LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram-521 230 :: NTR Dist. :: A.P

Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

B.Tech. (III Semester) (R17) Semester End Examinations (Supplementary) - April 2026

(2018, 2019 Regular admitted batches and 2020 Lateral Entry admitted batch only)

R17

TIME TABLE

Time : 10.00 AM to 01.00 PM **A.Y. : 2025-26**

Branch	10-04-2026 (Friday)	13-04-2026 (Monday)	15-04-2026 (Wednesday)	16-04-2026 (Thursday)	17-04-2026 (Friday)	18-04-2026 (Saturday)	20-04-2026 (Monday)
ASE	17FE07 - Numerical Methods and Fourier Analysis	17AE01 - Engineering Fluid Mechanics	17AE02 - Engineering Thermodynamics	17AE03 - Strength of Materials	17AE04 - Elements of Aerospace Engineering	17ME05 - Metallurgy and Material Science	17PD03 - Professional Ethics and Human Values
CE	17FE07 - Numerical Methods and Fourier Analysis	17EE51 - Fundamentals of Electrical Engineering	17CE04 - Strength of Materials - I	17CE05 - Engineering Geology	17CE06 - Mechanics of Fluids	17CE07 - Concrete Technology	17PD03 - Professional Ethics and Human Values
CSE	17FE08 - Probability and Statistics	17FE03 - Environmental Science	17CI03 - Discrete Mathematical Structures	17CI04 - Python Programming	17CI05 - Data Structures	17CI06 - Computer Architecture	---
ECE	17FE07 - Numerical Methods and Fourier Analysis	17CI01 - Computer Programming	17EC05 - Signals and Systems	17EC06 - Random Variables and Stochastic Processes	17EC07 - Pulse and Switching Circuits	17EC08 - Analog Integrated Circuits	17PD03 - Professional Ethics and Human Values
EEE	17FE07 -Numerical Methods and Fourier Analysis	17EE02 - Electric and Magnetic Fields	17EE03 - Network Theory - I	17EE04 - Digital Logic Circuit Design	17CI05 - Data Structures	17EE05 - Power Generation and Utilization	17PD03 - Professional Ethics and Human Values
EIE	17FE07 - Numerical Methods and Fourier Analysis	17FE03 - Environmental Science	17EE53 - Electrical Technology	17EI02 - Transducers	17EC03 - Analog Electronic Circuits	17EC04 - Digital Electronic Circuits	---
IT	17FE07 - Numerical Methods and Fourier Analysis	17FE03 - Environmental Science	17CI07 - OOPs through Java	17IT01 - Operating System Principles	17CI02 - Digital Logic Design	17CI09 - Data Base Management Systems	---
ME	17FE07 - Numerical Methods and Fourier Analysis	17FE03 - Environmental Science	17EC50 - Basic Electronics Engineering	17ME03 - Thermodynamics	17ME04 - Mechanics of Solids	17ME05 - Metallurgy and Material Science	---

Note: Any omissions or clashes in the time table may please be informed to the Controller of Examinations immediately.

Date: 24 MAR 2026

CONTROLLER OF EXAMINATIONS

PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs 2. T&P cell, Transport in-charge & Librarian
3. Canteen, PD, Security & Hostels 4. Coordinator-Disciplinary 5. Notice Boards

H.T.No.										

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R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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B.Tech. (III Semester) Supplementary Examinations

17FE07-NUMERICAL METHODS AND FOURIER ANALYSIS
(ASE,CE,ECE,EEE,EIE,IT&ME)

Time : 3 hours | Max. Marks : 60

Answer all questions with either or choice
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Applying Regula-Falsi method, find a real root of the equation $f(x) = x^3 - 4x - 9 = 0$.	6M	CO1	L3
(b)	Evaluate I= $\int_0^1 \frac{dx}{1+x}$ with n= 6 using Simpson's 1/3 rule.	6M	CO1	L3
	(OR)			
2(a)	Using Newton – Raphson method find the root of the equation $xe^x = 3$.	6M	CO1	L3
(b)	Using Trapezoidal rule, evaluate $\int_0^2 e^{-x^2} dx$, by taking h = 0.25	6M	CO1	L3
3(a)	Find f(0.3) by using Newton's forward difference table X: 0, 1, 2, 3, 4 f(X): 1, 14, 15, 5, 6	6M	CO2	L3
(b)	Find the unique polynomial of p(x) of degree two or less such that $p(1)=1, p(3)=27, p(4)=64$ using Lagrange's interpolation	6M	CO2	L3
	(OR)			
4(a)	Using Newton's Backward difference table find y(4.5) X: 0, 1, 2, 3, 4, 5 Y: 0, 1, 16, 8, 256, 62	6M	CO2	L3
(b)	Find the value of (i) $\Delta^{10}[(1-x)(1-2x^2)(1-3x^3)(1-4x^4)]$ (ii) $\Delta^6[(1+x)(1+2x^2)(1+3x^3)]$	6M	CO2	L2
5(a)	Given that $y' = 2y + 3e^x$, $y(0)=0$, find an approximate value of y at x=0.2 using Taylor's series method.	6M	CO3	L3
(b)	Apply Runge - Kutta fourth order method to solve the initial value problem $\frac{dy}{dx} = y - x, y(0) = 2$ and find y(0.1).	6M	CO3	L3
	(OR)			
6(a)	Solve $\frac{dy}{dx} = y - x, y(0) = 2$, by using Picard's method upto the third approximation and hence find y(0.1).	6M	CO3	L3
(b)	Given that $y' = x^2 - y$, $y(0)=1$ using modified Euler's method obtain y(0.1).	6M	CO3	L3
7(a)	For the following data fit a straight line y = a+bx X: 0, 1, 2, 3, 4 Y: 1, 1.8, 1.3, 2.5, 6.3	6M	CO4	L3

(b)	Construct a parabola from the following data by the method of least squares. x: 0, 5, 10, 15, 20, 25 y: 12, 15, 17, 22, 24, 30	6M	CO4	L3
	(OR)			
8(a)	By the method of least squares, fit an exponential curve b $y = ae^{bx}$ for the following data. X: 10, 12, 15, 23, 20 Y: 14, 17, 23, 25, 21	6M	CO4	L3
(b)	Fit a second degree polynomial for the following data x: 1, 2, 3, 4, 5 y: 5, 12, 26, 60, 100	6M	CO4	L3
9(a)	Find the Fourier series to represent the function $f(x)=x^2$ in $-\pi < x < \pi$.	6M	CO5	L3
(b)	Express the function $f(x) = \pi x$ as half – range cosine series on $0 < x < \pi$.	6M	CO5	L3
	(OR)			
10(a)	Obtain the Fourier transform of $f(x) = \begin{cases} 1-x^2 & for\ \lvert x\rvert \le 1 \\ 0 & for\ \lvert x\rvert > 1 \end{cases}$	6M	CO5	L3
(b)	Evaluate Fourier sine and cosine transform of $f(x)= e^{-x}, x > 0$	6M	CO5	L3

