LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram-521 230 :: Krishna Dist. :: A.P
Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

B.Tech.(VI Semester) (R17) Regular/Supplementary Examinations, August 2021

TIME TABLE

TIME :10.00 AM to 01.00 PM **A.Y. 2020-21**

DATE	ASE	CE	CSE	ECE	EEE	EIE	IT	ME
05-08-2021 (Thursday)	17AE16 Propulsion –II	17CE20 Design of Steel Structures	17CS05 Android Technologies	17EC20 Linear Control Systems	17EE17 Analog and Digital Signal Processing	17EI10 Process Control Instrumentation	17CI20 Information Security	17ME20 Heat Transfer
07-08-2021 (Saturday)	17AE17 Aircraft Structures-II	17CE21 Irrigation and Water Resources Engineering	17CI16 Data Mining and Data Warehousing	17CI07 OOPs through Java	17EE18 Power System Analysis	17EI11 Bio Medical Instrumentation	17CI16 Data Mining and Data Warehousing	17ME21 Mechanical Engineering Design - II
09-08-2021 (Monday)	17AE18 Flight Dynamics	17CE22 Water and Waste Water Engineering	17CI17 Data Communications and Computer Networks	17EC21 Antenna and Wave Propagation	17EE19 Power Electronics	17EC10 Digital Signal Processing	17IT03 R Programming	17ME22 CAD/CAM
11-08-2021 (Wednesday)	17AE19 Finite Element Methods in Engineering	17CE23 Geo Technical Engineering – II	17EC22 Microprocessors and Microcontrollers	17EC22 Microprocessors and Microcontrollers	17EE20 Measurements and Instrumentation	17EI12 Opto Electronics and Laser Instrumentation	17CI15 Automata Theory and Compiler Design	17ME23 Finite Element Analysis
13-08-2021 (Friday)	17AE23 Space Mechanics (PE-II)	17CE25 Railways, Airport Planning and Harbour Engineering (PE-II)	17CS08 PHP Programming (PE-II)	17EC25 Cellular and Mobile Communications (PE-II)	17EC29 Embedded System Design (PE-II)	17EI13 Virtual Instrumentation (PE-II)	17IT05 Object Oriented Software Engineering (PE-II) 17CI24 Image Processing (PE-II)	17ME24 Automobile Engineering (PE-II)
16-08-2021 (Monday)	17MB80 Industrial Engineering and Management (OE-I)	17MB80 Industrial Engineering and Management (OE-I)	17MB80 Industrial Engineering and Management (OE-I)	17MB80 Industrial Engineering and Management (OE-I)	17MB80 Industrial Engineering and Management (OE-I)	17MB80 Industrial Engineering and Management (OE-I)	17MB80 Industrial Engineering and Management (OE-I)	17MB81 Project Management (OE-I) 17MB82 Logistics and Supply Management (OE-I)
18-08-2021 (Wednesday)	17AE91 Industrial Aerodynamics (AoC-II)	17CE91 Low Cost and Eco-Friendly Building Technology (AoC-II)	17CS91 Software Testing Methodologies (AoC-II)	17EC91 Telecommunication Switching Systems and Networks (AoC-II)	17EE91 Electrical Reliability Engineering (AoC-II)	17EI91 Remote Sensing (AoC-II)	17IT91 Network Programming (AoC-II)	17ME91 Design of Experiments (AoC-II)

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

CONTROLLER OF EXAMINATIONS

PRINCIPAL

Date: 24-07-2021

Copy to: 1. Vice-Principal, Deans & HoDs 2. Transport in-charge & Librarian
3. Canteen, Security & Hostels 4. All Notice Boards

H.T.No.										

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17MB80-INDUSTRIAL ENGINEERING AND MANAGEMENT
(ASE,CE,CSE,ECE,EEE,EIE&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)	Define management and what is its nature and importance?	6M	CO1	L1
(b)	Explain Taylor's scientific management theory assumptions and limitations.	6M	CO1	L2
	(OR)			
2(a)	Demonstrate responsibility delegation procedures of the authority.	6M	CO1	L2
(b)	Outline any three organization structures with illustrated diagrams.	6M	CO1	L2
3(a)	What are the principles of plant layouts in the operations management?	6M	CO2	L1
(b)	Describe the Job, Batch and Mass production methods.	6M	CO2	L2
	(OR)			
4(a)	Summarize the basic procedures involved in method study and work study.	6M	CO2	L2
(b)	Identify the factors that influence the plant location identification.	6M	CO2	L1
5(a)	Examine the functions of quality control procedures to ensure the product quality.	6M	CO3	L3
(b)	Recall the meaning of statistical quality control variables and attributes.	6M	CO3	L1
	(OR)			
6(a)	Classify the Economic Order Quantity (EOQ) techniques for effective inventory management.	6M	CO3	L2
(b)	When will be the inventory controlling procedures more efficient for the management?	6M	CO3	L1
7(a)	What are the basic functions of Human Resources (HR) manager?	6M	CO4	L1
(b)	Explain the wages and salaries administration procedures.	6M	CO4	L2
	(OR)			
8(a)	In what way performance appraisal of the employees will motivate them towards the work.	6M	CO4	L2
(b)	Illustrate job evaluation and merit rating mechanisms of HR manager.	6M	CO4	L2
9(a)	Analyze network analysis implementation procedures for project identification.	6M	CO5	L3
(b)	Tabulate the highlights of project cost analysis.	6M	CO5	L1
	(OR)			
10(a)	Differentiate Programme Evaluation and Review Technique (PERT) with Critical Path Method (CPM).	6M	CO5	L2
(b)	Interpret the best procedural methods for the identification of critical path.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17AE23-SPACE MECHANICS
(ASE)

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)	Describe how it may be possible to obtain the translational velocity, in Non-inertial reference frames, derive from first principles.	6M	CO1	L2
(b)	Describe the transformation of space and time coordinates from S to S'.	6M	CO1	L2
	(OR)			
2(a)	At 12 km in the standard atmosphere the pressure, density and temperature are 1.9399×10^4 N/m^2, 3.1194×10^{-1} kg/m^3, and 216.66 K respectively. Using these values calculate the standard atmospheric values of P, ρ and T at 18 kilometer altitude	6M	CO1	L3
(b)	Explain the terms for drag, centripetal acceleration, and relative acceleration.	6M	CO1	L2
3(a)	What are the possible materials that can be used for nose of the long-range ballistic missiles?	6M	CO2	L1
(b)	Discuss the effect of non-spherical gravity perturbations on ballistic body.	6M	CO2	L2
	(OR)			
4(a)	Discuss with suitable diagram on compensating for the initial velocity of the missile due to earth rotation.	6M	CO2	L2
(b)	Determine the free-flight range equation of ballistic missile with neat diagram.	6M	CO2	L3
5(a)	What are libration points? List its applications in space flight.	6M	CO3	L2
(b)	Determine the Lagrange-Jacobi identity, and derive its various aspects in Space mechanics.	6M	CO3	L3
	(OR)			
6(a)	Discuss the short term and long-term perturbation effect on various satellites.	6M	CO3	L2
(b)	Describe the various two-body orbits such as circle, ellipse, parabola, and hyperbola.	6M	CO3	L2
7.	Illustrate in detail about: (i) Hohmann transfer Ascent trajectory. (ii) Direct Ascent trajectory. Explain in which trajectory the satellite will attain a low-altitude circular parking orbit. Make use of neat sketches.	12M	CO4	L2
	(OR)			
8(a)	Discuss the advantages and disadvantages of Cowell's and Encke's perturbation methods.	6M	CO4	L2
(b)	Discuss the rotational effect of earth and its importance in rocket launches.	6M	CO4	L2
9(a)	What is Hohmann transfer? How elliptical transfer between two coplanar circular orbits is achieved?	6M	CO5	L1
(b)	How do we construct interplanetary trajectory?	6M	CO5	L1
	(OR)			
10(a)	Describe about gravity assist trajectories and different other types of trajectories.	6M	CO5	L2
(b)	What are the perturbation forces considered in Interplanetary Trajectories?	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

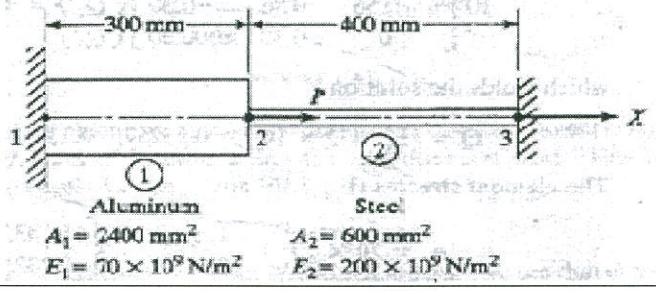
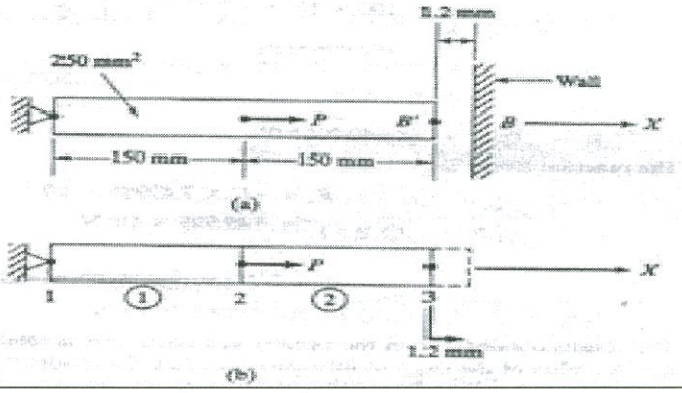
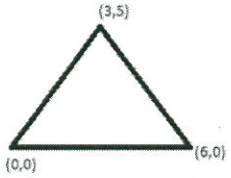
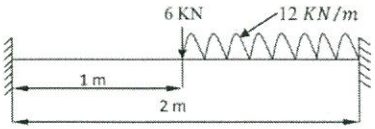
17AE19-FINITE ELEMENT METHODS IN ENGINEERING

