is equal to $\omega 2$ times the PSD of $S_{xx}(\omega)$?	L2	6M

Q.P. Code: 19CS0506 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November 2023
DATABASE MANAGEMENT SYSTEM
(CSE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1	a)	Explain the Architecture of Database with a neat diagram.	L4	6M
	b	Write a short note on Database users and administrators?	L3	6M
		OR		
2	a)	Write about logical database design (ER to Relational) with suitable examples?	L3	6M
	b)	Implement the DML Commands - Insert, Select Commands, and update & delete Commands.	L2	6M

UNIT-II

3	a)	Illustrate different operations in Relational algebra with an example?	L2	6M
	b)	Give an examples of clauses SELECT with an example.	L2	6M
		OR		
4	a)	Create a sub query to establish the WHERE, ANY,AS and ALL sub queries with example.	L6	6M
	b)	Discuss the candidate key, primary key, super key, composite key and alternate key.	L2	6M

UNIT-III

5	a)	Discuss about Armstrong Axiom's in functional Dependency.	L4	6M
	b)	What is Normalization? List out the purpose normalization.	L1	6M
		OR		
6	a)	Define Decomposition. List out the properties of decomposition.	L4	6M
	b)	The relation schema Student Performance (name, courseNo, rollNo, grade) has the following FDs: name,courseNo->grade rollNo,courseNo->grade name->rollNo rollNo->name What is the highest normal form of this relation scheme?	L3	6M

UNIT-IV

7	a)	What is a Transaction? Explain the properties of the transaction. Explain the States of the transaction with a neat sketch.	L4	6M
	b)	Discuss How do you implement Atomicity and Durability.	L6	6M
		OR		
8		Identify the deadlock and 2-phase locking to ensure serializability in concurrency control with locking methods.	L3	12M

UNIT-V

9	a)	Discuss about Times tamp based locking protocols?	L6	6M
	b)	Explain concurrency control with lock based protocols.	L4	6M
		OR		
10	a)	Explain how recovery is done using undo logging and redo logging.	L3	6M
	b)	What are the methods that are used in log based recovery?	L3	6M

Q.P. Code: 19CS0550 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations November 2023

RELATIONAL DATABASE MANAGEMENT SYSTEM

(Common to CIVIL, MECH & EEE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1	a)	Draw the Architecture of Database	L1	6M
	b)	Explain about Database users and Administrators.	L2	6M
		OR		
2	a)	Implement the DDL Commands – Table Creation, Altering the table structures, truncating a table and dropping a table.	L1	6M
	b)	Write a short note on relational model with an example.	L1	6M

UNIT-II

3		Explain about selection and projection in Relation Algebra	L2	12M
		OR		
4		Draw the ER diagram for Banking Applications and explain it	L2	12M

UNIT-III

5		Explain about the form of basic SQL query with an example.	L2	12M
		OR		
6	a)	To solve: i. Write a query to find name and age of sailors who have rating above 7. ii. Write a query to find the name of sailors who have reserved at least two boats.	L6	6M
	b)	What is outer joins with an examples?	L1	6M

UNIT-IV

7		Compare and contrast 4NF with 5NF.	L3	12M
		OR		
8	a)	Write short notes on Lossless join Decomposition.	L3	6M
	b)	Write a short notes on Dependency preserving Decomposition	L2	6M

UNIT-V

9	a)	Write short note on Buffer management for management of data.	L3	6M
	b)	Explain in detail about ISAM	L4	6M
		OR		
10	a)	Explain about failure with loss of non-volatile storage.	L2	6M
	b)	What are the methods that are used in log based recovery?	L4	6M

Q.P. Code: 19CS0549 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations November 2023
LINUX PROGRAMMING
(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		What is meant by path and pathname in Unix? Explain them in detail?	L3	12M
		OR		
2	a)	Express vi Editor and explain its modes.	L3	6M
	b)	Illustrate the user and group in Unix? Explain the related commands for changing ownership and group.	L2	6M

UNIT-II

3		Illustrate the following a) CDPATH b) PATH c) HOME d) Primary prompt	L3	12M
		OR		
4	a)	Explain command substitution with example.	L2	6M
	b)	Discuss pipe and tee command with suitable example.	L2	6M

UNIT-III

5	a)	Explain about comparing files with examples?	L5	6M
	b)	Write a shell program for counting characters, words and line?	L5	6M
		OR		
6	a)	Which command is used for translating characters? Also explain its options with examples.	L5	6M
	b)	How text manipulation is done in vi? Explain.	L2	6M

UNIT-IV

7		List and explain the expressions involved in Korn shell.	L1	12M
		OR		
8	a)	Discuss about Korn Shell and its Features?	L2	6M
	b)	Explain about file contents and its directories?	L3	6M

UNIT-V

9		How decision making is done? Explain with program.	L3	12M
		OR		
10	a)	Explain about Special Parameters.	L3	6M
	b)	What are the shutdown scripts in the C Shell?	L3	6M

Q.P. Code: 19CE0115 **R19**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations Nov 2023

ESTIMATION, COSTING AND VALUATION

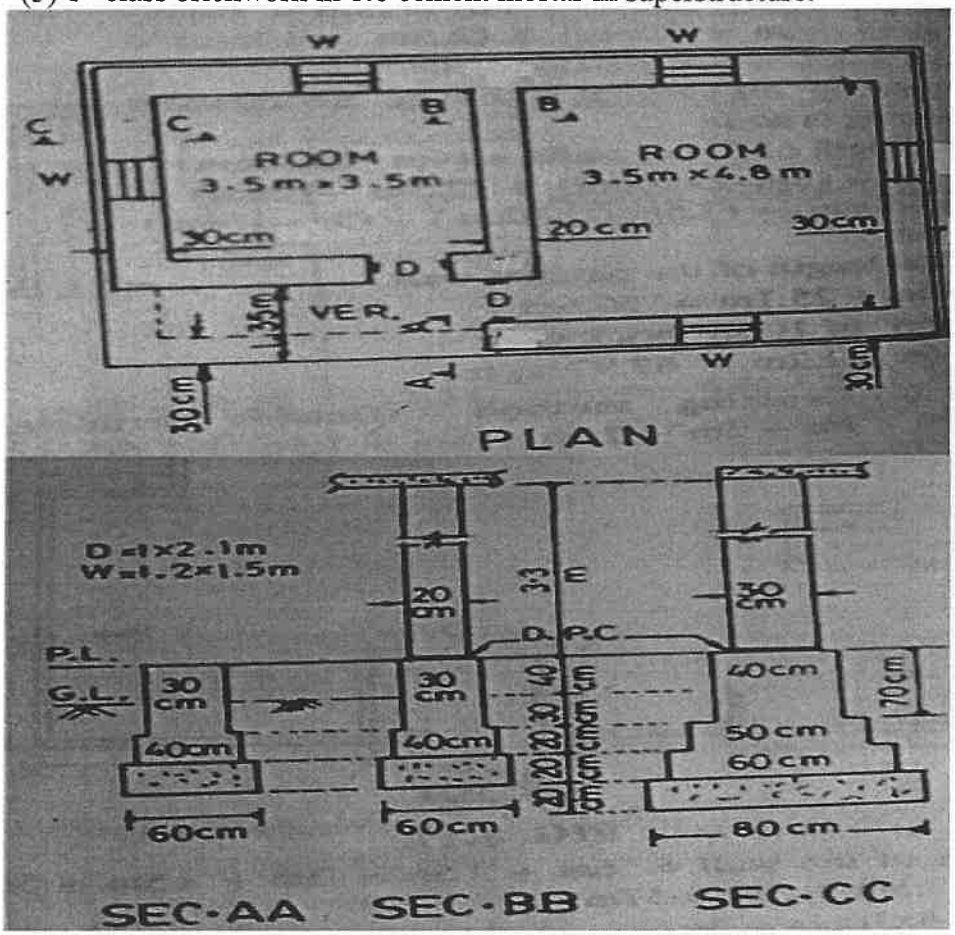
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Estimate the quantities of the following items of a two roomed building from the given plan and sections as shown in Fig. (1) Earthwork in exaction in foundation (2) Lime concrete in foundation (3) 1st class brick in 1:6 cement mortar in foundation and plinth (4) 2.5 cm thick damp proof course and (5) 1st class brickwork in 1:6 cement mortar in superstructure.	L3	12M