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B.Tech. (III Semester) Supplementary Examinations

17FE03-ENVIRONMENTAL SCIENCE

(CSE,EIE,IT&ME)

9.22

Time : 3 hours Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Justify the need for public awareness of Environmental Studies.	6M	CO1	L3
(b)	What are the major causes of displacement of people? Discuss in the light of some case studies.	6M	CO1	L1
	(OR)			
2(a)	Differentiate between re-habilitation and re-settlement of people.	6M	CO1	L2
(b)	Justify the significance of IT in the medical advances in terms of human health.	6M	CO1	L2
3(a)	What are the major consequences of over-exploitation of mineral resources? How can they be conserved?	6M	CO2	L1
(b)	Can you suggest some measures needed to be taken for conserving forest wealth?	6M	CO2	L1
	(OR)			
4(a)	What are the impacts of deforestation? And suggest possible solutions.	6M	CO2	L1
(b)	What are the adverse consequences of modern agriculture on environment?	6M	CO2	L1
5(a)	Define an ecosystem. And classify the structure and functions of an ecosystem.	6M	CO3	L1
(b)	Explain the different types of food chains and food webs with examples.	6M	CO3	L2
	(OR)			
6(a)	What are the criteria to select a biodiversity hotspot? Name the hotspots in India.	6M	CO3	L1
(b)	Explain the efforts taken towards conservation of biodiversity.	6M	CO3	L2
7(a)	Define greenhouse effect. List out any five greenhouse gases.	6M	CO4	L1
(b)	What are the various alternatives adapted in municipal solid waste management?	6M	CO4	L1
	(OR)			
8(a)	What is global warming and summarize its impacts?	6M	CO4	L1
(b)	Write short notes on landslides and earth quakes with the possible mitigation measures to be taken.	6M	CO4	L1
9(a)	When was Water (Prevention and Control of Pollution) Act, framed in India? Outline the important features of this Act.	6M	CO5	L1
(b)	List out the major objectives of Green Building.	6M	CO5	L1
	(OR)			
10(a)	When was Air (Prevention and Control of Pollution) Act, framed in India? Outline the important features of this Act.	6M	CO5	L1
(b)	What are the major objectives of Stockholm conference?	6M	CO5	L1

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B.Tech. (III Semester) Supplementary Examinations

17EE02-ELECTRIC AND MAGNETIC FIELDS
(EEE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Determine the electric field intensity $\bar{E}$ due to an infinite sheet charge having uniform charge density of row ρ_s **c/m²** at point P placed in xy plane.	6M	CO1	L2
(b)	A charge Q_1=**-20μC** is located at P (-6, 4, 7) and a charge Q_2=50μC is located at R (5, 8, -2) in a free space. If distances are given in meters, find out the force exerted on Q_2 by Q_1 in vector form.	6M	CO1	L3
	(OR)			
2(a)	State and explain the Coloumb's law in vector form.	6M	CO1	L2
(b)	Point charges of 50nC each are located at A(1,0,0), B(−1,0,0), C(0, 1, 0), and D(0,−1, 0) in free space. Find the total force and total electric field intensity on the charge at A.	6M	CO1	L3
3(a)	Derive the solution of Laplace equation in one variable using Cartesian coordinate system.	6M	CO2	L2
(b)	Determine whether or not the following potential field satisfy the Laplace equation: (i) $V = x^2 - y^2 + z^2$ (ii) $V = r \cos \Phi + z$.	6M	CO2	L2
	(OR)			
4(a)	Describe Ohm's law in point forms and behaviour of conductors in an electric field with help of neat diagrams.	6M	CO1	L2
(b)	For the $D=(2y^2+z)\,a_x+4xy\,a_y+x\,a_z$ C/m², determine (i) The volume charge density at (−1,0,3) (ii) The flux through the cube defined by $0 \le x \le 1$, $0 \le y \le 1$, $0 \le z \le 1$ (iii) The total charge enclosed by the cube.	6M	CO1	L3
5(a)	A Circular loop located on $x^2 + y^2 = 9$, $z = 0$, carries a direct current of 10 A along a_ϕ. Determine magnetic field intensity H at (0,0,4) and (0,0,-4).	6M	CO3	L4
(b)	Derive the expression for magnetic field intensity $\bar{H}$ at the center of the circular conductor carrying a direct current I.	6M	CO3	L2
	(OR)			
6(a)	Prove that the magnetic field intensity due to straight filamentary element i.e. $H = \frac{I}{2\pi\rho}$.	6M	CO3	L3
(b)	Find the incremental field dH at point of interest (0,1,2). The current element $Idl = (0.2a_x - 0.4a_z)\,\mu A$ is located at point (2, 1, 0).	6M	CO3	L3

7(a)	Illustrate about the magnetic scalar potential.	6M	CO3	L2
(b)	Derive the mutual inductance between a straight long wire and a square loop wire in the same plane.	6M	CO3	L3
	(OR)			
8(a)	Define magnetic dipole moment and derive an expression for Torque produced on a closed current loop.	6M	CO4	L3
(b)	Toroid has 1000 turns with area of cross-section of $10mm^2$ and mean-radius is 10mm, find value of Self-Inductance.	6M	CO4	L3
9(a)	Illustrate the Maxwell's equations in both integral and differential form for time varying electromagnetic fields with a neat diagram.	6M	CO4	L2
(b)	A rod with length 8cm is moving along y-axis. If $B = 2a_z wb/m^2, v = \frac{1}{2}a_x m/sec$ then find the induced emf in the rod.	6M	CO4	L3
	(OR)			
10(a)	List out the differences between static induced EMF and dynamic induced EMF.	6M	CO5	L1
(b)	State and explain the Faraday's laws of electromagnetic induction.	6M	CO5	L2

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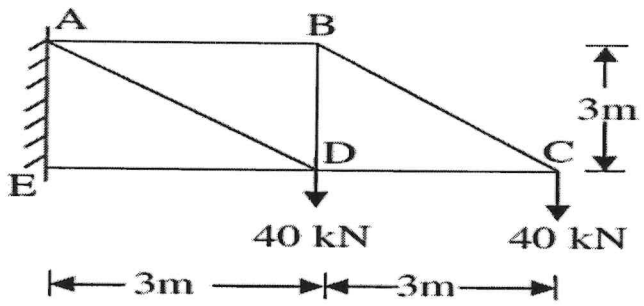
B.Tech. (III Semester) ~~Regular~~/Supplementary Examinations