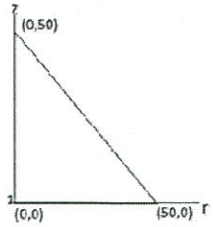
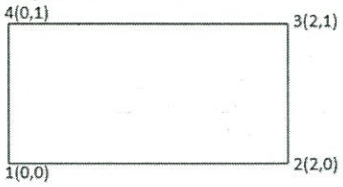
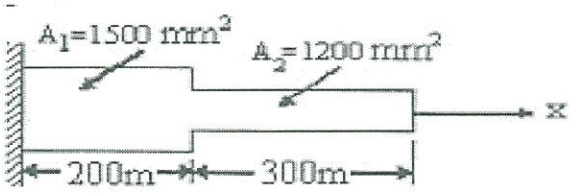
(ASE)

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)	Illustrate the equilibrium state of the system when the system is subjected to different types of loads and explain stress and equilibrium relations.	6M	CO1	L2
(b)	Consider the following figure. An axial load of P=200 KN is applied as shown.(i) Determine the nodal displacements.(ii) Determine the stress in each material.(iii) Determine the reaction forces. 	6M	CO1	L3
	(OR)			
2(a)	List out the steps involved in obtaining an approximate solution using finite element method.	6M	CO1	L2
(b)	Determine the displacement field, stress and support reactions in the body for the figure given below, a load P=60 KN is applied as shown. Take E as 20 GPa. 	6M	CO1	L3
3(a)	Derive the shape functions for beams and draw the shape functions.	6M	CO2	L3
(b)	Determine the stiffness matrix for the plane stress element shown in figure. Assume E=200 GPa and μ=0.3.Thickness =10 mm. The coordinates are in mm. 	6M	CO2	L4
	(OR)			
4(a)	Derive the strain displacement matrix of a constant strain triangle element.	6M	CO2	L3
(b)	Calculate the nodal displacements for the beam shown in figure. Take E = 210 GPa, I = 6×10^6 mm^4. 	6M	CO2	L4

5(a)	Derive the shape functions for two dimensional four noded quadrilateral element.	6M	CO4	L3
(b)	Determine the stiffness matrix for the axi-symmetric element shown in figure. Let $E=2.1\times10^5$ N/m^2 and $\mu=0.25$. The coordinates are in mm. 	6M	CO4	L3
	(OR)			
6(a)	Derive the shape function and strain displacement matrices for triangular element of revolving body.	6M	CO4	L3
(b)	Determine Jacobian matrix, Strain displacement matrix and element stresses of a four noded rectangular element is shown in figure.Take $E=2\times10^5$ N/mm^2, $\mu=0.5$, u=[0, 0, 0.005, 0.008, 0.008, 0,0]T, $\varepsilon=0,\eta=0$ 	6M	CO4	L3
7(a)	Derive element conductivity matrix for one dimensional heat flow element.	6M	CO3	L3
(b)	A metallic fin 0.15 cm thick and 12 cm long is attached to a furnace whose wall temperature is 220^{0}C. If the thermal conductivity of the material of the fin is 350 W/m^{0}C and convection coefficient is 9 W/m^{20}C, determine the temperature distribution if the width of the fin is 2 cm. Assume that the tip of the fin is open to the atmosphere and that the ambient temperature is 25^{0}C.	6M	CO3	L4
	(OR)			
8(a)	Derive the conductivity matrix for two dimensional triangular element subjected to convection on one face of the element.	6M	CO3	L3
(b)	Consider a brick wall of thickness L=30 cm, k=0.7 W/m ^{0}C. The inner surface is at 28^{0}C and the outer surface is exposed to cold air at -15^{0}C. The heat transfer coefficient associated with the outside surface is h=40 W/m^2 ^{0}C.Calculate the steady state temperature distribution within the wall.	6M	CO3	L4
9(a)	Differentiate consistent mass matrix and lumped mass matrices.	6M	CO5	L2
(b)	Derive the elemental mass matrix for 1-D bar element.	6M	CO5	L3
	(OR)			
10.	Consider axial vibration of the steel bar shown in figure below. Develop the global stiffness mass matrix and determine the natural frequencies and mode shapes. Take density as 7850 Kg/m^3. 	12M	CO5	L3

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17AE18-FLIGHT DYNAMICS
(ASE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No.	Questions	Marks	CO	BL
1.	Develop the relation between velocity corresponding to the minimum power required and velocity corresponding to minimum thrust required for steady level flight.	12M	CO1	L3
	(OR)			
2.	An airplane weighing 100,000 N is powered by an engine producing 20,000N of thrust under sea level standard conditions. If the wing area be 25 m^2, calculate (i) stalling speeds at sea level and at 10 km altitude (where density is 0.413 kg/m3), (ii) minimum Thrust required and (iii) velocity of minimum thrust required under sea level conditions. Assume C_{Lmax} = 1.5, $C_D = 0.016 + 0.064C_L^2$.	12M	CO1	L4
3(a)	Derive an expression for Breguet range equation for jet aircraft.	6M	CO2	L3
(b)	Derive an expression for endurance equation for jet aircraft.	6M	CO2	L3
	(OR)			
4(a)	An aircraft with a mass 5000 kg takes off from sea level with a forward speed of 50 m/s and starts to climb with a climb angle of 15°. Calculate the rate of climb and excess thrust available at the start of climb.	6M	CO2	L3
(b)	Derive the expression for maximum possible load factor.	6M	CO2	L3
5(a)	It is known that if angle of attack of airplane is increased, the pitching moment about center of gravity becomes negative and the airplane is no longer trimmed. What would be the philosophy to achieve steady level equilibrium flight at any other angle of attack?	6M	CO3	L3
(b)	For a given wing-body combination, the aerodynamic center lies 0.05 chord length ahead of the center of gravity. The moment coefficient about the aerodynamic center is -0.016. If the lift coefficient is 0.45, calculate the moment coefficient about the center of gravity.	6M	CO3	L3
	(OR)			
6.	Derive the expression for elevator angle to trim the airplane.	12M	CO3	L3

7(a)	What is meant by roll stability of an airplane? What is the criterion of static roll stability?	6M	CO4	L2
(b)	Explain qualitatively the effect of wing dihedral, wing sweep and vertical tail on rolling moment created on airplane when it starts to sideslip.	6M	CO4	L2
	(OR)			
8.	Derive the expression for rolling moment due to aileron using strip theory. Assume the necessary conditions.	12M	CO4	L3
9(a)	The longitudinal motion of an airplane is described by the following characteristics equation $\lambda^4 - 4.19\lambda^3 + 12.5\lambda^2 + 0.63\lambda + 0.51 = 0$. Determine whether the motion is dynamically stable or unstable.	6M	CO5	L4
(b)	Given the fourth order characteristic equation $\lambda^4 + 6\lambda^3 + 11\lambda^2 + 6\lambda + k = 0$. For what values of 'k' will the system be stable.	6M	CO5	L4
	(OR)			
10.	Consider the motion referred to an orthogonal axis set (*oxyz*) with the origin '*o*' coincident with the center of gravity of the aircraft. The components of velocity and force along the axes *ox*, *oy* and *oz* are denoted (u, v, w) and (X, Y, Z) respectively. The components of angular velocity and moment about the same axes are denoted (p, q, r) and (L', M, N) respectively. Derive the expression for The Z-force equation of an aircraft.	12M	CO5	L4

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B.Tech.(VI Semester) Regular/Supplementary Examinations

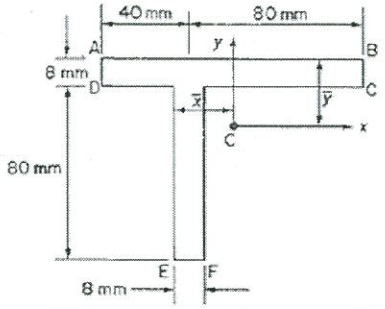
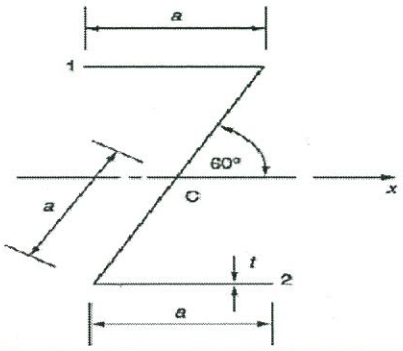
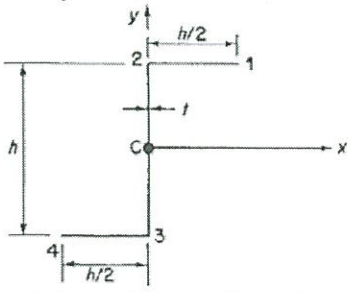
17AE17-AIRCRAFT STRUCTURES-II