OR

2	a)	List and explain different types of estimates in detail.	L3	6M
	b)	Write brief note on following main items of work (i) Damp proof course (ii) Plastering.	L2	6M

UNIT-II

3		Reduced level (R.L.) of ground along the centre line of a proposed road from chainage 10 to chainage 20 are given below. The formation level at the 10th chainage is 107 and road is in downward gradient of 1 in 150 up to the chainage 14 and then the gradient changes to 1 in 100 downward. Formation width of road is 10 m and side slopes of banking are 2:1 (H:V). Length of the chain is 30 m. Prepare an estimate of earth at the rate of Rs.275% cu.m.	L3	12M

Chainage	RL of ground (m)
10	105.00
11	105.60
12	105.44
13	105.90
14	105.42
15	104.30
16	105.00
17	104.10
18	104.62
19	104.00
20	103.30

OR

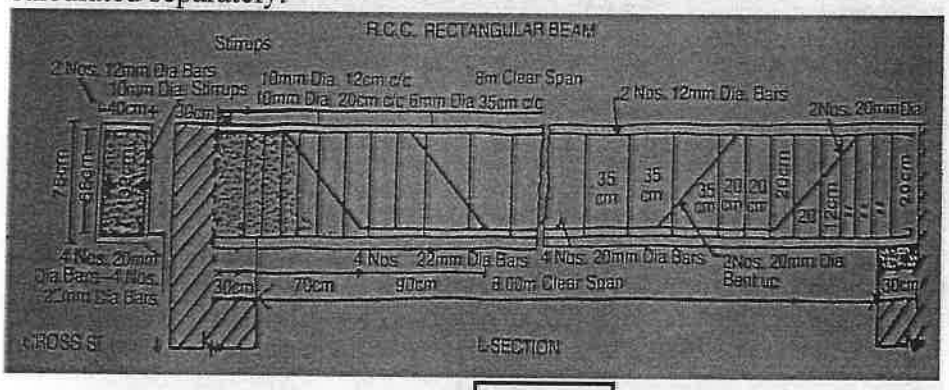
4	a)	Define turfing. Give the equation for calculating turfing area for a road in banking having formation width 'B', formation depth 'd', side slopes S:1 (H:1) and length 'L'.	L2	6M
	b)	Write a short note of different methods of estimating earthwork in construction.	L2	6M

UNIT-III

5	a)	Briefly explain the different types of reinforcement bars used in RCC members with examples.	L2	6M
	b)	Explain the different items of work estimated in reinforced cement concrete work.	L2	6M

OR

6		Prepare a detailed estimate of a RCC beam of 8 m clear span and 75 cm x 40 cm in section from the given drawings. Steel in detail and RCC work shall be calculated separately.	L3	12M



UNIT-IV

7		Calculate the rate per cu.m for providing and laying plain cement concrete (M10) nominal mix in foundation trenches including compacting and curing.	L3	12M

OR

8	a)	Prepare earthwork in banking or in exaction in road or canal work in layer of 20 cm including ramming, dressing etc., up to 30 m load and 1.5 m lift.	L3	6M
	b)	Arrive rate per sq.m for laying 2.5 cm thick 1:1.5:3 cement concrete as damp proof course.	L3	6M

UNIT-V

9		A three-storied building is standing on a plot of land measuring 800 sq.m. The plinth area of each storey is 400 sq.m. The building is of RCC framed structure and the future life may be taken as 70 years. The building fetches a gross rent of Rs.1500.00 per month. Work out the capitalized value of the property on the basis of 6% net yield. For sinking fund 3% compound interest may be assumed. Cost of land may be taken Rs.40.00 per sq m. Other data as required may be assumed suitably.	L3	12M

OR

10	a)	List and explain general specifications of a first-class building.	L3	6M
	b)	Write detailed specification for earthwork exaction	L3	6M

Q.P. Code: 19EC0414 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B. Tech III Year I Semester Supplementary Examinations November 2023

ANTENNAS AND WAVE PROPAGATION

(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Derive an expression for Electric and Magnetic Field radiated by Half Wave Dipole Antenna ($\lambda/2$) and also sketch its field strength pattern.	L3	12M
		OR		
2	a)	An antenna has a radiation resistance of 72Ω, and a loss resistance is 8Ω, if the power gain is 16. Calculate the directivity of the antenna.	L2	6M
	b)	Explain briefly Radiation Intensity and Antenna Gain.	L2	6M

UNIT-II

3	a)	Explain about construction and operation of Yagi-Uda Antenna with neat sketch.	L2	6M
	b)	Discuss about the Folded dipole antenna and its input impedance.	L2	6M
		OR		
4	a)	Discuss about the helical antenna geometry, axial mode of radiation and its applications.	L2	6M
	b)	For a 20-turns Helical antenna operating at 3GHz with circumference of 10cm and spacing between the turns is 0.3 wavelengths is operating at 3GHz. Calculate the directivity and half power beam width.	L2	6M

UNIT-III

5	a)	Give the advantages and limitations of Micro strip antennas.	L1	6M
	b)	What are the types of reflectors? Explain the features of parabolic reflectors.	L2	6M
		OR		
6	a)	Explain sources of Error in Antenna measurement.	L2	6M
	b)	Explain the principle of parabolic reflector with a suitable diagram.	L2	6M

UNIT-IV

7		Compare the Broad side array and End fire array.	L4	12M
		OR		
8	a)	What is principle of pattern multiplication? List the advantages and disadvantages.	L2	6M
	b)	Explain briefly the Collinear Array.	L2	6M