17CE04-STRENGTH OF MATERIALS-I
(CE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Formulate the relation between Modulus of Elasticity, Bulk Modulus and Poisson's Ratio of an elastic body.	6M	CO1	L3
(b)	A circular rod of 20 mm diameter and 500 mm long is subjected to a tensile force of 45 kN. E for steel is 200kN/mm^2. Evaluate the stress, strain and elongation in the bar.	6M	CO1	L3
	(OR)			
2(a)	A copper rod, 25 mm in diameter is encased in steel tube 30mm internal diameter and 35 mm external diameter. The ends are rigidly attached. The composite bar is 500 mm long and is subjected to an axial pull of 30 kN. Determine the stresses in the rod and the tube. Take E for steel = 2 x 10^{5}N/mm^2 and E for copper as 1 x 10^5 N/mm^2.	6M	CO1	L2
(b)	Two walls 10 m apart are stayed together by a 30 mm diameter steel rod with metal plates and nuts screwed at each end. The nuts are screwed when the bar is heated to a temperature of 420 K. Evaluate the pull exerted by the bar on cooling to a temperature 300 K if (i) the ends do not yield, (ii) if they yield by 3 mm. Take coefficient of expansion for steel = 11.5 X 10^{-5} per K and E = 2.05 x 10^5 N/mm^2.	6M	CO1	L2
3(a)	Mention the types of beams based on various criteria.	6M	CO2	L2
(b)	Draw the shear force and bending moment diagrams for a cantilever beam of length 4 m if two anti-clockwise moments of 15 kNm and 10 kNm are applied at the mid-span and the free end, respectively.	6M	CO2	L3
	(OR)			
4(a)	A cantilever beam of length 3 m carries a uniformly distributed load of 1.5 kN/m run over a length of 2 m from the free end. Sketch the SFD and BMD.	6M	CO2	L3
(b)	Derive the relation between rate of loading, shear force and bending moment for a beam carrying a uniformly distributed load of w per unit length over whole span.	6M	CO2	L2
5(a)	Prove that the maximum shear stress of a Circular section is equal to 1.33 times of average shear stress.	6M	CO3	L3
(b)	Calculate section modulus for (i) Rectangular (ii) Circular (iii) Hollow circular (iv) Hollow rectangular sections.	6M	CO3	L2
	(OR)			

6(a)	Compare the weights of two beams of the same material and of equal strength, one being circular section and solid, and the other being of hollow circular section, the internal diameter being $3/4^{th}$ of the external diamete.	6M	CO3	L3
(b)	The maximum shear stress in a beam of rectangular section is 1.5 $\tau_{average}$. Judge the statement.	6M	CO3	L3
7(a)	A solid shaft has to transmit 75 kW at 200rpm. Taking allowable shear stress as $75N/m^2$, find suitable diameter for the shaft, if the maximum torque transmitted on each revolution exceed the mean by 25%.	6M	CO4	L3
(b)	A closed coiled helical spring made of 6mm diameter steel wire has 20 coils, each of 100mm mean diameter, when subjected to axial loads of 70N, Calculate (i) The maximum shear stress produced (ii) The deflection (iii) The energy stored.	6M	CO4	L3
	(OR)			
8(a)	Define the term 'Polar modulus'. Find the expression for polar modulus for a solid shaft and for a hollow shaft.	6M	CO4	L1
(b)	The shearing stress in a solid shaft is not to exceed 45 when the torque transmitted is 4000 N-m. Determine the minimum diameter of the shaft. Also determine the power transmitted by the shaft at 150 r.p.m.	6M	CO4	L2
9.	Determine the forces in the various members of the truss shown in fig.2, using method of joints.  Fig.2	12M	CO5	L3
	(OR)			
10(a)	Derive an expression for longitudinal and hoop stresses for a thin cylinder of internal diameter 'd' and thickness 't' subjected to an internal pressure of magnitude 'p'.	6M	CO5	L2
(b)	A thick cylinder of internal diameter 160 mm is subjected to an internal fluid pressure of 8 N/mm^2. Compute the thickness of metal necessary for the cylinder, if the maximum hoop stress in the section is not to exceed 35 N/mm^2.	6M	CO5	L3

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B.Tech. (III Semester) Supplementary Examinations

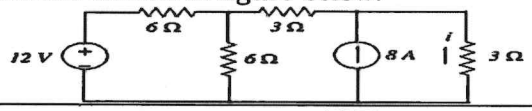
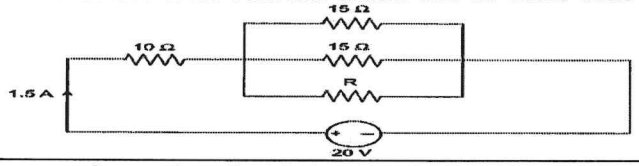
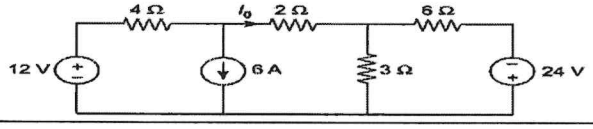
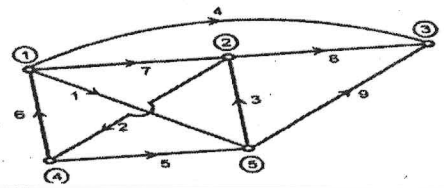
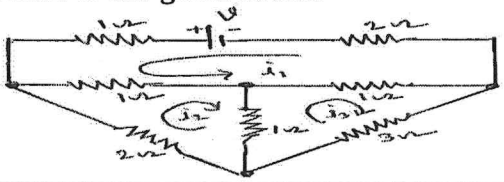
17EE03-NETWORK THEORY-I