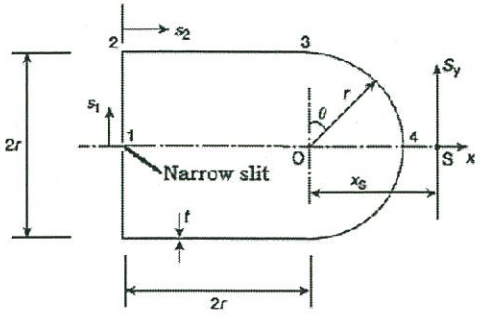
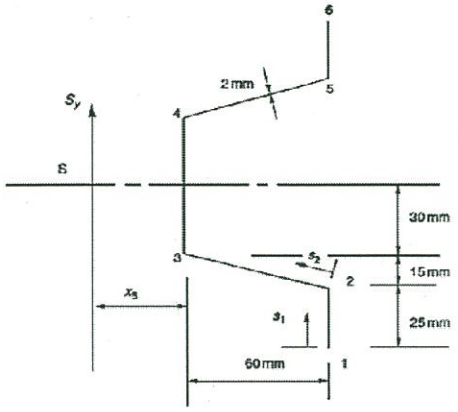
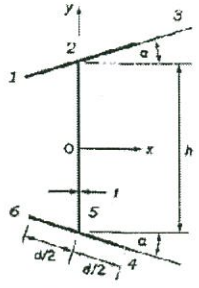
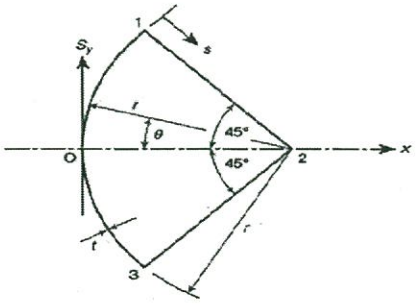
(ASE)

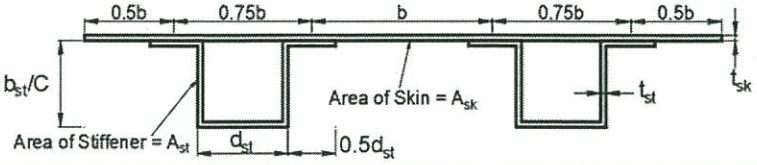
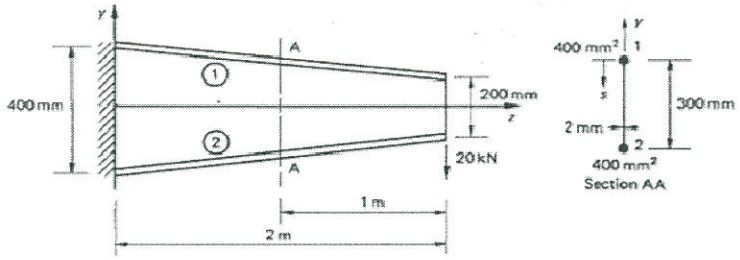
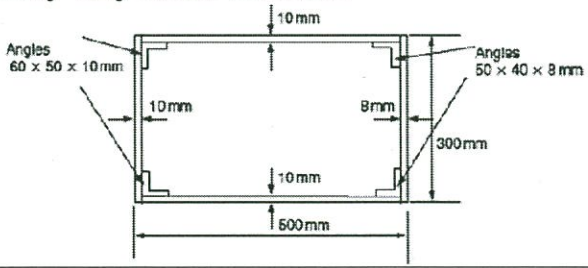
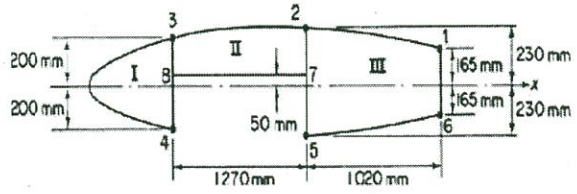
Time : 3 hours | Max. Marks : 60

Answer all questions with either or choice

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	A beam having the cross-section shown in Figure is subjected to a bending moment of 1500 Nm in a vertical plane. Calculate the direct stresses due to bending at point B and E. Take I_{xx}= 1.09 × 10^6 mm^4, I_{yy} = 1.31 × 10^6 mm^4, I_{xy} = 0.34 × 10^6 mm^4. 	6M	CO1	L3
(b)	The thin-walled beam section shown in Figure is subjected to a bending moment M_x = 3000 N-m ,applied in a negative sense. Find the position of the neutral axis and the maximum direct stress in the section. Take I_{xx}= $2a^3t$, I_{yy} = $a^3t/3$, I_{xy} = $1.732a^3t/6$, when a = 90 mm and t = 5 mm. 	6M	CO1	L3
	(OR)			
2(a)	Determine the direct stress distribution at point 1-2 in the thin-walled Z-section shown in Figure, produced by a positive bending moment M_x. Take I_{xx}= $h^3t/3$, I_{yy} = $h^3t/12$, I_{xy} = $h^3t/8$. 	6M	CO1	L3
(b)	How a neutral axis located for any arbitrary cross-section?	6M	CO1	L1
3(a)	Define the term 'shear center' of a thin-walled open section and determine the position of the shear center of the thin-walled open section is subjected to a shear load of S_y = 100 N as shown in Figure. Take I_{xx} = $6.22tr^3$ where t = 1.6 mm, r = 100 mm.	6M	CO2	L3

				
(b)	Calculate the position of the shear center of the thin-walled section shown in Figure. Take I_{xx}= 724094 mm^4. 	6M	CO2	L3
	(OR)			
4(a)	A beam has the singly symmetrical, thin-walled cross-section shown in Figure is subjected to a shear load S_y= 2000 N applied through the shear center of the section. Calculate the shear flow distribution in plane 1-3. The thickness t of the walls is constant throughout, where d = 30 mm, h =100 mm and α = 35^0.  where I_{xx} is given by, $I_{xx}=\frac{th^3}{12}+2\left[\frac{td^3\sin^2\alpha}{12}+td\left(\frac{h}{2}\right)^2\right]$	6M	CO2	L3
(b)	Prove that the shear center lies at the junction for an angle section with equal legs.	6M	CO2	L2
5(a)	A thin-walled closed section beam of constant wall thickness t = 3 mm has the cross-section shown in Figure. Assuming that the direct stresses are distributed according to the basic theory of bending, calculate the shear flow of curved part O-1 and plane 1-4 for a vertical shear force S_y = 400 N applied tangentially to the curved part of the beam. I_{xx}= 0.62tr^3, where r = 80 mm. 	6M	CO3	L4

(b)	Part of a compression panel of internal construction is shown in Figure. The equivalent pin-centre length of the panel is 600 mm. The material has a Young's modulus of 70 000 N/mm² and a crippling load of 500 N is acting. Taking coefficients of 3.62 for buckling of a plate with simply supported sides and of 0.385 with one side simply supported and one free, determine the appropriate limiting stresses (σ_{CR} for stringer/stiffener, σ_{CR} for skin). Take b = 100 mm, t_s = 5 mm, t_{sk} = 2 mm, d_s = 20 mm, C = 30 mm, poisons ratio = 0.3, Assume if you required any other parameters. 	6M	CO4	L4
9(a)	Determine the direct stress in the top and bottom flange of the tapered beam shown in Figure at a section midway along its length. The beam tapers symmetrically about its horizontal centroidal axis and the cross-sectional area of each flange is 400mm². 	6M	CO5	L3
(b)	Describe structural Idealization of a panel.	6M	CO5	L2
	(OR)			
10(a)	Idealize the box section shown in Figure into an arrangement of direct stress carrying booms positioned at the four corners and panels, which are assumed to carry only shear stresses. 	6M	CO5	L3
(b)	The wing section shown in Figure has been idealized such that the booms carry all the direct stresses. If the wing section is subjected to a bending moment of 300 kN-m applied in a vertical plane, calculate the direct stresses in the booms. Boom areas: $B_1 = B_6 = 2580$ mm², $B_2 = B_5 = 3880$ mm², $B_3 = B_4 = 3230$ mm². 	6M	CO5	L3

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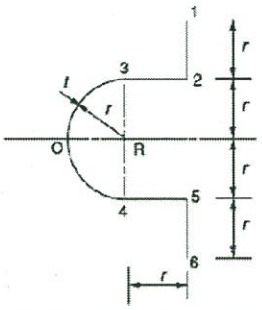
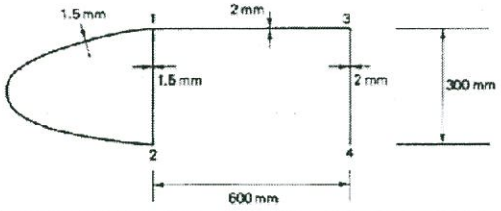
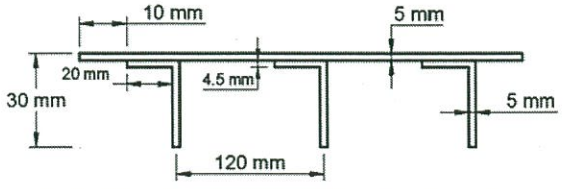
(b)	A thin-walled circular section beam has a diameter of 200 mm and is 2 m long; it is firmly restrained against rotation at each end. A concentrated torque of 30 kN-m is applied to the beam at its mid-span point. If the maximum shear stress in the beam is limited to 200 N/mm^2 and the maximum angle of twist to 2^0, calculate the minimum thickness of the beam walls. Take G = 25 000 N/mm^2.	6M	CO3	L3
	(OR)			
6(a)	The thin walled section shown in Figure. is constrained to twist about an axis through R, the centre of the semi-circular wall 34. Calculate the maximum shear stress in the section is subjected to a torque of 80 N m and per unit rate of twist. Take G = 25 000 N/mm^2, r = 50 mm, t = 3 mm. 	6M	CO3	L3
(b)	Find the angle of twist per unit length in the wing whose cross-section is shown in Figure when it is subjected to a torque of 10 kN-m. Find also the maximum shear stress in the section. G = 25 000 N/mm^2. Wall 12 (outer) = 900 mm. Nose cell area = 20 000 mm^2. 	6M	CO3	L3
7(a)	Explain Pure bending of thin plates.	6M	CO4	L2
(b)	Part of a compression panel of internal construction is shown in Figure. The equivalent pin-centre length of the panel is 400 mm. The material has a Young's modulus of 70 000 N/mm^2 and its elasticity may be taken as falling catastrophically whena compressive stress of 350 N/mm^2 is reached. Taking coefficients of 3.62 for buckling of a plate with simply supported sides and of 0.385 with one side simply supported and one free, determine the load per mm width of panel when initial buckling may be expected. 	6M	CO4	L3
	(OR)			
8(a)	A plate 20 mm thick is subjected to a twisting moment of 15 N m/mm along each edge, in addition to the bending moments of M_x= 20 N m/mm and M_y= 15 N m/mm. Determine the principal moments in the plate, the planes on which they act and the corresponding principal stresses.	6M	CO4	L3