UNIT-V

9		Draw and explain the structure of Ionosphere with its typical electron density variation characteristics.	L3	12M
		OR		
10	a)	Explain the relation between MUF and skip distance.	L2	6M
	b)	Discuss the different modes of Wave Propagation.	L2	6M

Q.P. Code: 19EC0116 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year & I Semester Supplementary Examinations November 2023
HYDRAULIC ENGINEERING
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		A concrete lined circular channel of diameter 6m has abed slope of 1 in 250. Find out velocity and flow rate for conditions of a) Maximum Velocity b) Maximum Discharge. Assume chezy's constant C=50.	L1	12M
		OR		
2	a)	Derive the condition for a trapezoidal channel to be most economical.	L1	8M
	b)	A reactangularchannael carries water at a rate of 350 litre/sec when bedslope is 1 in 2500. Find the most economical dimensions of the channel if C = 50.	L1	4M

UNIT-II

3		What are assumptions of gradually varied flow? Derive the Dynamic equation of gradually varied flow.	L1	12M
		OR		
4	a)	Derive an expression for hydraulic jump in rectangular channel.	L3	6M
	b)	What are the applications of hydraulic jump?	L1	6M

UNIT-III

5	a)	Derive the equation for force exerted by a jet on stationary inclined flat plate.	L3	6M
	b)	Find the force exerted by a jet of water of diameter 90mm on a stationary flat plate, when the jet strikes the plate normally with velocity of 25m/s.	L3	6M
		OR		
6		A jet of water of diameter 7.5 cm strikes a curved plate at its centre with avelocity of 20m/sec. the curved plate is moving with a velocity of 8 m/sec in the direction of jet. The jet is deflected through an angle of 165. Assuming the plate smooth. Find i) Force exerted on the plate in the direction of jet ii) Power of jet iii) Efficiency of jet	L3	12M

UNIT-IV

7		A three stage centrifugal pump has impeller 42 cm in Diameter and 2.5 cm wide at outlet. The vanes are curvedback at the outlet at 450 and reduce the circumferential area by 10%. The manometric efficiency is 90% and overall efficiency is 80%. Determine the head generated by the pump when running at 1050r.p.m. delivering 65litres per second. What should be the shaft horse power?	L3	12M
		OR		
8	a)	What it is meant by priming?	L1	5M
	b)	What is cavitation? What are the effects of cavitation and mention some precautions against cavitation.	L2	7M

Q.P. Code: 19EC0116 R19

UNIT-V

9		A Francis turbine working under a head of 30 m has a wheel diameter of 1.2 m at the entrance and 0.6 m at the exit. The vane angle at the entrance is 90 degres and guide blade angle is 150 degrees. The water at the exit leaves the vane without any tangential velocity and the velocity of flow in the runner is constant. Neglecting the effect of draft tube and losses in the guide and runner passages, determine the speed of wheel in r.p.m. and vane angle at exit. State whether the speed calculated is synchronous or not. If not, what speed would you recommend to couple the turbine with an alternator of 50 cycles?	L3	12M
		OR		
10	a)	List out various types of efficiencies of a turbine in detail.	L3	6M
	b)	Explain Radial flow reaction turbine with a neat diagram.	L3	6M

Q.P. Code: 19EC0415 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November 2023
DIGITAL COMMUNICATIONS
(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		A Television signal having a bandwidth of 5.8 MHz is transmitted using binary PCM system. Given that the number of quantization levels is 512 & 256. Determine i) Code word length? ii) Transmission Bandwidth? iii) Final Bit rate? iv) Output SNR ratio? v) Efficiency?	L3	12M
		OR		
2	a)	Consider an audio signal consisting of the sinusoidal term given as x (t) =3cos (1000πt). i) Determine the SNR noise ratio. When this is quantized using 10 bits PCM. ii) How many bits of quantization are needed to achieve a SNR ratio of at least 40dB?	L3	6M
	b)	Discuss the Noise considerations in PCM systems?	L2	6M

UNIT-II

3		Derive the expression for the Nyquist criterion for distortion less baseband Transmission in the absence of noise in terms of time domain & Frequency domain.	L3	12M
		OR		
4	a)	What is ISI? Draw the basic block diagram of baseband binary data transmission.	L2	6M
	b)	Explain the matched filter.	L2	6M

UNIT-III

5	a)	Investigate Gram-Schmidt orthogonalization procedure with an example	L5	6M
	b)	Formulate signal constellation diagram for BPSK.	L5	6M
		OR		
6	a)	Discuss the purpose of Orthogonality basis function in signal transmission.	L5	6M
	b)	Describe the concept of continuous AWGN channel.	L2	6M

UNIT-IV

7		What are the parameters you can consider to choose the modulation Techniques? Draw the block diagram of ASK transmitter and receiver and explain the operation.	L1	12M
		OR		
8	a)	Compare all the digital modulation techniques.	L2	6M
	b)	Derive the probability of error for a coherent QPSK system.	L3	6M

UNIT-V

9		Identify the concept of matrix representation of Linear block codes. Describe the Error detection and correction codes for LBC.	L3	12M
		OR		
10	a)	The Sub matrix (P) for a (7, 4) block code is given below. $\begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 0 \\ 0 & 1 & 1 \end{bmatrix}$ Determine the Parity check matrix (H).	L3	6M
	b)	Construct the Convolutional Encoding and Decoding using a simple example.	L3	6M

Q.P. Code: 19CE0117 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November 2023
GEOTECHNICAL ENGINEERING
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1	a)	What is compactive effort?	L2	4M
	b)	The moist unit weight of a soil is 14.50kN/m3. Given that the water content=12% and specific gravity of soil solids = 2.70, find the dry unit weight, porosity, degree of saturation the mass of water that must be added to reach full saturation.	L4	8M
		OR		
2	a)	The discharge of water collected from a constant head permeameter in a period of 10 minutes is 300ml. The internal diameter of the permeameter is 5.0cm and the measured difference in heads between the two gauging points 15.0cm apart is 40.0cm. Calculate the coefficient of permeability?	L3	6M
	b)	Draw a grain size distribution curve for different grades of soils and name them.	L3	6M

UNIT-II

3	a)	Explain various types of field compaction control.	L3	6M
	b)	What are the assumptions in Terzaghi's 1-D Consolidation theory?	L2	6M
		OR		
4	a)	Describe briefly the procedure to compute the pre-consolidation pressure.	L2	6M
	b)	Explain concept of consolidation using Spring Analogy.	L2	6M

UNIT-III

5		Briefly explain the construction of Newmark's Influence Chart and briefly explain its usage?	L5	12M
		OR		
6	a)	A strip load of considerable length and 1.30 m width transmits a pressure of 130 kN/m^2 to the underlying soil. Determine the maximum principal stress at 0.65 m depth below the footing, if the point lies. (i) Directly below the Centre of the footing, and (ii) Directly below the edge of the footing.	L5	8M
	b)	Explain Mohr Coulomb's shear failure theory.	L2	4M