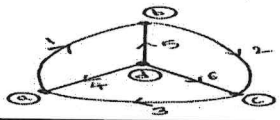
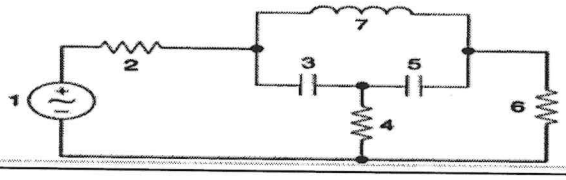
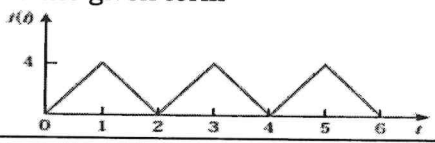
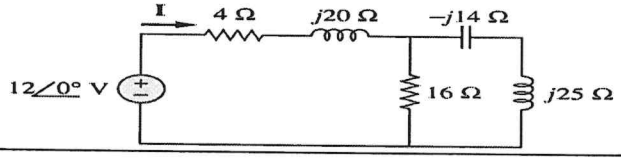
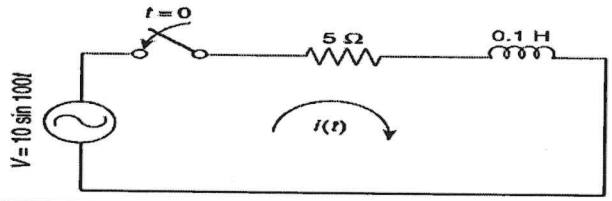
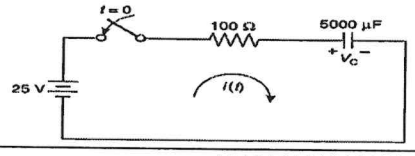
(EEE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Summarize the procedure to calculate node voltages of an electrical network with ideal voltage source between any two nodes.	6M	CO1	L2
(b)	Apply mesh analysis and calculate the current flowing through 3 Ohms element for the network shown in figure below. 	6M	CO1	L3
	(OR)			
2(a)	A resistance of 10 Ω is connected in series with two resistances each of 15Ω arranged in parallel. What resistance must be added across this parallel combination so that the total current taken will be 1.5A with 20 V applied? 	6M	CO1	L2
(b)	Using source transformation find I_0 in the circuit shown in the figure. 	6M	CO1	L3
3(a)	Derive an expression for coefficient of coupling.	6M	CO1	L4
(b)	Two similar coils connected in series gave a total inductance of 600 mH and when one of the coil is reversed, the total inductance is 300 mH. Determine the mutual inductance between the coils and coefficient of coupling.	6M	CO2	L2
	(OR)			
4(a)	Predict the amount of magnetic flux developed in the composite magnetic circuit.	6M	CO2	L1
(b)	Two coupled coils with L1 =0.02H,L2=0.01H,k=0.5 are connected in four different ways: series aiding, series opposing and parallel with both arrangements of the winding sense. What area the four equivalent inductances?	6M	CO2	L2
5(a)	Develop cut-set schedule, write the fundamental cut-set matrix, and establish the node equations, branch voltages in terms of twig voltages to the given graph(Choose a tree with the branches 3,5,6,8). 	6M	CO1	L3
(b)	Draw the dual network to the given circuit 	6M	CO1	L3
	(OR)			

6(a)	Develop tie-set schedule, write the fundamental tie-set matrix and establish the loop equations, branch currents in terms of loop currents to the given graph (Choose a tree with the branches 4,5,6). 	6M	CO1	L3
(b)	For the given network, Draw the graph and write the Incidence matrix and reduced incidence matrix. 	6M	CO1	L2
7(a)	Compute the resonant frequency,cut-off frequencies band width and quality factor of a series a.c circuit consisting of a coil resistance 100Ω and inductance of 10mH and capacitance of 5μF.	6M	CO4	L3
(b)	Draw the current locus diagram of series RC circuit with respect to C and prove that it's a circle.	6M	CO4	L2
	(OR)			
8(a)	Evaluate Form factor to the given form 	6M	CO1	L3
(b)	Compute the current delivered by the source, average power, reactive power and power factor of the source of the source in the given circuit 	6M	CO1	L3
9(a)	Derive the complete solution for transient response in series R-C circuit for AC excitation.	6M	CO3	L3
(b)	A series RL circuit shown in the figure is excited by sinusoidal voltage source v=10 sin 100t Volts, by closing at t=0. Take R=5 Ω and L=0.1H. Determine the current i(t) flowing through the RL circuit. 	6M	CO3	L2
	(OR)			
10(a)	A series R-L circuit with initial current in the inductor is connected to a D.C voltage V at t=0. Derive expression for the instantaneous current through the inductor for t > 0.	6M	CO3	L1
(b)	A series RC circuit with R=100Ω AND C=500μF has a DC voltage of 25V applied through a switch at t=0. Find the equation of the current, voltage across the capacitor and resistor. Assume that there is no initial charge on the capacitor 	6M	CO3	L2

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B.Tech. (III Semester) Supplementary Examinations

17EC50-BASIC ELECTRONICS ENGINEERING

(ME)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What is Energy Band Diagram? Classify materials based on Energy Bands.	6M	CO1	L2
(b)	Explain the current flow due to majority and minority carriers in semiconductors.	6M	CO1	L2
	(OR)			
2(a)	Define mobility and conductivity of a material.	6M	CO1	L1
(b)	Summarize the types of semiconductors and mention the majority and minority carriers in it.	6M	CO1	L2
3(a)	Predict the expression for ripple factor using shunt capacitor filter of a full wave rectifier.	6M	CO2	L2
(b)	For an N-P-N transistor collector current I_C = 5m Amps, base current I_B = 50μ Amps estimate α, β, and γ of the transistor.	6M	CO2	L3
	(OR)			
4(a)	List out various types of Bipolar junction transistors. Sketch the symbols used for them and explain the functions of their terminals.	6M	CO2	L2
(b)	Sketch the bridge rectifier circuit, analyze its operation when applied with AC input and mention the expressions for various parameters.	6M	CO2	L3
5(a)	For a fixed biased transistor amplifier derive expressions for 'S', 'S^I' and 'S^{II}'.	6M	CO3	L3
(b)	Design a collector to base bias transistor amplifier for the specifications V_{CC} = 15V, V_{CE} = 5V, I_C =5 m Amps and β=100.	6M	CO3	L3
	(OR)			
6(a)	Calculate β of the transistor, S, S^I and S^{II} for the fixed bias circuit V_{CC} = 10V, V_{CE} = 4V, R_B=100kΩ, R_C =2kΩ, V_{BE} = 0.7V.	6M	CO3	L3
(b)	Predict the expression for stability factor 'S' for a collector to base bias circuit.	6M	CO3	L3
7(a)	Convert the following numbers into binary and to its equivalent Gray code numbers. (i) $(96)_{10}$ (ii) $(45)_{16}$ (iii) $(235)_8$	6M	CO4	L2
(b)	Simplify the following functions using k-map: (i) $F(A,B,C,D) = \sum(2,3,6,7,8,9,11,12,13) + d(0,1,14)$ (ii) $F(A,B,C,D) = \sum(0,1,2,4,5,6,8,9,10,12,13,14)$	6M	CO4	L3
	(OR)			
8(a)	Convert the following numbers in decimal (i) $(1023.3)_4$ (ii) $(40123)_5$ (iii) $(0.354)_6$	6M	CO4	L2
(b)	Obtain the 1's and 2's complement of the following binary numbers 1010101, 10000, 00000.	6M	CO4	L2
9(a)	List the differences between Multiplexer and Encoder.	6M	CO5	L1
(b)	Implement inverting summing amplifier circuit using IC-741 Op-amp.	6M	CO5	L2
	(OR)			
10(a)	Develop a circuit that used to convert given four bit binary code into gray code.	6M	CO5	L3
(b)	Implement the Half adder and half subtractor circuits using basic logic gates.	6M	CO5	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