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

17AE16-PROPULSION-II
(ASE)

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)	Examine topping/staged combustion cycle.	6M	CO1	L2
(b)	Draw a schematic diagram of an RAMJET engine and explain its Performance.	6M	CO1	L2
	(OR)			
2(a)	Give a detailed explanation on computing rocket engine performance.	6M	CO1	L1
(b)	Discuss briefly about history and principles of rocket propulsion.	6M	CO1	L2
3(a)	Outline about the injector configuration.	6M	CO2	L2
(b)	Derive the equation for multi stage rocket.	6M	CO2	L3
	(OR)			
4(a)	Illustrate the combustion instabilities.	6M	CO2	L2
(b)	Classify the different types of fuels and oxidizers.	6M	CO2	L2
5(a)	Explain about the pressure feed system for liquid propulsion system with neat sketch.	6M	CO3	L2
(b)	State and Explain cycles of operation in propellant feed systems.	6M	CO3	L2
	(OR)			
6(a)	Summarize computing rocket engine performance.	6M	CO3	L2
(b)	Draw a schematic diagram of a liquid propellant rocket. What are the different Systems of injecting liquid propellants into the combustion chamber?	6M	CO3	L2
7(a)	Analyze the design of solid propellant rocket.	6M	CO4	L2
(b)	List down the advantages and disadvantages of solid propellant rockets. Explain the methods to overcome disadvantages.	6M	CO4	L1
	(OR)			
8(a)	Briefly describes the two types of solid propellant rockets.	6M	CO4	L2
(b)	Demonstrate the Ignition process of solid propellant rockets.	6M	CO4	L2
9(a)	Outline the Electro-thermal rocket engines with neat sketches.	6M	CO5	L2
(b)	Compute the Choice of parameters for electrical thrusters.	6M	CO5	L2
	(OR)			
10(a)	Draw a schematic diagram of electrical propellant with a turbo pump feed system and explain briefly.	6M	CO5	L2
(b)	Describe about arc-jet propellant.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CE91-LOW COST AND ECO-FRIENDLY BUILDING TECHNOLOGY

(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)	How light weight concrete blocks are manufactured?	6M	CO1	L1
(b)	How bamboo is used as a traditional building material in construction?	6M	CO1	L2
	(OR)			
2(a)	Discuss about any two appropriate traditional materials for building construction.	6M	CO1	L2
(b)	What is stone masonry? Explain the difference between rubble masonry and ashlar masonry.	6M	CO1	L2
3(a)	Explain about any two eco-friendly materials used in construction.	6M	CO2	L2
(b)	List the advantages of ferrocement and PPC over OPC.	6M	CO2	L1
	(OR)			
4(a)	Explain any six structural properties of alternative building materials.	6M	CO2	L2
(b)	Discuss how the agro-industrial waste is used as a building material in construction.	6M	CO2	L2
5(a)	List the factors that influences the allowable settlements of foundations.	6M	CO3	L2
(b)	Explain about the cellular light weight concrete roofing system.	6M	CO3	L2
	(OR)			
6(a)	What is the permissible limit of settlements for shallow foundations as per IS 1904?	6M	CO3	L1
(b)	Describe the cost affective and eco-friendly technologies for building construction.	6M	CO3	L2
7(a)	List the advantages of pre-fabrication construction over in-situ concrete construction.	6M	CO4	L1
(b)	Differentiate between basic wind speed and design wind speed.	6M	CO4	L2
	(OR)			
8(a)	In which climate zones is it possible to use precast concrete elements?	6M	CO4	L2
(b)	Discuss about the wind-structure interaction with perspective of structure weight, shape and rigidity.	6M	CO4	L2
9(a)	Discuss about the fire-retardant treatment for trench roof.	6M	CO5	L2
(b)	Explain different types of damage failures of non-engineered buildings.	6M	CO5	L2
	(OR)			
10(a)	Describe the advancements in building technology using appropriate rural housing technology.	6M	CO5	L2
(b)	List the damages of masonry house due to earthquake.	6M	CO5	L1

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B.Tech. VI Semester Regular/Supplementary Examinations

17CE25-RAILWAYS, AIRPORT PLANNING AND HARBOUR ENGINEERING

(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)	Describe the concept of track renewal in railways.	6M	CO1	L1
(b)	Discuss briefly about the various types wielded rail joints.	6M	CO1	L2
	(OR)			
2(a)	Illustrate the various types of maintenance of railway track.	6M	CO1	L2
(b)	State and explain about the requirement of good alignment of railway track.	6M	CO1	L1
3(a)	State and discuss about various types of railway stations based on their functions.	6M	CO2	L1
(b)	Analyze about the various types of crossings used in Indian Railways.	6M	CO2	L2
	(OR)			
4(a)	List and draw the types of track junctions in railways.	6M	CO2	L2
(b)	Explain about various types of Railway stations in Indian railways.	6M	CO2	L2
5(a)	Classify the railway signals based on the functional characteristics.	6M	CO3	L2
(b)	Describe principle of automatic train control system in railways.	6M	CO3	L1
	(OR)			
6.	Outline the principle and mechanism of Interlocking in Indian Railways.	12M	CO3	L1
7(a)	State and explain the basic patterns of runway configurations.	6M	CO4	L2
(b)	Define the term basic runway length and discuss about the three cases to be considered for runway length.	6M	CO4	L1
	(OR)			
8(a)	Mention the functions and objectives of the terminal building in airports.	6M	CO4	L1
(b)	Calculate the airport reference temperature if the site is at a mean sea-level with a level ground. Monthly mean of average daily temperature for the hottest month of year at an airport site is 40°c. Monthly mean of maximum daily temperature of the same month of the year is 50°c.	6M	CO4	L1
9(a)	Classify and describe the dredgers used in harbours.	6M	CO5	L1
(b)	Elaborate the requirements of navigational signals in harbours.	6M	CO5	L1
	(OR)			
10.	List and describe the components of harbour.	12M	CO5	L1

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CE23-GEO TECHNICAL ENGINEERING-II

(CE)

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)	Analyze about split spoon sampler, with a neat sketch.	6M	CO1	L2
(b)	The standard penetration resistance obtained in a coarse sand deposit at a depth of 6m was 24. The ground water table was at a depth of 3m below the ground level. The dry unit weight of sand was 17.60kN/m^3 and the saturated unit weight 20.80kN/m^3. What is the corrected N value after applying the correction?	6M	CO1	L3
	(OR)			
2(a)	Discuss the objectives of soil exploration.	6M	CO1	L2
(b)	How to decide on the number, spacing and depth of boreholes in soil exploration.	6M	CO1	L1
3(a)	Outline Meyerhof's bearing capacity theory.	6M	CO2	L2
(b)	Determine using Terzaghi theory, the ultimate bearing capacity of a strip footing 1.50m wide resting on a saturated clay (c= 30kN/m^2, Φ= 0^0 and γ=20kN/m^3), at a depth of 2m below ground level. The water table is also at a depth of 2m from the ground level. If the water table rises by 1m, calculate the percentage reduction in the ultimate bearing capacity.	6M	CO2	L3
	(OR)			
4(a)	Discuss the procedure for proportioning of a footing for equal settlement.	6M	CO2	L2
(b)	A column carries a load of 1100kN. The soil is dry sand weighing 19.5kN/m^3 and having an angle of internal friction of 35^0. A minimum factor of safety of 2.50 is required and Terzaghi factors are required to be used. (N_γ = 40 and N_q = 22). Find the size of a square footing required if it is placed at 1m below ground surface with water table at ground surface. Assume γ_{sat} = 20 kN/m^3.	6M	CO2	L2
5(a)	A group of 16 piles of 10m length and 0.50m diameter is installed in a 10m thick stiff clay layer underlain by rock. The pile-soil adhesion factor is 0.40. Average shear strength of the soil on the sides is 100kPa. Undrained shear strength of the soil at the base is also 100kPa. Determine the base resistance of a single pile. Assuming 100% efficiency, determine the group side friction.	6M	CO3	L3