UNIT-IV

7		A 45^0 is excavated to aa depth of 7m in a deep layer of saturated clay of unit weight 23kN/m^3. The relevant shear strength parameters are Cu = 65kN/m^2 and Φu = 0. Determine the factor of safety for the trial failure surface specified in Figure. Check that no loss of overall stability will occur according to limit state.	L4	12M
		OR		
8		A canal is to be excavated to a depth of 7m below the ground level through a soil having the following characteristics C=20kN/m^2 angle of internal friction is 20^0 e= 0.9 and G=2.67 the slope of the bank is 1 in 1 determine the factor of safety with respect to cohesion when the canal runs full. What will be the factor of safety if the canal is rapidly empty completely?	L4	12M

UNIT-V

9		Describe in detail the methods of Exploration in soils?	L3	12M
		OR		
10		Explain in detail the design features affecting degree of disturbance?	L3	12M

Q.P. Code: 19EE0212 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November 2023
CONTROL SYSTEMS
(EEE & ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1 Write the differential equation governing the mechanical system shown in figure and determine the transfer function. L1 12M

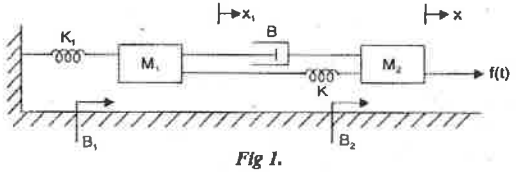


Fig 1.

OR

2 Obtain the overall gain C(S)/R(S) from signal flow graph shown in fig. L1 12M

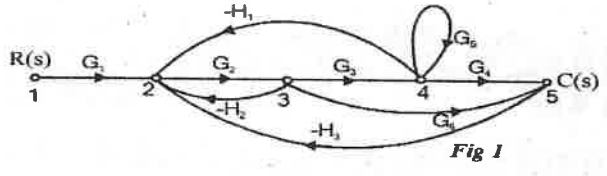


Fig 1

UNIT-II

3 A closed loop servo is represented by the differential equation: L5 12M
$\frac{d^2c}{dt^2} + 8\frac{dc}{dt} = 64e$. Where 'c' is the displacement of the output shaft, 'r' is the displacement of the input shaft and e =r – c. Determine undamped natural frequency, damping ratio and percentage maximum overshoot for unit step input.

OR

4 a) A For servo mechanisms with open loop transfer function given below what type of input signal give rise to a constant steady state error and calculate their values. $G(s)H(s)=\frac{20(S+2)}{S(S+1)(S+3)}$. L3 6M

b) Consider a unity feedback system with a closed loop transfer function $\frac{C(S)}{R(S)}=\frac{KS+b}{(S^2+aS+b)}$. Calculate open loop transfer function G(s). Show that steady state error with unit ramp input is given by $\frac{(a-K)}{b}$. L1 6M

UNIT-III

5 With the help of Routh's stability criterion determine the stability of the following systems represented by the characteristic equations: L5 12M

(a) $s^5 + s^4 + 2s^3 + 2s^2 + 3s + 5 = 0$

(b) $9s^5 - 20s^4 + 10s^3 - s^2 - 9s - 10 = 0$

OR

6 Develop the root locus of the system whose open loop transfer function is $G(s)H(s) = \frac{K(S+9)}{S(S^2+4S+11)}$ L3 12M

Q.P. Code: 19EE0212 R19

UNIT-IV

7 Derive the expressions for resonant peak and resonant frequency and hence establish the correlation between time response and frequency response. L2 12M

OR

8 Obtain the transfer function of Lead compensator, draw pole zero plot and write the procedure for design of lead compensator using the bode plot. L5 12M

UNIT-V

9 A state model of a system is given as: L2 12M

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

Determine: (i) The Eigen Values. (ii) The State Transition Matrix.

OR

10 a) Explain the properties of STM L3 6M

b) For the state equation: $\dot{X} = \begin{pmatrix} 1 & 0 \\ 1 & 1 \end{pmatrix} X + \begin{pmatrix} 0 \\ 1 \end{pmatrix} U$ when, $X(0) = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$. L3 6M

Find the solution of the state equation for the unit step input.

Q.P. Code: 19CE0118 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November 2023
TRANSPORATATION ENGINEERING
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		Write the basic requirements and factors controlling for ideal alignment between two terminal stations.	L1	12M
		OR		
2	a)	Explain any four highway cross-sectional elements.	L1	6M
	b)	Describe Lag distance and Braking distance.	L1	6M

UNIT-II

3		The results of a speed study are given in the form of a frequency distribution table. Find the time mean speed and space mean speed.	L3	12M

No.	Speed Range	Average Speed (vi)
1	2-5	3.5
2	6-9	7.5
3	10-13	11.5
4	14-17	15.5

OR

4	a)	Describe the significance of traffic studies.	L1	6M
	b)	Explain grade separated intersections.	L1	6M

UNIT-III

5	a)	Draw the stress distribution and cross section in flexible pavements and rigid pavements?	L1	6M
	b)	Differentiate flexible pavements and rigid pavements.	L1	6M
		OR		
6	a)	What are the functions of tie bars and dowel bars in rigid pavements?	L1	6M
	b)	List the types of pavements based on structural behavior.	L1	6M

UNIT-IV

7		Explain the role of chairs, keys and fish plates as track fittings and fastenings. Support your Answer with neat sketch.	L1	12M
		OR		
8	a)	Draw a typical cross section of permanent way and show various components.	L2	6M
	b)	Explain the concept of creep using percussion theory.	L2	6M

UNIT-V

9		Calculate the maximum permissible speed on a curve of high speed for the following data on a B.G track. Degree of curve 1.2 , amount of super elevation 8.0 cm, length of transition curve 125 m, maximum speed of the section likely sanction speed = 150 kmph.	L3	12M
		OR		
10	a)	Explain the classification of gradient in railways.	L2	6M
	b)	Discuss the requirement of passenger platforms.	L2	6M

Q.P. Code: 19EC0416 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November 2023

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1	a)	An Ammeter reads 8.3A and the true value of the current is 8.5A Determine the absolute error and Relative Percentage Error?	L3	6M
	b)	Discuss with the help of circuit diagram the construction & working of a Series type ohm meter.	L2	6M

OR

2	a)	Explain different types of errors that occur in measurements.	L2	6M
	b)	Explain about Differential type voltmeter.	L2	6M

UNIT-II

3		Draw the block diagram of a dual beam CRO, explain its operation.	L2	12M

OR

4	a)	With the help of block diagram explain Delay line.	L2	6M
	b)	Explain with the help of block diagram, how the digital frequency and time period can be measured using counter/meter instrument.	L2	6M

UNIT-III

5	a)	List the applications of random noise generator.	L1	6M
	b)	Draw the block diagram of a function generator and explain its operation.	L2	6M

OR

6	a)	What is distortion? What does a distortion analyzer measure?	L1	6M
	b)	Explain the method of generate random noise.	L2	6M

UNIT-IV

7		What is the function of bridge? With neat circuit, derive & explain Anderson's bridge.	L2	12M

OR

8	a)	Describe the operation of the Wheatstone bridge and derive the expression for DC resistance.	L2	6M
	b)	Derive an expression for Wein Bridge.	L2	6M