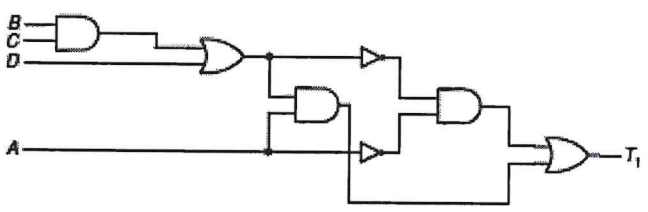
Revaluation 16/4/26

B.Tech. (III Semester) Supplementary Examinations

17EE04-DIGITAL LOGIC CIRCUIT DESIGN
(EEE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What is an XS-3 code? Obtain the XS-3 code for the decimal numbers 0 to 15.	6M	CO1	L2
(b)	Determine the Hamming code for the word 10111 with odd parity.	6M	CO1	L3
	(OR)			
2(a)	Convert the following numbers into binary & octal systems (i) $(52)_{10}$ (ii) $(105)_{10}$	6M	CO1	L3
(b)	Discuss the representation of signed binary numbers.	6M	CO1	L2
3(a)	Determine the canonical sum-of-products representation of the following functions: $f(x,y,z) = z + (x' + y)(x + y')$ $f(x,y,z) = x + (x'y' + x'z)'$	6M	CO2	L3
(b)	Find the minimal sum-of-products and minimal product-of-sums expressions for $f(w,x,y,z) = \prod(1,4,5,6,11,12,13,14,15)$	6M	CO2	L3
	(OR)			
4(a)	(i)Given $AB' + A'B = C$, show that $AC' + A'C = B$ (ii) Express T_1 as functions of A,B, C and D 	6M	CO2	L3
(b)	With the aid of a four-variable Karnaugh map, derive minimal sum-of products expressions for each of the following functions: $f(w,x,y,z) = \sum(1,3,4,5,9,10,11) + \sum_{\phi}(6,8)$	6M	CO2	L3

5(a)	Convert the 4-bit binary code into Gray code and develop the logic circuit.	6M	CO3	L3
(b)	Implement the logic function using 4:1 MUX $F(a,b,c) = \Sigma m(1,3,5,6)$ Choose 'a' and 'b' as select lines.	6M	CO3	L3
	(OR)			
6(a)	Develop the combinational circuit of Half adder.	6M	CO3	L2
(b)	Implement the logic circuit of 2 to 4 line Decoder.	6M	CO3	L3
7(a)	Discuss the modes of triggering methods of flipflops.	6M	CO4	L2
(b)	Describe the operation of 2-bit ripple down-counter using negative edge-triggered flipflops.	6M	CO4	L2
	(OR)			
8(a)	Describe the operation of clocked D Flip-flop and derive its characteristic equation.	6M	CO4	L3
(b)	Illustrate the operation of buffer and controlled buffer registers.	6M	CO4	L2
9(a)	Explain in detail ASM technique of designing sequential circuit.	6M	CO5	L3
(b)	Explain the state minimization procedure with the help of example.	6M	CO5	L2
	(OR)			
10(a)	What are the limitations of finite state machine?	6M	CO5	L3
(b)	Explain standard form of mealy and moore sequential circuits.	6M	CO5	L2

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B.Tech. (III Semester) Supplementary Examinations

Proof 16/4/26

17ME03-THERMODYNAMICS

(ME)

Time : 3 hours Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Distinguish between control mass and control volume concept with examples.	6M	CO1	L2
(b)	Draw the p-v plane for different processes. (i) Constant pressure (ii) Constant volume (iii) Constant temperature (iv) Polytropic process (v) Adiabatic process (vi) Throttling process	6M	CO1	L1
	(OR)			
2(a)	How does the free expansion process have zero work transfer? Explain with help of a neat diagram.	6M	CO1	L2
(b)	Why does quasistatic process occur infinitely slowly? Justify the statement.	6M	CO1	L2
3(a)	What is perpetual motion machine of first kind?	4M	CO2	L1
(b)	1.5 kg of liquid having a constant specific heat of 2.5 kJ/kg K is stirred in a well-insulated chamber, causing the temperature to rise by 15 ^{0}C. Find the change in internal energy and work done during the process.	8M	CO2	L3
	(OR)			
4(a)	List out different forms of energies in thermodynamics.	6M	CO2	L1
(b)	Discuss that heat and work are mutually convertible in a cycle with the help of Joule's experiment.	6M	CO2	L2
5(a)	State thermal energy reservoir (TER), source and sink in second law of thermodynamics with examples.	6M	CO3	L1
(b)	Apply the laws of thermodynamics to obtain the three general expressions for entropy change of an ideal gas.	6M	CO3	L3
	(OR)			
6(a)	Differentiate between PMM -I and PMM -II	6M	CO3	L1
(b)	State and prove Carnot's theorem.	6M	CO3	L3
7(a)	Discuss the phase transformation process of ice to steam.	6M	CO4	L2
(b)	Find the saturation temperature, the changes in specific volume and entropy during evaporation, and the latent heat of vaporization of steam at 1 Mpa or 10 bar.	6M	CO4	L3
	(OR)			
8(a)	Define equation of state and express the mass fraction, mole fraction, gas constant and specific heat of mixture of gases.	6M	CO4	L1
(b)	Find the enthalpy, entropy, and volume of steam at 1.4 MPa, 380°C.	6M	CO4	L3
9(a)	Show that the efficiency of the Otto cycle depends only on the compression ratio.	6M	CO5	L3
(b)	A Diesel engine has a compression ratio of 14 and cut-off takes place at 6% of the stroke. Find the air standard efficiency.	6M	CO5	L3
	(OR)			
10(a)	Define the term 'mean effective pressure' and how that could it be determined.	4M	CO5	L1
(b)	Describe the working of Otto cycle.	8M	CO5	L2

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B.Tech. (III Semester) Supplementary Examinations

Revised 17/4/26

17CE06-MECHANICS OF FLUIDS

(CE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the concepts of (i) vapour pressure (ii) partial pressure (iii) surface tension.	6M	CO1	L2
(b)	The space between two square flat parallel plates is filled with oil. Each side of the plate is 50 cm. The thickness of the oil film is 10.5 mm. The upper plate, which moves at 3 m/s, requires a force of 98.1 N to maintain the speed. Determine: (i) The dynamic viscosity of the oil in poise, and (ii) The kinematic viscosity of the oil in stokes if the specific gravity of the oil is 0.95.	6M	CO1	L3
	(OR)			
2(a)	Derive an expression for total pressure force and center of pressure for vertical plane surface submerged in liquid.	8M	CO1	L3
(b)	Determine the total pressure and centre of pressure on an isosceles triangular plate of base 5 m and altitude 5 m when it is immersed vertically in an oil of sp.gr. 0.9. The base of the plate coincides with the free surface of oil.	4M	CO1	L3
3.	Write short notes on different types of Fluid flow with examples and neat sketches.	12M	CO2	L2
	(OR)			
4(a)	A stream function follows the law $\Psi=4x^2-4y$Obtain the velocity potential function.	6M	CO2	L2
(b)	Define Reynolds number. What is its significance? List the characteristics of laminar flow.	6M	CO2	L1
5(a)	Derive the Bernoulli's equation from the Euler's equation and state the assumptions made in the derivation of Bernoulli's equation.	6M	CO3	L3
(b)	The water is flowing through a tapering pipe having diameters 400mm and 200 mm at a sections1 and 2 respectively. The discharge through the pipe is 45 litres/sec. The section 1 is 10m above datum and section2 is 8m above datum. Find the intensity of pressure at section2 if that at section1 is 420 kN/m^2.	6M	CO3	L2
	(OR)			
6(a)	What is the principle of Venturi meter? Derive the expression for discharge through an Venturi meter.	6M	CO3	L3