(b)	Discuss the various formulae for determining the efficiency of a pile group.	6M	CO3	L2
	(OR)			
6(a)	Explain negative skin friction effect and how it affects the load carrying capacity.	6M	CO3	L2
(b)	A 30cm diameter pile, 12m long is driven into a sand deposit. The details of the hammer are given below. Total weight of hammer = 20kN Length of stroke =100cm Energy per blow = 2000kN-cm Average penetration blow = 4mm. Estimate the ultimate resistance of pile using Hiley's formula, assuming that driving is without dolly and cushion is about 2.50cm thick.	6M	CO3	L3
7(a)	With neat diagrams explain about the types of retaining walls.	6M	CO4	L2
(b)	A smooth backed vertical wall is 6m high and retains a soil with a bulk unit weight of 18kN/m^3 and Ø= 18°. The top of the soil is level with the top of the wall and is horizontal. If the soil surface carries a uniformly distributed load of 4.50kN/m^2, determine the total passive thrust on the wall per linear metre of the wall.	6M	CO4	L3
	(OR)			
8(a)	Derive the expression for the passive earth pressure behind a retaining wall.	6M	CO4	L2
(b)	A gravity retaining wall retains 6m of a backfill, γ = 15kN/m^3, Ø=30^0 with a uniform horizontal backfill surface. The backfill carries a surcharge of 10kPa. Assuming the wall interface to be vertical, determine the magnitude of the total active thrust and the thrust due to rest condition (assume the soil is a loose deposit).	6M	CO4	L3
9(a)	Write a note on types of machines and their respective foundations.	6M	CO5	L1
(b)	A canal is to be excavated through a soil with c' = 15kN/m^2, Ø' = 20^0, e = 0.90 and G=2.67. The side slope is 1 in 1. The depth of the canal is 6m. Determine the factor of safety with respect to cohesion when the canal runs full. For the combination β=45^0, Ø'= 20^0, the stability number is 0.06.	6M	CO5	L3
	(OR)			
10(a)	What are the remedial measures to control 'Tilts and Shifts' of a well foundation?	6M	CO5	L1
(b)	State the assumptions that are generally made in the analysis of the stability of slopes. Discuss briefly their validity.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CE22-WATER AND WASTEWATER ENGINEERING

(CE)

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)	Discuss the different types of water demand.	6M	CO1	L2
(b)	The following data shows the variation in population of a city from 1920-1970. Estimate the population of the city in year 2000 using geometrical increase method. The population in the years 1920, 1930, 1940, 1950, 1960 and 1970 are 72,000, 85,000, 110,500, 144,000, 184,000 and 221,000 respectively.	6M	CO1	L3
	(OR)			
2(a)	Deliberate on the factors affecting population growth.	6M	CO1	L2
(b)	Calculate the total hardness and total alkalinity in terms of $CaCO_3$ from the following data: Ca^{+2}: 60 mg/L, Mg^{+2}: 75 mg/L, CO_3^{-2}: 60 mg/L, HCO_3^-: 122 mg/L. (Molecular Weights: Ca: 40g, Mg: 24g, C: 12g, H: 1g, O: 16g).	6M	CO1	L3
3(a)	Explain jar test for determining optimum coagulant dosage in water treatment.	6M	CO2	L2
(b)	A settling tank of 20 m diameter and 3 m liquid depth is to treat 10,000 m^3 of water per day. Calculate (i) surface loading (ii) detention time (iii) minimum size of particles removed with 100% efficiency. Assume T = 20C, specific gravity of particles = 2.5.	6M	CO2	L3
	(OR)			
4(a)	Explain the following with respect to water treatment plants: (i) Baffles (ii) weir loading (iii) sludge hoppers.	6M	CO2	L2
(b)	Determine the settling velocity of 0.05 mm size particles of specific gravity 2.5 from raw water at temperature of 25C. Assume viscosity as $1x\ 10^{-3}$ Ns/m^2.	6M	CO2	L3
5(a)	Compare the salient features of slow sand and rapid sand filters.	6M	CO3	L2
(b)	A water treatment plant of capacity 1.25 m^3/s has filter boxes of dimensions 10 m × 6 m and the loading rate to the filters is 120 $m^3/day/m^2$. Compute the loading rate in $m^3/day/m^2$ when two of the filters are out of service for back washing.	6M	CO3	L3
	(OR)			
5(a)	Discuss the filter troubles in filtration.	6M	CO3	L2
(b)	A rapid sand filter comprising four filter beds is required to produce 10 MLD of potable water. Assuming rate of filtration as 5.0 m/h and length to width ratio of filter bed as 1.25, determine the size of filter beds.	6M	CO3	L3
7(a)	Describe the Carbon and Nitrogen cycles of decomposition.	6M	CO4	L2
(b)	The 5-day BOD of a sewage sample at 20C is 120 mg/L. Compute the BOD at 25C and 3-days. Assume Kd = 0.23 d^{-1} at 20C (base e).	6M	CO4	L3
	(OR)			
8(a)	Illustrate the objectives of the following sewage treatments: Preliminary, Primary, and Secondary. List the treatment units covered under each of the above treatment options.	6M	CO4	L2
(b)	Design a skimming tank for a sewage flow of 2.5 MLD assuming a rising velocity of oil particle as 0.25 m/min. Assume suitable values.	6M	CO4	L3
9(a)	Outline the concept of biological growth.	6M	CO5	L2
(b)	A wastewater treatment plant is handling 5 MLD of sewage in an ASP. The BOD entering the plant = 250 mg/L, MLSS = 3000 mg/L, HRT = 5 hours. Calculate (i) Volume of aeration tank (ii) F/M ratio (iii) Volumetric loading.	6M	CO5	L3
	(OR)			
10(a)	Define sludge digestion. Explain the mechanism of sludge digestion.	6M	CO5	L2
(b)	A primary sludge contains 96% moisture content with 60% volatile solids. Assuming specific gravity of volatile and fixed solids as 1 and 2.5 respectively, calculate the volume of sludge.	6M	CO5	L3

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CE21-IRRIGATION AND WATER RESOURCE ENGINEERING

(CE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No.	Question	Marks	CO	BL
1(a)	Discuss the various modes of failure of a gravity dam.	6M	CO1	L2
(b)	Explain the merits and demerits of gravity dam.	6M	CO1	L2
	(OR)			
2.	A 100 m high concrete gravity dam trapezoidal in cross-section has upstream face vertical, crest width 6 m, base width 75 m and free board equal to 4 m. Calculate the maximum principal stress at the toe when the reservoir is full. Take unit weight of concrete 24 kN/m^3. Neglect all other forces except hydrostatic water pressure, uplift pressure and self-weight. There is no drainage gallery and no tail water.	12M	CO1	L3
3(a)	Distinguish clearly between a weir and a barrage.	6M	CO2	L2
(b)	List out the limitations of Bligh's creep theory.	6M	CO2	L1
	(OR)			
4.	A horizontal impervious floor of a weir on permeable soil is 16 m long and has sheet piles at both the ends. The upstream pile is 4 m deep and the downstream pile is 5m deep. The weir creates a net head of 2.5m. Neglecting the thickness of the weir floor and consider the interference of piles, determine analytically the uplift pressures at the junction of the inner faces of the pile with the weir floor, by using Khosla's theory.	12M	CO2	L3
5(a)	Write a note on sprinkler method of irrigation.	6M	CO3	L2
(b)	Discuss various methods of surface irrigation.	6M	CO3	L2
	(OR)			
6.	A water course command an irrigated area of 800 hectares. The intensity of irrigation of rice in this area is 50 %. The transplantation of rice crop takes 15 days and total depth of water required by the crop is 60 cm on the field during the transplantation period, given that the rain falling on the field during this period is 15 cm. Find the duty of irrigation water for the crop on the field during transplantation, at the head of the distributary, assuming losses of water to be 20 % in the water course. Also calculate the discharge required in the water course.	12M	CO3	L3
7.	Explain the design principles of a head and cross regulator.	12M	CO4	L2
	(OR)			
8(a)	Compare Kennedy's and Lacey's silt theories. Why is Lacey's conception superior to that of Kennedy's?	6M	CO4	L2
(b)	Using Kennedy's theory, design a channel section for the following data : Discharge Q = 14 cumecs Kutter's N = 0.0225 Critical velocity ratio m = 1 Side slopes = 1/2 : 1 Bed slope = 1/5000.	6M	CO4	L3
9(a)	Classify aqueducts and explain under what circumstances each one is used.	6M	CO5	L2
(b)	Explain the necessity and location of canal falls.	6M	CO5	L2
	(OR)			
10.	Explain the design principles of a sarda type fall.	12M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CE20-DESIGN OF STEEL STRUCTURES
(CE)

Time : 3 hours Max.Marks : 60

Answer one question from each unit
All questions carry equal marks
Use of IS 800-2007, IS-875 Part 3, Steel tables is to be permitted