UNIT-V

9		List the pressure measuring transducers, explain any one of them.	L2	12M

OR

10	a)	Explain about vibration.	L2	6M
	b)	Explain about Accelerometer.	L2	6M

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations November 2023
THERMAL ENGINEERING
(MECH)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Explain the working principle of reciprocating compressor with neat sketch. Describe the processes using PV diagram with clearance volume.	L2	12M
		OR		
2		A single stage reciprocating compressor takes $1m^3$ of air per minute at 1.013 bar and 15^0C and delivers it at 7 bar. Assuming that the law of compression is $P_v^{1.35}$= constant, and the clearance is negligible, calculate the indicated power?	L3	12M

UNIT-II

3		Explain brief Brayton cycle with PV and Ts Diagrams. Derive an expression for thermal efficiency.	L3	12M
		OR		
4		In a gas turbine unit, the gases flow through the turbine is 15 kg/s and the power developed by the turbine is 12000kW. The enthalpies of gases at the inlet and outlet are 1260 kJ/kg and 400kJ/kg respectively, and the velocity of gases at the inlet and outlet are 50m/s and 110m/s respectively. Calculate: a) The rate at which heat is rejected to the turbine. b) The area of the inlet pipe given that the specific volume of gases at the inlet is $0.45m^3/kg$.	L3	12M

UNIT-III

5		A convergent-divergent nozzle is required to discharge 350 kg of steam per hour. The nozzle is supplied with steam at 8.5 bar and 90% dry and discharges against a back pressure of 0.4 bar. Neglecting the effect of friction, find the throat and exit diameters.	L3	12M
		OR		
6	a)	What is the function of a steam nozzle? List the types of nozzles and draw and describe the nozzles?	L2	6M
	b)	What do you understand by the term critical pressure ratio as applied to steam nozzles?	L2	6M

UNIT-IV

7		Single stage of feed heating was employed in a steam turbine installation, steam being bled at pressures of 3.4 bar. The temperature of the feed water is raised to that of the bled steam, and the condensate from heater may be taken as being at the same temperature as the feed water entering the heater. The steam is supplied to the turbine at 17 bar with 250^oC, and condenser pressure is 0.06 bar. The stage efficiency between pressures 17 bar and 3.4 bar is 0.7. Estimate: (i) the mass of steam bled to each heater, (ii) the total work done per kilogram of steam supplied to the turbine, and (iii) the overall thermal efficiency of the cycle.	L3	12M
		OR		
8	a)	List the classifications of steam turbines. Explain working principle of impulse turbine with neat sketch.	L2	8M
	b)	What is advantage of feed heating by bled steam in steam power cycle?	L3	4M

UNIT-V

9		A single cylinder four stroke Petrol engine has piton diameter 250 mm and stroke 400 mm. The mean effective pressure on both side of the piton is 2.5 bar Determine the Indicated power when the engine runs at 2000 r.p.m. Calculate Brake Power if the Mechanical efficiency is 80%.	L4	12M
		OR		
10	a)	Explain the distinguish between the 2 Stroke and 4 Stroke engines.	L3	6M
	b)	Explain the difference between petrol and Diesel engines.	L3	6M

Q.P. Code: 19ME0321 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations May 2023

NON-CONVENTIONAL ENERGY RESOURCES

(CE,EEE & ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Describe Renewable Energy Scenario in Andhra Pradesh.	L1	12M
		OR		
2	a)	Assess the need of renewable energy resources.	L2	6M
	b)	Describe the impact of Energy Utilization on environment.	L5	6M

UNIT-II

3		What are the types of solar radiation measuring instruments? Explain the working of Sunshine recorder with a neat sketch.	L2	12M
		OR		
4	a)	Explain the working of Pyrheliometer with a neat sketch.	L2	6M
	b)	Differentiate flat plate collector with concentrating type collector.	L2	6M

UNIT-III

5	a)	Illustrate the power generation process in HAWT and state its demerits.	L2	6M
	b)	Describe the working of VAWT with a neat sketch.	L1	6M
		OR		
6	a)	What is the impact of wind energy on environment?	L1	6M
	b)	Describe the working of ducted wind turbine with its merits and demerits.	L1	6M

UNIT-IV

7		Explain the function of Deenbandhu biogas digester with a neat sketch and also mention its merits and demerits.	L1	12M
		OR		
8	a)	Name various strokers used for the combustion of biomass and explain anyone with a neat figure.	L2	6M
	b)	Describe the working of Spreader stroker with a neat sketch .	L3	6M

UNIT-V

9		What is the nature of tidal power extracted from single basin arrangement and double basin arrangement?	L3	12M
		OR		
10	a)	List all the applications of hydrogen?	L4	6M
	b)	What is the geothermal energy? Explain its extraction process.	L1	6M

Q.P. Code: 19HS0812 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech IV Year I Semester Supplementary Examinations Nov 2023

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		How do you measure the elasticity of demand? Illustrate How you interpret the different type of elasticity with suitable examples.	L3	12M

OR

2	a)	Analyze the significance of managerial economics in decision-making.	L3	6M
	b)	Discuss the various methods of demand forecasting techniques.	L2	6M

UNIT-II

3		A High-Tech Rail can carry a maximum of 36,000 passengers per annum at a fare of Rs.400.The variable cost per passenger is Rs.150 while the fixed costs are 25,00,000 per year. Find the break- even point in terms of number of passengers and also in terms of fare collections.	L5	12M

OR

4	a)	State the concept of Break-Even Point (BEP) with graph.	L2	6M
	b)	Explain the Iso-quants or Iso-Product curve with diagram.	L2	6M

UNIT-III

5	a)	Distinguish between monopoly and perfect competition.	L2	6M
	b)	"Globalization is a means of attaining the international standard of living"- Discuss.	L3	6M

OR

6		Explain the different methods of pricing with examples.	L3	12M

UNIT-IV

7		The cost of a project is Rs.50,000 which has an expected life of 5 years. The cash inflows for next 5 years are Rs.24,000; Rs.26,000; Rs.20,000; Rs.17000 andRs.16,000 respectively. Determine the Payback period.	L5	12M

OR

8		How the discounting models of capital budgeting differ from non-discounting models?	L3	12M

UNIT-V

9		Journalize the following transactions in the books of Krishna 2012,	L4	12M

Jan 1	Krishna commenced business with cash Rs.2,00,000
2	Purchased goods for cash Rs.10,000
3	Purchased goods from Mohan Rs.6,000
7	Paid into bank Rs.5,000
10	Purchased furniture Rs.2000
20	Sold goods to Suresh on credit Rs.5,000
25	Cash sales Rs. 3,500
26	Paid to Mohan on account Rs.3,000
31	Paid salaries Rs.2,800

OR

10	a)	List out the types of accounts and their rules governing each account.	L3	6M
	b)	A firm's sales during the year were Rs.4, 00,000 of which 60 percent were on credit basis. The balance of debtors at the beginning and at the end of the year was Rs.25, 000 and Rs.15, 000 respectively. Calculate debtor's turnover ratio of the firm. And also find out debt collection period.	L5	6M