(b)	Oil of specific gravity 0.8 flows through a pipe of 0.25 m diameter. An orifice of 0.1 m diameter is fitted to the pipe to measure the flow rate. A mercury manometer fitted across the orifice records a reading of 0.8 m. Calculate the coefficient of discharge of the orifice meter if the flow rate measured by it is 0.082 m^3/s.	6M	CO3	L2
7(a)	Four pipes of same length L, diameter D and friction factor f are connected in parallel. Determine the diameter of the pipe of length L and friction f which will carry the same discharge for the same head loss. Use Darcy's – Weishbach equation.	6M	CO4	L3
(b)	An oil of specific gravity 0.9 and viscosity 0.06 poise is flowing through a pipe of diameter 200 mm at the rate of 60litre / sec. Find the head lost due to friction for a 500m length of pipe. Find the power required to maintain this flow.	6M	CO4	L2
	(OR)			
8(a)	Define physically and mathematically the concept of displacement, momentum and energy thickness of a boundary layer.	6M	CO4	L2
(b)	For the velocity profile for laminar boundary layer $u/U = 3/2\ (y/\delta) - 1/2\ (y/\delta)3$ find the thickness of the boundary layer and the shear stress 1.5 m from the leading edge of a plate. The plate is 2 m long and 1.4 m wide and is placed in water which is moving with a velocity of 200 mm per second. Find the total drag force on the plate if μ for water = 0.01 poise.	6M	CO4	L2
9(a)	State Buckingham's π-theorem with an example.	6M	CO5	L2
(b)	Discuss geometric, kinematic, and dynamic similarity with examples.	6M	CO5	L3
	(OR)			
10(a)	Define & explain (i) Froude's number (ii) Mach number (iii) Model similarities.	6M	CO5	L2
(b)	Explain how Reynolds number similarity is achieved in pipe flow models.	6M	CO5	L2

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B.Tech. (III Semester) Supplementary Examinations

Passed 17/4/26

17CI05-DATA STRUCTURES

(CSE & EEE)

Time : 3 hours Max.Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the concept of Abstract Data Type (ADT) with examples.	6M	CO1	L2
(b)	Explain different operations performed on ADT.	6M	CO2	L2
	(OR)			
2(a)	Explain the Operations performed on a Double linked list in detail.	8M	CO1	L2
(b)	Illustrate the operations on list using pointers.	4M	CO1	L2
3.	Illustrate the Operations on a Stack using Linked List.	12M	CO2	L2
	(OR)			
4(a)	Explain the process of Converting an Infix expression to Postfix expression.	6M	CO2	L3
(b)	Define Queue. Explain the applications of a Queue.	6M	CO2	L3
5(a)	What is Binary Search? Explain in detail with example.	6M	CO3	L2
(b)	Explain Merge sort in detail.	6M	CO3	L2
	(OR)			
6(a)	What is Fibonacci Search? Explain the significance with an example.	6M	CO3	L2
(b)	Explain Bubble sort with example.	6M	CO3	L2
7(a)	Construct a Binary tree with { 1,8,12,3,5,7,6,101,25} and discuss your observations.	6M	CO4	L3
(b)	Explain the differences between Binary Tree and Binary Search Tree.	6M	CO4	L2
	(OR)			
8(a)	Describe Tree Traversals with example.	6M	CO4	L2
(b)	What is AVL tree? Explain the operations.	6M	CO4	L3
9(a)	Define Graph. Explain the BFS algorithm.	6M	CO5	L2
(b)	Explain Prims algorithm.	6M	CO5	L2
	(OR)			
10(a)	What is Hashing? Explain in detail.	6M	CO5	L2
(b)	Explain various collision resolution techniques.	6M	CO5	L2

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B.Tech (III Semester) Supplementary Examinations

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17EC07-PULSE AND SWITCHING CIRCUITS

(ECE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the response of high pass RC circuit for a step input signal.	6M	CO1	L4
(b)	Explain how a high-pass circuit acts as differentiator.	6M	CO1	L2
	(OR)			
2(a)	Explain the response of Low-pass RC circuit for exponential input.	6M	CO1	L4
(b)	Prove that a low pass circuit acts as an Integrator.	6M	CO1	L3
3(a)	Explain clipping at two independent levels using diodes.	6M	CO2	L4
(b)	Draw the circuit of transistor clipper and explain its operation.	6M	CO2	L3
	(OR)			
4(a)	Explain the operation of negative clamping circuit.	6M	CO2	L2
(b)	State and explain clamping circuit theorem.	6M	CO2	L2
5(a)	Explain about the saturation parameters of a transistor.	6M	CO3	L2
(b)	Explain about diode forward recovery time and reverse recovery time.	6M	CO3	L2
	(OR)			
6(a)	Explain about design of transistor switch.	6M	CO3	L3
(b)	Explain the operation of Bistable Multivibrator with the help of a circuit diagram.	6M	CO3	L3
7(a)	Explain the operation of Schmitt trigger.	8M	CO4	L2
(b)	Design a Schmitt trigger circuit for the following specifications: UTP = 8 V, LTP = 5 V, VCC = 15V, IC (sat) = 2 mA, hFE(min) = 25.	4M	CO4	L3
	(OR)			
8(a)	Explain the operation of collector coupled Monostable multivibrator.	6M	CO4	L2
(b)	Explain how an astable multivibrator can be used as a voltage to frequency convertor.	6M	CO4	L3
9(a)	Explain the basic principles behind miller time base generator.	6M	CO5	L2
(b)	Discuss about the transistor bootstrap time base generator.	6M	CO5	L2
	(OR)			
10(a)	Explain the operation of four diode sampling gate.	6M	CO5	L2
(b)	List any three applications of sampling gates and explain any one of them in detail.	6M	CO5	L3

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B.Tech (III Semester) Supplementary Examinations