Q.No	Questions	Marks	CO	BL
1(a)	Describe the design philosophy of steel structures.	6M	CO1	L2
(b)	Illustrate various types of bolt connections with neat sketches.	6M	CO1	L2
	(OR)			
2.	Design a butt joint between 10 mm thick bracket plate and column, so as to transfer reaction load 120 kN at eccentricity 75 mm to the column ISHB 200. Neatly detail the joint and apply necessary design checks.	12M	CO1	L4
3.	Design a splice for tension member sections 160mm x 10mm and 250mm x 14mm and the member is subjected to a pull of 200kN. Assume fy=250N/mm^2.	12M	CO2	L4
	(OR)			
4.	Design a tension member 3.4m between c/c of intersections and carrying a pull of 145kN.	12M	CO2	L3
5.	Design a beam of effective span 6.0m and subjected to a bending moment of 105.3x10^{6}Nmm.The compression flange is laterally unsupported throughout. Check for deflections and shear.	12M	CO3	L4
	(OR)			
6.	Design a suitable section for a beam of effective span 6m and carrying a superimposed load of 30kN/m including its self weight. Assume that the compression flange is fully restrained against lateral buckling. Apply necessary checks.	12M	CO3	L4
7.	Design a bridge compression member of two channels toe-to-toe. The Length of the member is 8 m. It carries a load of 1300 kN. The width over back of channel is 400 mm, if the channels are connected by lacing system, design the lacing system.	12M	CO4	L4
	(OR)			
8.	Design a gusseted base for a built up column consisting of ISMC 250 placed back to back separated by a distance of 160mm. The factored axial load on the column is 1200kN.	12M	CO4	L4
9.	Design a channel section purlin on a sloping roof truss with the dead load of 0.20 kN/m^2 and a live load of 2 kN/m^2 and also a wind load of 1.5 kN/m^2 . The purlins are spaced 2 m apart and of span 4 m c/c, simply supported on a rafter at a slope 20 degrees.	12M	CO5	L4
	(OR)			
10(a)	Explain the live load and dead loads criteria considerations in the roof trusses.	6M	CO5	L2
(b)	Illustrate the design procedure of simple roof truss.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CS91-SOFTWARE TESTING METHODOLOGIES

(CSE)

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)	Explain the model of testing with neat sketch.	6M	CO1	L2
(b)	How to go through selecting paths for testing? Explain with an example.	6M	CO1	L2
	(OR)			
2(a)	Describe the consequences of bugs.	6M	CO1	L2
(b)	List out various types of Bugs possible in executing a program and discuss their remedies.	6M	CO1	L1
3(a)	What is data flow model? Explain the various components of data flow model.	6M	CO2	L2
(b)	Differentiate static versus dynamic anomaly detection.	6M	CO2	L2
	(OR)			
4(a)	Illustrate the differences between Control Flow and Transaction flow.	6M	CO2	L2
(b)	Explain the terms slicing, dicing, data flow and debugging with reference to testing.	6M	CO2	L2
5(a)	State and explain various restrictions at domain testing processes.	6M	CO3	L2
(b)	Discuss Domain Testing with example.	6M	CO3	L2
	(OR)			
6(a)	Explain domain closure and domain dimensionality.	6M	CO3	L2
(b)	State and explain Nice and Ugly Domains.	6M	CO3	L2
7(a)	Use KV chart to minimize F= B'C'D'+A'B'C'D'+ABC'D+ A'BCD +ABD+B'CD'+A'BC'D.	6M	CO4	L2
(b)	Write the role of path expression and path predicates in testing.	6M	CO4	L1
	(OR)			
8(a)	Discuss the importance of regular expression in software testing.	6M	CO4	L2
(b)	Describe Test Case Design process.	6M	CO4	L2
9(a)	What are the principles of state testing? Discuss advantages and disadvantages.	6M	CO5	L2
(b)	What are the software implementation issues in state testing? Explain how to handle them.	6M	CO5	L2
	(OR)			
10(a)	Discuss node reduction algorithm with suitable example.	6M	CO5	L2
(b)	Differentiate good state and bad state graphs. How to handle bad state graphs?	6M	CO5	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

17CS08-PHP PROGRAMMING
(CSE)

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)	Develop a PHP program for the following output using embedded HTML. RED BLUE GREEN BLUE RED GREEN GREEN GREEN RED	6M	CO1	L3
(b)	Illustrate the importance of conditional operator in PHP.	6M	CO1	L2
	(OR)			
2(a)	Explain in detail about Language Constructs in PHP.	6M	CO1	L2
(b)	Differentiate between variables and constants in PHP.	6M	CO1	L2
3(a)	Describe various function types with an example program.	6M	CO2	L2
(b)	Describe the importance of default arguments in the function.	6M	CO2	L2
	(OR)			
4(a)	How to define Indexed array in PHP? Give an example program.	6M	CO2	L1
(b)	Develop a PHP program to perform search and replace operations on strings.	6M	CO2	L3
5(a)	Describe in detail about access modifiers in PHP.	6M	CO3	L2
(b)	Develop a PHP program to perform function overloading and overriding.	6M	CO3	L3
	(OR)			
6(a)	Develop a PHP program to illustrate the importance of inheritance in OOP.	6M	CO3	L3
(b)	What is the role of final keyword? Give an example program.	6M	CO3	L1
7(a)	How to include JQuery in HTML page? Describe the process of calling Jquery from HTML page.	6M	CO4	L2
(b)	Develop a Jquery program to hide, show and toggle the HTML element.	6M	CO4	L3
	(OR)			
8(a)	Describe the process of handling AJAX on Server by using GET and POST methods with an example program.	6M	CO4	L2
(b)	What is the role of XMLHttpRequest object in AJAX? Give an example program.	6M	CO4	L1
9(a)	Describe the importance of sessions in PHP web application.	6M	CO5	L2
(b)	Illustrate the importance of Cookies in PHP web application.	6M	CO5	L2
	(OR)			
10.	Develop a PHP program that interact with MYSQL database to create, insert and update the table.	12M	CO5	L3

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EC22-MICROPROCESSORS AND MICROCONTROLLERS

(CSE&ECE)

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)	List out the features of 8086 Microprocessor.	6M	CO1	L2
(b)	Develop an assembler language program to find no. of Positive and Negative numbers from a given series of signed numbers.	6M	CO2	L3
	(OR)			
2(a)	Mention the flag register format of 8086 Microprocessor and function of each flag bit.	6M	CO1	L2
(b)	Develop an assembler language program to move a block of data from the offset address location 2000H to 3000H.	6M	CO2	L3
3(a)	Discuss the functions of following 8086 pins: (i). $MN/\overline{MX}$ (ii). $DT/\overline{R}$ (iii). $\overline{DEN}$	6M	CO1	L2
(b)	Describe the operation of Interrupt Vector Table.	6M	CO1	L2
	(OR)			
4(a)	Develop an 8086 based system by interfacing 64 KB EPROM in odd and even memory banks form 80000H.	6M	CO4	L3
(b)	Differentiate between minimum mode and maximum mode operation of 8086 Microprocessor.	6M	CO1	L2
5(a)	Describe the functional diagram of 8237 and its internal blocks.	6M	CO3	L2
(b)	Summarize the initialization sequence of 8259 with flow chart.	6M	CO3	L2
	(OR)			
6(a)	Describe the Mode instruction format of 8251 in asynchronous mode.	6M	CO3	L2
(b)	Develop an ALP to transmit 100 bytes of data string starting at location 2000: 5000 using 8251 in asynchronous mode with even parity enabled, 2-stop bits, 8-bit character length, frequency 160K Hz and baud rate 10K.	6M	CO2	L3
7(a)	Describe the architecture of 8051 and internal functional blocks.	6M	CO1	L2
(b)	Develop an Assembly Language Program to find whether a given byte is available in the given sequence or not. If it is available, write FF in R3, otherwise write 00 in R3.	6M	CO2	L3
	(OR)			
8(a)	Mention the Register format of Program Status Word (PSW) and describe the function of each bit.	6M	CO1	L2
(b)	Develop a program by using 8051 instructions to multiply two 8-bit numbers present at memory locations 9000H and 9001H and store the result at the memory locations 9050H and 9051H.	6M	CO2	L3
9(a)	Mention the Register format of Timer Control Register (TCON) and describe the function of bits.	6M	CO1	L2
(b)	Interface a 4-phase, 200 teeth, 9V stepper motor using 8051 microcontroller and develop an assembly language program for rotating shaft 90^{o} back and forth in 30 seconds each continuously.	6M	CO4	L3
	(OR)			
10(a)	Mention the Register format of Interrupt Priority Register (IP) and describe the function of bits.	6M	CO1	L2
(b)	Develop an interfacing program for 7-segment display with 8051.	6M	CO4	L3

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

17CI17-DATA COMMUNICATIONS AND COMPUTER NETWORKS
(CSE)

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)	Compare OSI model and TCP/IP Model.	6M	CO1	L1
(b)	Describe Frequency Division Multiplexing.	6M	CO1	L2
	(OR)			
2(a)	Discuss about the Data Transmission in the OSI model.	6M	CO1	L2
(b)	Solve the transmitted frame for given data frame is 1101011011and generator polynomial G(x) = x4 + x + 1.	6M	CO1	L3
3(a)	Differentiate between Go-Back-N and Selective Repeat Protocol.	6M	CO2	L2
(b)	Describe stop and wait protocol with an example.	6M	CO2	L2
	(OR)			
4(a)	Differentiate between noise free and noisy channels.	6M	CO2	L2
(b)	Describe HDLC Data link protocol.	6M	CO2	L2
5(a)	Differentiate between Pure ALOHA and Slotted ALOHA.	6M	CO3	L2
(b)	What are Different Types of Techniques for Traffic Shaping?	6M	CO3	L1
	(OR)			
6(a)	Draw and explain internet protocol frame format.	6M	CO3	L2
(b)	Discuss token ring protocol.	6M	CO3	L2
7(a)	Illustrate hierarchical routing problem with suitable example.	6M	CO4	L2
(b)	Draw and explain connection management process in TCP.	6M	CO4	L2
	(OR)			
8(a)	What are the differences between TCP and UDP?	6M	CO4	L2
(b)	What is meant by multicast routing explain with example?	6M	CO4	L2
9(a)	Explain clearly the RSA algorithm with an example.	6M	CO5	L2
(b)	Describe why HTTP is designed as a stateless protocol.	6M	CO5	L2
	(OR)			
10(a)	Give a brief note on the electronic mail Transaction.	6M	CO5	L2
(b)	Discuss HTTP Transaction with an example.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CI16-DATA MINING AND DATAWAREHOUSING
(CSE&IT)