Q.P. Code: 19EC0426 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
WIRELESS COMMUNICATIONS
(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1	a)	List and explain various elements of wireless communication systems.	L1	6M
	b)	Explain the two full duplex systems in wireless communication systems.	L2	6M
		OR		
2	a)	Explain third generation wireless networks.	L2	6M
	b)	How does subdividing a congested cell into smaller cells help to improve the coverage and capacity in cellular systems?	L3	6M

UNIT-II

3	a)	With the help of neat diagrams, illustrate knife-edge geometry with appropriate notations.	L3	6M
	b)	Derive the received power at a distance d from the transmitter for the two-ray ground bounce model.	L3	6M
		OR		
4	a)	Explain the dependence of surface roughness on the frequency and angle of incidence.	L2	6M
	b)	Explain the ground reflection (two-ray) model. And derive the expression for total E-field envelope.	L2	6M

UNIT-III

5	a)	Explain the relation between the various multipath parameters and the type of fading experienced by the signal.	L2	6M
	b)	Describe the factors influencing small scale fading in the radio propagation channel.	L2	6M
		OR		
6	a)	Illustrate the Doppler shift in radio propagation	L2	6M
	b)	If the coherence bandwidth is calculated as 100 kHz in the given radio channel of 900 MHz frequency, calculate the maximum symbol rate that can be transmitted over this channel that will suffer minimal inter symbol interference.	L4	6M

UNIT-IV

7	a)	Explain about selection diversity and feedback diversity.	L2	6M
	b)	Derive an expression for selection diversity improvement.	L3	6M
		OR		
8	a)	Explain the basic structure of an adaptive equalizer with neat diagram.	L2	6M
	b)	Describe about macro diversity and express the mathematical representation of macro diversity.	L2	6M

UNIT-V

9	a)	Explain various hybrid spread spectrum techniques in CDMA.	L2	6M
	b)	Derive the expression for capacity in fading channels.	L3	6M
		OR		
10	a)	Describe MIMO systems. How does spatial multiplexing works?	L2	6M
	b)	Evaluate the efficiency of Time Division Multiple Access (TDMA) scheme.	L4	6M

Q.P. Code: 19CE0130 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
FOUNDATION ENGINEERING
(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		A cantilever retaining wall of 7mts height retains sand. The properties of sand are e=0.5,φ=300 and G=2.7m.Using Rankines theory Determine the active earth pressure at the base when the backfill is (i) dry (ii) saturated (iii)submerged and also the resultant active force in each case.	L3	12M
		OR		
2		Discuss culmann's method for the determination of active earth pressure.	L3	12M

UNIT-II

3		A strip footing of 2m width is founded at a depth of 4m below the ground surface. Determine the net ultimate bearing capacity, using a) Terzaghi's equation (Nc=5.7, Nγ=1.0, Nq=0.0) b) Skempton's equation c) IS Code (Nc=5.14). The soil is clay (φ=00, C-10kN/m2).The unit weight of soil is 20kN/m2.	L3	12M
		OR		
4	a)	With neat sketches explain different types of shear failures.	L2	6M
	b)	Determine the ultimate bearing capacity of a strip footing, 1.20 m wide, and having the depth of foundation of 1.0 m. use Terzaghi's theory and assume general shear failure. Take φ = 35o, γ = 18 kN/m3, and C' = 15 kN/m2. Take (Nc=57.8, Nγ=42.4, Nq=41.4).	L3	6M

UNIT-III

5	a)	A 30cm diameter concrete pile is driven into a homogeneous consolidated clay deposit (cu=40kN/m2, α=0.7).If the embedded length is 10m, estimate the safe load (F.S. =2.5).	L2	6M
	b)	A square concrete pile (30cm side) 10 m long is driven into coarse sand (γ=18.5 kN/m3, N=2.0). Determine the allowable load (F.S. =3.0).	L3	6M
		OR		
6		Define pile foundation? Detail about necessity of pile foundation?	L1	12M

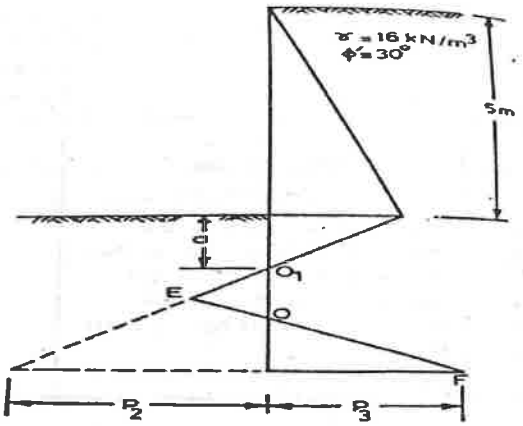
UNIT-IV

7		Discuss various forces acting on well foundation.	L1	12M
		OR		
8		Describe the various components of pneumatic caisson with the help of neat sketch.	L2	12M

UNIT-V

9		Determine the required of penetration of the cantilever sheet pile as shown in fig.Take Ɣ=16kN/m3.	L3	12M

Q.P. Code: 19CE0130 R19



OR

10		Explain in detail the pressure distribution of cantilever sheet pile penetrating clay withneat sketch.	L3	12M

Q.P. Code: 19ME0326 **R19**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
MODERN MACHINING METHODS
(MECH)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Discuss the Modern Machining Methods with their advantages in the current industry.	L3	12M
		OR		
2	a)	List out the Machining techniques and write a short note need for MRR in Industrial sectors.	L3	6M
	b)	What are the advantages, disadvantages and applications of MRR.	L2	6M

UNIT-II

3		Explain the parts and working principle of EDM (Electrical Discharge machining) with a neat sketch.	L3	12M
		OR		
4	a)	Give a brief note on the advantages, disadvantages, and applications of the Electrical Discharge Grinding (EDG) process.	L4	6M
	b)	List out the Parameters that effect EDG and limitations	L4	6M

UNIT-III

5	a)	Discuss the function of electrolytes in this process of ECM.	L2	6M
	b)	What are the advantages, disadvantages and applications of Electro Chemical Machining?	L1	6M
		OR		
6	a)	List out the major techniques used in the Chemical machining process.	L2	6M
	b)	Explain the parts and working principle of the Electro Chemical Grinding (ECG) process with a schematic diagram.	L1	6M

UNIT-IV

7		Draw the schematic layout of Plasma Arc Machining (PAM) set-up and explain its parts.	L2	12M
		OR		
8	a)	Write the advantages, disadvantages, and applications of Laser Beam Machining (LBM).	L2	6M
	b)	Differentiate between Ion Beam Machining and Electron Beam Machining.	L3	6M

UNIT-V

9		Explain about the Micro Fabrication Technique of Physical vapor deposition with a neat diagram.	L1	12M
		OR		
10	a)	Explain the types of microfabrication techniques used in Industrial sectors.	L3	6M
	b)	Discuss briefly about the advantages, disadvantages and applications of Scanning Probe Microscopy.	L3	6M