Proof 17/4/26

17CI02-DIGITAL LOGIC DESIGN

(IT)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Convert the following values from one radix to another. (i) $(456.12)_8 = (\ )_{16}$ (ii) $(AB.CD)_{16} = (\ )_{10}$ (iii) $(876.54)_{10} = (\ )_2$	6M	CO1	L3
(b)	Perform the following operations using 1's and 2's complement. (i) 1011-110000 (ii) -76+(+26)	6M	CO1	L3
	(OR)			
2(a)	Explain briefly about the following codes (i) BCD Code (ii) Excess-3 code (iii) ASCII code	6M	CO1	L2
(b)	Encode the binary word 10111 into 9 bit hamming code for odd parity.	6M	CO1	L3
3(a)	Simplify the following using K-map method and implement it with basic logic Gates. $F(A,B,C,D) = \Sigma m(0,7,8,9,10,12) + \Sigma d(2,5,13)$	6M	CO2	L3
(b)	Reduce the following Boolean expressions (i) (AB'+AC')(BC+BC')(ABC) (ii) A'B(D'+C'D)+B(A+A'CD).	6M	CO2	L3
	(OR)			
4(a)	Obtain the simplified expressions in sum of products for the following Boolean functions using Karnaugh-Map. (i) $F(A, B,C,D) = \Sigma (7,13, 14, 15)$ (ii) $F(w,x,y,z) = \Sigma (2,3,12,13,14,15)$	6M	CO2	L3
(b)	Verify Demorgan's theorems and implement using logic circuits.	6M	CO2	L4
5(a)	Realize Full Subtractor and implement using two half subtractors.	6M	CO3	L3
(b)	Design a 4 to 2 priority encoder.	6M	CO3	L3
	(OR)			
6(a)	What is a multiplexer? Construct a 8:1 multiplexer with two 4:1 multiplexers.	6M	CO3	L3
(b)	Realize the following Boolean function using 8:1 MUX: $F(W, X,Y,Z)= \Sigma(0,1,2,4,5,7,8,9,12,13)$.	6M	CO3	L3
7(a)	Explain difference between combinational and sequential circuits.	6M	CO4	L2
(b)	Convert a D flip flop into JK flip flop.	6M	CO4	L3
	(OR)			
8(a)	Design Johnson's counter using D-Flip flops with timing diagram.	6M	CO4	L3
(b)	Implement a characteristic table for JK flip-flop using NAND gates.	6M	CO4	L3
9(a)	Distinguish between PLA, PAL and PROM.	6M	CO5	L2
(b)	Explain the working of PROM. How logic functions are implemented using PROM?	6M	CO5	L2
	(OR)			
10(a)	Explain RAM and ROM and their differences.	6M	CO5	L2
(b)	Explain the structure and working of PLA with an example.	6M	CO5	L2

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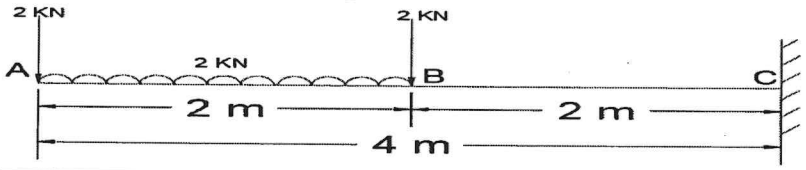
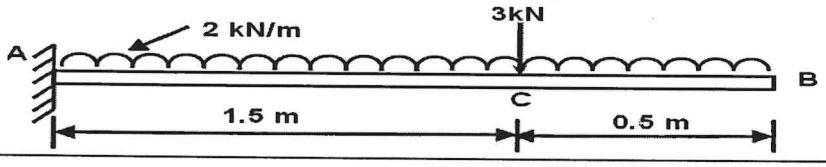
B.Tech. (III Semester) Supplementary Examinations

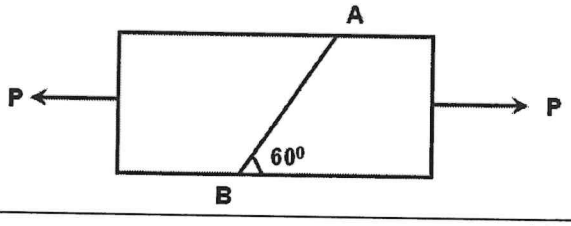
Proof 17/4/26

17ME04-MECHANICS OF SOLIDS
(ME)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Derive the relationship between modulus of elasticity and modulus of rigidity.	6M	CO1	L3
(b)	A circular bar of diameter 25mm and length 300mm is subjected to a tensile force of 40,000N. If the Young's modulus of material is $2x10^5 N/mm^2$, estimate the change in length and diameter of the bar. Assume Poisson's ratio of the material is 0.3.	6M	CO1	L3
	(OR)			
2(a)	Derive an expression for modulus of elasticity in terms of bulk modulus and Poisson's ratio.	6M	CO1	L3
(b)	A bar of 30 mm diameter is subjected to a pull of 60kN. The measured extension on gauge length of 200mm is 0.09mm and the change in diameter is 0.0039mm. Compute the Poisson's ratio and the values of three elastic moduli.	6M	CO1	L3
3.	Draw the shear force and bending moment diagrams for the beam as shown in figure. 	12M	CO2	L3
	(OR)			
4.	Draw the shear force and bending moment diagrams for the cantilever beam as shown in figure. 	12M	CO2	L3
5(a)	Derive the bending equation $M/I = \sigma/y = E/R$.	6 M	CO3	L3
(b)	The shearing stress induced in a solid shaft is $40N/mm^2$ when the torque transmitted is 20,000N-m. Estimate the minimum diameter of the shaft.	6M	CO3	L3
	(OR)			
6.	A hollow shaft is to transmit 300kW power at 80r.p.m. If the shear stress is not to exceed $60N/mm^2$ and the internal diameter is 0.6 of the external diameter, compute the external and internal diameters assuming that the maximum torque is 1.4 times the mean.	12M	CO3	L3

7(a)	A body is subjected to direct stresses in two mutually perpendicular directions accompanied by a simple shear stress. Draw the Mohr's circle of stresses and describe how will you obtain the normal, tangential and resultant stresses on oblique plane.	6M	CO4	L3
(b)	A rectangular bar of cross sectional area of 11000mm^2 is subjected to a tensile load P as shown in figure. The permissible normal and shear stresses on the oblique plane AB are given as 7N/mm^2 and 3.5N/mm^2 respectively. Determine the safe value of P.  	6M	CO4	L3
	(OR)			
8(a)	Prove that the shear stress distribution in a circularlar section of a beam which is subjected to a shear force F is given by $\tau = \frac{F}{3I}\left(\frac{d^2}{4} - y^2\right)$	6M	CO4	L3
(b)	A wooden beam 100mm wide and 150mm deep is simply supported over a span of 4m. If the shear force at a section of the beam is 4500N, compute the shear stress at a distance of 25mm above N.A.	6M	CO4	L3
9(a)	Explicate various boundary conditions to calculate the constants in Lame's Equations.	6M	CO5	L2
(b)	A thin cylindrical shell with following dimensions is filled with a liquid at atmospheric pressure. Length=1.2m, external diameter=20cm, thickness of metal=8mm, Find the value of the pressure exerted by the liquid on the walls of the cylinder and the hoop stress induced if an additional volume of 25cm^3 of liquid is pumped into the cylinder. Take E=2.1×10^{5}N/mm^2 and poisons ratio=0.33.	6M	CO5	L3
	(OR)			
10(a)	List out some practical applications of shells.	6M	CO5	L1
(b)	A cylindrical pipe of diameter 1m and thickness 10mm is subjected to internal fluid pressure of 0.8N/mm^2. Evaluate (i) circumferential stress developed in the pipe and (ii) maximum shear stress.	6M	CO5	L3

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18 APR 2026

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar: Mylavaram – 521 230: Krishna Dist.: A.P.