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)	Illustrate Snowflake and Star schemas with suitable examples.	6M	CO1	L2
(b)	Differentiate Online Analytical Processing (OLAP) and Online Transactional Processing (OLTP).	6M	CO1	L2
	(OR)			
2(a)	Describe the major issues in data mining.	6M	CO1	L2
(b)	Summarize the various features of a Data warehouse.	6M	CO1	L2
3(a)	Apply the two methods below to normalize the following group of data: 100, 500, 700, 200, 1000 (i) min-max normalization by setting min = 0 and max = 1 (ii) z-score normalization	6M	CO2	L3
(b)	Discuss the heuristic methods for attribute subset selection.	6M	CO2	L2
	(OR)			
4(a)	Test the Hypothesisfor the following contingency table using Chi-square analysis. And assume the critical value as 11.56.	6M	CO2	L3
(b)	What is the necessity of Preprocessing the data?	6M	CO2	L2
5.	A database has five transactions. Find all the frequent item sets using FP-growth algorithm with min_sup=2.	12M	CO3	L3
	(OR)			

	SMALL	MEDIUM	LARGE
MALE	22	10	15
FEMALAE	14	23	15

Tid	Items
T100	{M,O,N,K,E,Y}
T200	{D,O,N,K,E,Y}
T300	{M,A,K,E}
T400	{M,U,C,K,Y}
T500	{C,O,O,K,I,E}

6.	Consider the following transactional database with min_support = 2 Use Apriori algorithm to find frequent item sets.	12M	CO3	L3

Tid	Items
100	I1,I2,I5
200	I2,I4
300	I2,I3
400	I1,I2,I4
500	I1,I3
600	I2,I3
700	I1,I3
800	I1,I2,I3,I5
900	I1,I2,I3

7(a)	Describe the Model Construction and model usage in the classification with example.	6M	CO4	L2
(b)	Illustrate the working of Naïve Bayes algorithm with example.	6M	CO4	L2
	(OR)			
8(a)	Differentiate classification task from Prediction task.	6M	CO4	L2
(b)	Consider the following set of paired data where x is the number of years of work experience of a college graduate and y is the corresponding salary of the graduate. Find the linear relationship between these variables. Predict the salary of a graduate with 10 Years of experience.	6M	CO4	L3

x Years of Experience	Y Salary (in $1000s)
3	30
8	57
9	64
13	72
3	36
6	43
11	59
21	90
1	20
16	83

9(a)	Describe DBSCAN clustering algorithm.	6M	CO5	L2
(b)	What is meant by authoritative web pages? How can a search engine automatically identify authoritative web pages for any keyword?	6M	CO5	L1
	(OR)			
10(a)	What are the differences between Partition based and Density based clustering algorithms?	6M	CO5	L2
(b)	Why is outlier mining important? Briefly describe the different approaches for outlier detection.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CS05-ANDROID TECHNOLOGIES
(CSE)

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)	List the features and applications of Android.	6M	CO1	L1
(b)	Discuss Dalvik Virtual Machine.	6M	CO1	L2
	(OR)			
2(a)	Illustrate Activity life cycle.	6M	CO1	L2
(b)	What are various service states and life cycle?	6M	CO1	L1
3.	Classify about various UI components.	12M	CO2	L2
	(OR)			
4.	Categorize various UI layouts.	12M	CO2	L2
5(a)	How do you use intent to dial a number and send SMS?	6M	CO3	L2
(b)	How do you launch activity by using intents?	6M	CO3	L2
	(OR)			
6(a)	Outline finding and using intents received within an activity.	6M	CO3	L2
(b)	What are various ways for creating and displaying notifications?	6M	CO3	L2
7(a)	Discuss saving and retrieving data using shared preference.	6M	CO4	L2
(b)	Explain application specific folder and files in data storage.	6M	CO4	L2
	(OR)			
8(a)	Discuss about content providers.	6M	CO4	L2
(b)	Explain inserting and deleting data in Sqlite database.	6M	CO4	L2
9(a)	What are RSS feeds and Alarms.	6M	CO5	L2
(b)	Describe about integrating PHP/MYSQL.	6M	CO5	L2
	(OR)			
10(a)	Illustrate the usage of download manager.	6M	CO5	L2
(b)	Discuss about publishing android application.	6M	CO5	L2

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

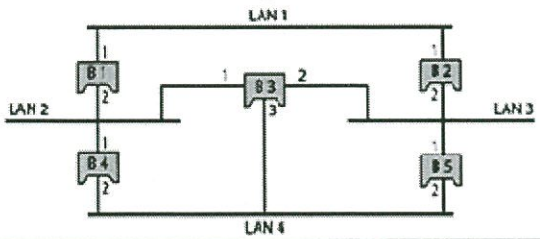
17EC91-TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS

(ECE)

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)	Categorise the Enhanced Services offered to the subscriber by the exchange.	6M	CO1	L2
(b)	Distinguish Single Stage and Multistage Networks.	6M	CO1	L2
	(OR)			
2(a)	Estimate the expressions for Availability and Unavailability figures of single and dual processor systems.	6M	CO1	L2
(b)	Derive the expression for the blocking probability in Two-Stage Networks.	6M	CO1	L3
3(a)	Calculate the number of trunks that can be supported on a time multiplexed space switch, given that (i) 32 channels are multiplexed in each stream (ii) Control memory access time is 100 ns (iii) Bus switching and transfer time is 100 ns per transfer.	6M	CO4	L3
(b)	Describe the working of input controlled time division space switch.	6M	CO4	L2
	(OR)			
4(a)	Illustrate the working of a two-stage STS switch.	6M	CO4	L2
(b)	Summarize the working principle of TSI switch.	6M	CO4	L2
5(a)	An exchange uses 40V battery to drive subscriber lines. A resistance of 250 ohm is placed in series with battery to protect it from short-circuits. The subscriber telephone set offers a D.C resistance of 50 ohm. The micro-phone requires 23m.A for proper functioning. Determine the farthest distance from the exchange at which a subscriber can be located if conductor has 133.89 ohm/km D.C resistance.	6M	CO2	L3
(b)	Differentiate in-channel and common channel signaling techniques.	6M	CO2	L2
	(OR)			
6(a)	Show the formats of the signaling units in SS7.	6M	CO2	L2
(b)	Examine outband signaling scheme with E and M control.	6M	CO2	L1
7(a)	Infer the principle of circuit switching.	6M	CO3	L2
(b)	Find the spanning tree for the following system if B1 is selected as root bridge. 	6M	CO3	L3
	(OR)			
8(a)	Classify the network protocols.	6M	CO3	L2
(b)	Discuss the concept of layered network architecture.	6M	CO3	L2
9(a)	Recall the overheads used in STS-1 frame.	6M	CO4	L1
(b)	HFC networks are more sophisticated than traditional cable TV networks justify by using features.	6M	CO4	L2
	(OR)			
10(a)	Explain the bandwidth division in ADSL.	6M	CO4	L2
(b)	Specify the types of virtual tributaries and calculate data rates.	6M	CO4	L1

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

17EC25-CELLULAR AND MOBILE COMMUNICATIONS

(ECE)

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)	Discuss the drawbacks of conventional mobile telephone system.	6M	CO1	L2
(b)	Summarize the generations of cellular systems.	6M	CO1	L2
	(OR)			
2(a)	Describe the operation of Cellular system.	6M	CO1	L2
(b)	Outline the Basic Cellular system.	6M	CO1	L2
3(a)	Asses roof mounted and glass mounted antennas.	6M	CO4	L2
(b)	Outline the 3-sector directional antenna arrangement of cell cite for interference reduction for 45 radios with neat figure.	6M	CO4	L2
	(OR)			
4(a)	Asses horizontally oriented and vertically oriented space diversity antennas.	6M	CO4	L2
(b)	Demonstrate space diversity antennas and umbrella pattern antennas.	6M	CO4	L3
5(a)	Interpret the C/I ratio in worst case situation for a three sectored cell with cluster size 7.	6M	CO3	L2
(b)	Interpret Desired C/I from normal case for a omni directional antenna system.	6M	CO3	L2
	(OR)			
6(a)	Outline the various techniques to measure the co channel interference.	6M	CO3	L1
(b)	Compare k=4 and k=7 for directional antenna system.	6M	CO3	L2
7(a)	Outline various non fixed channel assignment algorithms.	6M	CO1	L2
(b)	Explain the process of adjacent channel assignment.	6M	CO1	L2
	(OR)			
8(a)	Discuss about frequency management.	6M	CO1	L2
(b)	Compare handoffs based on signal strength and based on C/I ratio.	6M	CO1	L2
9(a)	Compare CDMA, TDMA and FDMA multiple access techniques.	6M	CO2	L2
(b)	Outline the GSM architecture.	6M	CO2	L2
	(OR)			
10(a)	Discuss about Wideband CDMA.	6M	CO2	L2
(b)	Explain CDMA 2000.	6M	CO2	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EC21-ANTENNA AND WAVE PROPAGATION
(ECE)