Q.P. Code: 19EC0427 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
EMBEDDED SYSTEMS AND IOT
(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		With the neat sketch, Explain architecture of embedded system.	L3	12M
		OR		
2	a)	Explain I2C, SPI and Write Comparison between Serial and parallel interface.	L3	6M
	b)	Explain IEEE1394 and IrDA interfaces.	L2	6M

UNIT-II

3		Classify IoT-enabled health and lifestyle technologies as fitness and health monitoring systems.	L3	12M
		OR		
4	a)	Compare the protocols associated with transport layer of IoT.	L2	6M
	b)	Explain how the IoT technology is implemented in smart appliances and smoke/gas detection systems?	L2	6M

UNIT-III

5	a)	Develop a program for LCD and Keyboard programming interface for an Arduino.	L5	6M
	b)	Interpret the Arduino board and its I/O pins with a neat sketch.	L5	6M
		OR		
6	a)	Develop a program to control DC motor using PWM technique	L5	6M
	b)	Explain the structure of Network function Virtualization for IoT.	L2	6M

UNIT-IV

7		Explain the control flow statements such as if ,for, while and Range with an example.	L1	12M
		OR		
8	a)	Summarize the various service types used in service specifications step of IoT System design methodology.	L2	6M
	b)	Illustrate the file handling and date/time operations in python with an example.	L3	6M

UNIT-V

9		Design an automatic refrigerator light system with LED, switch & raspberry pi and write a python program to support the working of that design.	L3	12M
		OR		
10	a)	Compare the various single board computers which are alternatives to Raspberry pi.	L3	6M
	b)	Illustrate how to interface a Light sensor (LDR) with raspberry pi.	L3	6M

Q.P. Code: 19CE0131 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech IV Year I Semester Supplementary Examinations November 2023

CONCRETE TECHNOLOGY

(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1		List the Bouge's compounds present in cement and Explain in detail how each one of these compounds influences the strength and setting properties of cement.	L3	12M
		OR		
2	a)	Explain the term super plasticizers. How are they useful in concrete production?	L2	6M
	b)	Describe setting time of cement and factors affecting setting time of cement.	L2	6M

UNIT-II

3		Explain the relation between compression strength and tensile strength of concrete.	L3	12M
		OR		
4	a)	Discuss the different methods of curing procedure.	L2	6M
	b)	Describe the various factors affecting strength of hardened concrete.	L2	6M

UNIT-III

5		Explain in detail about the rebound hammer test (NDT) that is conducted on existing structure to assess its strength with a neat diagram.	L3	12M
		OR		
6	a)	Explain the various factors affecting shrinkage of concrete.	L2	6M
	b)	What are the factors that affect the creep and shrinkage of concrete?	L2	6M

UNIT-IV

7		Write briefly about deterioration of concrete by Abrasion, Erosion and Cavitation.	L3	12M
		OR		
8	a)	What are the methods of controlling sulphate attack, Explain Briefly.	L2	6M
	b)	How the performance of concrete is affected by acid attack. Write briefly.	L3	6M

UNIT-V

9		Design a M30 concrete mix using IS method of Mix Design for the following data: Maximum size of aggregate - 20mm (Angular). Degree of workability - 0.90 compaction factor. Quality control - good Type of exposure - severe Specific Gravity: (i) Cement - 3.10, (ii). Sand - 2.68, (iii) Coarse Aggregate - 2.69 Water absorption: (i). Coarse aggregate -1.0% (ii). Fine aggregate - 2.0% Free surface moisture: (i). Coarse aggregate- Nil, (b). Fine aggregate-2.0% Sand confirms to zone III grading. Assume any other data required suitably	L3	12M
		OR		
10	a)	Define the term "Mix Design of Concrete" and explain its significance.	L3	6M
	b)	Explain quality control of concrete and durability of concrete.	L3	6M

Q.P. Code: 19ME0327 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
AUTOMOBILE ENGINEERING
(MECH)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit **(5 x 12 = 60 Marks)**

UNIT-I

1	a)	List out the components of I.C engine and its function.	L3	6M
	b)	What is Combustion? Explain the different types of Combustion Process.	L2	6M
		OR		
2		Explain the following indirect injection type combustion chamber in C.I Engine with a neat sketch. (i) Swirl Chamber. (ii) Pre Combustion Chamber. (iii) Air Cell or Energy Cell.	L3	12M
		UNIT-II		
3		Describe the fuel supply system in petrol engine with line diagram.	L3	12M
		OR		
4	a)	Describe about the CRDI engines.	L3	6M
	b)	Write the merits and demerits of CRDI fuel supply system.	L2	6M
		UNIT-III		
5		Elucidate briefly about battery coil ignition system with a suitable sketch.	L5	12M
		OR		
6		Discuss in detail about the following systems used in automobile. (i)Wiper System. (ii) Fuel gauge.	L5	12M
		UNIT-IV		
7	a)	What are the different functions of Clutch?	L2	6M
	b)	Discuss in detail about the fluid coupling.	L3	6M
		OR		
8	a)	Explain in details about Front Axle with neat diagram.	L2	6M
	b)	Define briefly about torque tube drive.	L3	6M
		UNIT-V		
9		Briefly explain about the Davi's Steering Mechanism with neat sketch.	L3	12M
		OR		
10		Answer all the following questions.	L2	4 M
		(i) Short notes on ABS.		4 M
		(ii) Discuss about EBS.		4 M
		(iii) Write the functions of Traction control.		

Q.P. Code: 19CE0139 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech IV Year & I Semester Supplementary Examinations November 2023

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

(CE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Describe in detail about the classification and prediction of impacts?	L2	12M
		OR		
2	a)	Explain about the identification of impacts on the environment by preliminary assessment?	L2	8M
	b)	List out the classification of environmental parameters in EIA.	L1	4M

UNIT-II

3		Explain the cost/benefit analysis in EIA?	L2	12M
		OR		
4	a)	Write short notes on matrix method.	L1	6M
	b)	Make a note on impact interpretation and evaluation.	L2	6M

UNIT-III

5	a)	With flow chart, mention the area and point sources of air pollution	L2	6M
	b)	List the WHO and CPCB standards on air quality.	L1	6M
		OR		
6	a)	List the conceptual approach to study surface water environment impacts.	L1	6M
	b)	What are the physical and chemical characteristics of water? Brief it.	L1	6M

UNIT-IV

7		With flow chart, explain about systematic approach for Evaluating biological impacts.	L3	12M
		OR		
8	a)	Make a note on noise measurement.	L2	6M
	b)	With a table format, mention the OSHA noise exposure limits for the work environment.	L2	6M

UNIT-V

9		Discuss about the Water pollution prevention & protection act and its functions.	L2	12M
		OR		
10	a)	Mention the various physical resources in EI of industrial development and explain any two.	L1	6M
	b)	Write short notes on ecological resources in EI of industrial development.	L1	6M