B.Tech. (III Semester) ~~Regular~~/Supplementary Examinations
17EE05-POWER GENERATION AND UTILIZATION
(EEE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit.
All questions carry equal marks
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UNIT-I

1. Draw single line diagram of a typical power system. Indicate various sections of it and mention typical voltages of generation, transmission and distribution. [12M]

(OR)

2(a) "The annual per capita income of electrical energy is taken as an index of the economic development, prosperity and standard of living of a nation", Elaborate. [6M]

(b) What is meant by pumped storage plant? Discuss the advantages of a pumped storage plant for short peak load operation. [6M]

UNIT-II

3(a) With the help of a neat diagram, describe the working of a pressurized water reactor used in a nuclear power plant. [6M]

(b) Briefly describe the radioactive pollution of environment caused by nuclear power plants. [6M]

(OR)

4(a) What is solar energy? How solar energy may be utilized in generation of electrical power? [6M]

(b) How wind energy can be converted into electrical energy? [6M]

UNIT-III

5(a) Derive the expression for economic load sharing between base and peak load power plants. [6M]

(b) How a good load factor and good diversity factor help to keep overall cost of generation low? [6M]

(OR)

6(a) Enumerate the items that constitute the fixed and running charges of generation of electrical energy. [6M]

(b) A generating station has a maximum demand of 50 MW. Calculate
(i) The fixed cost (ii) The running cost (iii) Number of units consumed per year and (iv) The cost per Kwhr, from the following data:
Capital cost=Rs 150×10^6, Annual cost of fuel oil=Rs.9×10^6, Taxes, wages & salaries=Rs.6×10^6, Interest and depreciation=10%, Annual load factor=50%. [6M]

UNIT-IV

7(a) Why is tungsten selected as the filament material and on what factors does its life depend? [6M]

(b) Discuss the advantages of using inert gas in filament lamps and the purpose to get the filament as coiled coil. [6M]

(OR)

8(a) Distinguish between 'fluorescence' and 'phosphorescence' properties of materials used in lighting equipment. [6M]

(b) What are the requirements of good lighting? Enumerate the factors to be considered while designing an indoor lighting scheme. [6M]

UNIT-V

9(a) What are the factors which decide the frequency and voltage of the dielectric heating? [6M]

(b) Derive an expression for the heat produced in a dielectric material. [6M]

(OR)

10(a) Differentiate between carbon and metallic arc welding. [6M]

(b) Mention the relative merits and demerits of carbon and metallic arc welding. [6M]

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L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (III Semester) Supplementary Examinations

Recd 18/4/26

17CI09-DATA BASE MANAGEMENT SYSTEMS
(IT)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss about three schema architecture with neat diagram.	6M	CO1	L2
(b)	Define the following terms with suitable example (i) Candidate key (ii) Primary key (iii) Foreign key.	6M	CO1	L1
	(OR)			
2(a)	Differentiate Database System with File processing system.	6M	CO1	L2
(b)	List and define three types of Database languages with example.	6M	CO2	L1
3(a)	List different aggregate functions in SQL with an example.	6M	CO2	L1
(b)	Define the following Relational Algebra with suitable example (i) Union (ii) Rename Operation (iii) Set Difference.	6M	CO2	L1
	(OR)			
4(a)	State various fundamental operations in the relational Algebra with suitable examples.	6M	CO2	L1
(b)	Discuss different types of constraints with suitable examples.	6M	CO2	L2
5(a)	What is dependency preservation property for decomposition? Giveits importance.	6M	CO3	L1
(b)	Illustrate Boyce Codd normal form with suitable examples.	6M	CO3	L2
	(OR)			
6(a)	Illustrate the concept of scheme refinement in database design.	6M	CO3	L4
(b)	What is decomposition? Explain the two types of decompositions.	6M	CO4	L2
7(a)	Explain about 2 phase locking protocol, strict 2 phase locking protocol and conservative 2 phase locking protocol.	6M	CO4	L2
(b)	Discuss about ARIES algorithm in detail for crash recovery.	6M	CO4	L2
	(OR)			
8(a)	Define Lock granularity. Discuss different types of Locking mechanisms on object.	6M	CO4	L2
(b)	Demonstrate Log based recovery Mechanism with suitable examples.	6M	CO4	L3
9(a)	Compare and contrast between heap files and sorted files.	6M	CO5	L2
(b)	What is dynamic hashing? Give the implementation details of it.	6M	CO5	L2
	(OR)			
10(a)	Discuss in detail about indexed accessing methods.	6M	CO5	L2
(b)	Describe in detail about internal hashing Techniques.	6M	CO5	L2

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B.Tech. (III Semester) ~~Regular~~/Supplementary Examinations

17ME05-METALLURGY AND MATERIAL SCIENCE
(ME)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Construct and explainClosed packed hexagonal structure.	6M	CO1	L3
(b)	Identify the Hume Rothary rules and explain.	6M	CO1	L3
	(OR)			
2(a)	Develop the mechanism of crystallization of metals.	6M	CO1	L3
(b)	Construct the differences between Interstitial solid solution and Substitution solid solution.	6M	CO1	L3
3(a)	What is coring? Explain.	6M	CO2	L1
(b)	What is allotropy? Explain.	6M	CO2	L1
	(OR)			
4.	What are Eutectic, eutectoid and pertitectoid reactions in Fe-Fe_3C diagram? Explain.	12M	CO2	L1
5(a)	Classifythe various types of cast irons.	6M	CO3	L2
(b)	Explain properties and applications of high carbon steel.	6M	CO3	L2
	(OR)			
6.	Summarize and explain about the structure, properties and applications of Aluminum and its alloys.	12M	CO3	L2
7(a)	What is Strain hardening? Explain.	6M	CO4	L2
(b)	Compare properties of cold and hot worked parts.	6M	CO4	L2
	(OR)			
8.	Show the TTT diagram for eutectoid steel and explain.	12M	CO4	L2
9.	What are Carbon-carbon composites? Explain.	12M	CO5	L1
	(OR)			
10.	What is Filament winding and continuous pultrusion process?	12M	CO5	L1

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