Q.P. Code: 19ME0334 **R19**

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
POWER PLANT ENGINEERING
(MECH)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Describe the layout of diesel power plant with neat sketch.	L2	12M
		OR		
2	a)	Identify the pollution effects from hydro-electric plants.	L3	6M
	b)	What is meant by load curve? Explain its importance in power generation.	L2	6M

UNIT-II

3		Organize types of equipment used for transferring coal.	L4	12M
		OR		
4		Explain about cyclone furnace, its design and construction	L2	12M

UNIT-III

5		Explain the working of a diesel power plant with a neat sketch.	L2	12M
		OR		
6	a)	List out the advantages and disadvantages of combined cycle power plant.	L1	6M
	b)	Compare a closed cycle gas turbines with open cycle gas Turbine.	L4	6M

UNIT-IV

7		Explain the need for flow measurement and the methods for flow measurement.	L2	12M
		OR		
8	a)	Discuss different types of spill ways	L2	6M
	b)	How to select prime movers for hydroelectric power plant?	L2	6M

UNIT-V

9	a)	Describe boiling water reactor with neat diagram.	L2	6M
	b)	Enumerate the requirements of fission process.	L2	6M
		OR		
10	a)	Explain a nuclear reactor with neat diagram.	L2	6M
	b)	Describe radioactive waste disposal methods.	L2	6M

Q.P. Code: 19EC0437 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
DIGITAL IMAGE PROCESSING
(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1	a)	Discuss the method for representation of a digital image.	L2	6M
	b)	Represent the components of digital image processing along with the suitable block diagram.	L2	6M
		OR		
2	a)	Explain the following mathematical operations on digital images. i) Array versus Matrix operations ii) Linear versus Nonlinear Operations.	L3	6M
	b)	Explain about image sampling and quantization process with proper steps.	L2	6M

UNIT-II

3	a)	Discuss the properties of Unitary transforms.	L3	4M
	b)	Compute the Discrete Cosine Transform basis matrix for N = 4.	L3	8M
		OR		
4	a)	Define Haar transform and give the algorithm and flowchart to Compute Harr basis.	L1	6M
	b)	Apply the KL transform for the following image. $f(m,n) = \begin{bmatrix} 4 & -2 \\ -1 & 3 \end{bmatrix}$	L3	6M

UNIT-III

5	a)	Define histogram and draw the histogram four basic image types.	L1	6M
	b)	Explain the procedure for histogram process and uses of histogram.	L2	6M
		OR		
6	a)	Define the following terms: Radiance, Luminance and Brightness.	L5	6M
	b)	Draw the functional block diagram of pseudo colour processing and explain each block.	L2	6M

UNIT-IV

7	a)	Differentiate the Image Enhancement and Image Restoration.	L4	6M
	b)	Draw the degradation/restoration model in image processing and describe the each part presented on it.	L1	6M
		OR		
8	a)	Illustrate the Clustering techniques for image segmentation with example.	L3	6M
	b)	Discuss the Edge detection with the help of the following operators: i) Gradient ii) Roberts iii) Prewitt iv) Sobel.	L2	6M

UNIT-V

9		Define the following terms: Data, Information, Data Redundancy, Data compression and Compression Ratio.	L1	12 M
		OR		
10	a)	Apply Huffman coding for the following probabilities.	L2	6M

Symbol	a_1	a_2	a_3	a_4	a_5	a_6
Probability	0.1	0.4	0.06	0.1	0.04	0.3

Estimate Compression ratio and Redundancy.

b) Discuss the different Image Formats and compression standards. L2 6M

Q.P. Code:19ME0337 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Supplementary Examinations November 2023
MECHATRONICS & ROBOTICS
(MECH)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Explain the various components in mechatronics system with neat sketch.	L2	12M
		OR		
2	a)	What are the basic methods of force measurement? Elaborate elastic force devices with neat sketch.	L2	6M
	b)	Discuss the selection criteria for sensor.	L2	6M

UNIT-II

3		Define actuator. Actuators play a primary role in mechatronics system. Justify.	L3	12M
		OR		
4	a)	What is coupling? Classify the couplings in detail.	L2	6M
	b)	What is the function of protection scheme? Describe working principle of circuit breaker with neat sketch.	L2	6M

UNIT-III

5	a)	What are the applications of 8051 microcontroller? List out the various functional blocks of 8051 micro-controller.	L2	6M
	b)	What aspects should be considered for the selection of a PLC for the application?	L1	6M
		OR		
6	a)	List the different types of joints used in robots with neat sketch.	L4	6M
	b)	What is degree of freedom? Briefly explain it.	L1	6M

UNIT-IV

7		Differentiate between newton-Euler and Euler -Lagrangian formulations and find the dynamic equations of motion.	L1	12M
		OR		
8		Define the following terms of trajectory planning. (i) Trajectory (ii) Spline (iii) Joint space scheme (iv) Cartesian space scheme.	L1	12M

UNIT-V

9		Define Robot program. What is the purpose of it and what are the various methods used for programming robots?	L3	12M
		OR		
10	a)	Explain the various applications of robot in spot and continuous arc welding.	L2	6M
	b)	List And Describe the robot application in material transfer.	L4	6M

Q.P. Code: 19EC0440 R19

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY: PUTTUR
(AUTONOMOUS)

B.Tech IV Year I Semester Supplementary Examinations November 2023

FIBER OPTIC COMMUNICATIONS

(ECE)

Time: 3 Hours Max. Marks: 60

Answer one question from each unit (**5 x 12 = 60 Marks**)

UNIT-I

1		Explain the Elements of Optical Communication System with neat sketch.	L2	12M
		OR		
2	a)	How the attenuation is caused by absorption losses?	L1	6M
	b)	Explain the phenomenon of Rayleigh scattering.	L2	6M

UNIT-II

3	a)	Explain in brief about direct and indirect band gap materials in detail.	L2	6M
	b)	Explain LED Structure with neat sketch.	L2	6M
		OR		
4		Derive the expressions for LASER modes and threshold conditions.	L3	12M

UNIT-III

5	a)	Explain the principle behind the operation of PIN photo diode.	L2	6M
	b)	A photo diode has a quantum efficiency of 66% when photons of energy of 1.6 x 10-19 J are incident upon it. (i) Find the operating wavelength of the photodiode (ii) Calculate the incident optical power required to obtain a photo current of 2.6 nA when the photodiode is operating as described above.	L4	6M
		OR		
6	a)	Compute the expression for response time of a photodiode.	L3	6M
	b)	Explain the working of depletion layer photo diode with diagram.	L2	6M

UNIT-IV

7		Explain Optical Fiber System Design Specification.	L2	12M
		OR		
8	a)	Explain the optical multiplexing and de-multiplexing techniques.	L2	6M
	b)	Explain in detail about Optical amplifier with an example.	L2	6M

UNIT-V

9		Explain in detail about Optical network topologies	L2	12M
		OR		
10	a)	Discuss the basic concept of optical CDMA	L2	6M
	b)	What are the advantages of optical CDMA?	L1	6M