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)	Show that directivity of half wave dipole antenna is 1.64.	6M	CO1	L1
(b)	Discuss the following antenna parameters: (i) Vertical pattern (ii) Radiation lobes (iii) Aperture efficiency (iv) Radiation resistance.	6M	CO1	L2
	(OR)			
2(a)	An antenna has a radiation resistance of 73Ω and a loss resistance of 7Ω. if power gain is 20, calculate the directivity and efficiency of the antenna.	6M	CO1	L3
(b)	Derive the relation between directivity and beam area.	6M	CO1	L3
3(a)	Differentiate broad side and end fire arrays.	6M	CO2	L2
(b)	Analyze array of two point sources fed with currents of equal magnitude and unequal phase.	6M	CO2	L3
	(OR)			
4(a)	Design the Dolph-Tchebyshev array of 4 elements with $\lambda/2$ spacing between the elements for required side lobe level of -20 dB.	6M	CO2	L3
(b)	Illustrate the array of 4 point sources using method of pattern multiplication.	6M	CO2	L3
5(a)	Outline traveling wave and standing wave antennas.	6M	CO3	L3
(b)	Discuss the design of Rhombic Antenna using Maximum Electric field Design Method.	6M	CO3	L2
	(OR)			
6(a)	Outline the characteristics of Yagi-Uda antenna.	6M	CO3	L2
(b)	Determine the directivity and HPBW for a 20 turn helical antenna operating at 3GHz with circumference of 10cm and spacing between the turns 0.3λ.	6M	CO3	L3
7(a)	Analyze the corner reflector antenna with corner angle 90^0 using method of image principle.	6M	CO4	L2
(b)	For what mouth diameter and capture area of a parabolic reflector is a BWFN of 12^0 obtained when it is operated at 2.5GHz.	6M	CO4	L1
	(OR)			
8(a)	Apply reflection coefficient equation for measurement of impedance of antenna using slotted line method.	6M	CO4	L3
(b)	Demonstrate the measurement of gain of antenna using direct comparison method.	6M	CO4	L2
9(a)	Examine the expression for refractive index of ionosphere.	6M	CO5	L3
(b)	Describe the Ground wave propagation.	6M	CO5	L2
	(OR)			
10(a)	Summarize the characteristics of layers in the ionosphere.	6M	CO5	L2
(b)	Derive the line of sight distance between transmitting and receiving antenna for space wave propagation.	6M	CO5	L3

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CI07-OOPS THROUGH JAVA
(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)	Write a program to input five Strings and reverse them and also create a new string by collecting first characters from each reversed strings and display the new string in upper case.	6M	CO1	L2
(b)	Discuss the principles of object oriented language in detail.	6M	CO1	L2
	(OR)			
2(a)	Illustrate "Constructor Overloading" with an example program.	6M	CO1	L3
(b)	Create a class Employee to represent the employees of an organization. Include the following members: Data Members: employee id, name of the employee, address, department, salary Methods: to assign initial values, to display the particulars of an employee, to update the salary of an employee. Create the object of this class in Main method and call the methods appropriately.	6M	CO1	L2
3(a)	What happens when the final keyword is used for inheritance? Explain with an example.	6M	CO2	L2
(b)	Explain multilevel inheritance with the help of abstract class in your program.	6M	CO2	L2
	(OR)			
4(a)	Explain the procedure of creating and accessing a package in java.	6M	CO2	L2
(b)	Differentiate between Abstract class and Interface with an example.	6M	CO2	L2
5(a)	Explain the steps in creating a thread using Runnable interface.	6M	CO3	L2
(b)	Create a try block that is likely to generate two types of exceptions and then incorporate necessary catch blocks to handle them appropriately.	6M	CO3	L2
	(OR)			
6(a)	"Threads can be given priorities" - Support this statement with suitable example.	6M	CO3	L2
(b)	Explain the following: try, catch, throw, throws, finally.	6M	CO3	L2
7(a)	Describe the different stages in the life cycle of an Applet.	6M	CO4	L2
(b)	With an example, illustrate the role of inner classes in event-handling.	6M	CO4	L3
	(OR)			
8(a)	Write an applet application that has different shapes in it.	6M	CO4	L3
(b)	Write a Java program to handle mouse events using Adapter classes.	6M	CO4	L3
9(a)	Explain about JTabbedPane in Swing package.	6M	CO5	L2
(b)	Develop a java program that has 6 text fields, one submit button. When you press the button, first 5 text field's values average has to be displayed in the 6th text field.	6M	CO5	L3
	(OR)			
10.	Design a JFrame which will display 5 buttons with color names. When the user clicks on specific button, it changes the background color of screen?	12M	CO5	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING **R17**

(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

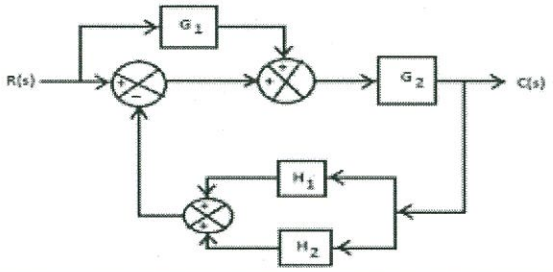
17EC20-LINEAR CONTROL SYSTEMS

(ECE)

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)	Classify the control systems in detail and Explain the effects of feedback on the system performance.	6M	CO1	L2
(b)	Obtain the transfer function C(s)/R(s) for the block diagram below using block diagram reduction technique. 	6M	CO1	L3
	(OR)			
2(a)	Compare the performances of closed loop and open loop control systems.	6M	CO1	L2
(b)	List the properties of signal flow graphs.	6M	CO1	L2
3(a)	Analyze the effect of Proportional plus Integral Control (PI) action on the performance of a second order system.	6M	CO2	L2
(b)	Derive an expression for the transfer function of an armature controlled DC motor.	6M	CO2	L3
	(OR)			
4(a)	Explain the time response of under damped 2nd order system along with its transient response specifications.	6M	CO2	L2
(b)	Calculate the steady state errors due to a unit step input, a unit ramp input and a unit parabolic input for a unity feedback control system whose open loop transfer function is $$G(s) = \frac{1}{(s^2 + 3s + 1)}$$	6M	CO2	L3
5(a)	State and explain the Routh stability criterion.	6M	CO3	L2
(b)	The open loop transfer functions of a unity feedback are given below. Sketch the root locus. $$G(s) = \frac{K(s+2)}{(s+3)(s^2+2s+16)}$$	6M	CO3	L3
	(OR)			

6.	A unity feedback control system is characterized by the open loop transfer function $G(s) = \frac{K(s+11)}{s(s+5)(s+9)}$ Using the Routh criterion i) Calculate the range of values of K for the system to be stable. ii) What is the marginal value of K for stability? Determine the frequency of oscillations if any iii) Check for K = 1, all the roots of the characteristic equation of the above system have the damping factor greater than 0.5.	12M	CO3	L3
7(a)	Derive the correlation between time domain and frequency domain specifications.	6M	CO4	L3
(b)	Sketch the Bode plot and determine the Gain margin and phase margin For the transfer function is given $G(s) = \frac{10}{s(1+0.5s)(1+0.1s)}$	6M	CO4	L3
	(OR)			
8(a)	Obtain the expression for the transfer function of a lead compensator.	6M	CO4	L3
(b)	Recall about lag compensator.	6M	CO4	L2
9(a)	Develop the state model of linear time invariant systems.	6M	CO5	L3
(b)	Illustrate the controllability and observability with an example.	6M	CO5	L2
	(OR)			
10(a)	Derive the expression for state transition matrix.	6M	CO5	L2
(b)	Given, $G(s) = \frac{2}{s^2+5s+6}$ obtain the state space model of the system in the diagonal canonical form.	6M	CO5	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
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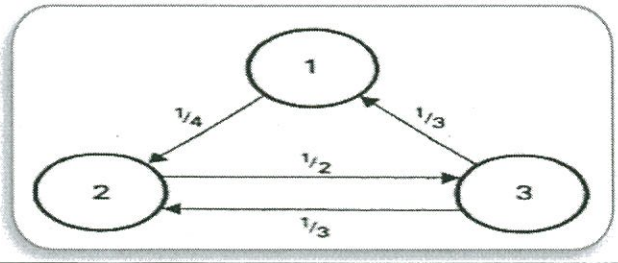
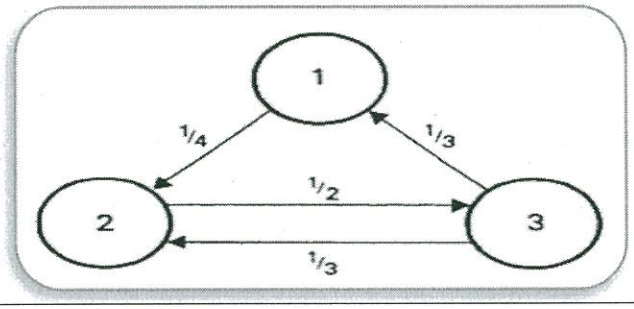
B.Tech. (VI Semester) Regular/Supplementary Examinations

17EE91-ELECTRICAL RELIABILITY ENGINEERING
(EEE)

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)	An engineer selects two components A and B. The probability that component A is good is 0.9 and the probability that component B is good is 0.95. Therefore the probability of both components being good is.	6M	CO1	L2
(b)	Outline the permutations and combinations for Evaluation of engineering events.	6M	CO1	L3
	(OR)			
2(a)	List out the Rules for combining probabilities.	6M	CO1	L1
(b)	Develop the probability of success of the parallel connected components A and B, assume the failure distribution to be an exponential.	6M	CO2	L2
3(a)	Describe the reliability functions using exponential distribution for evalution of reliability of systems/components	6M	CO1	L2
(b)	Define the Reliability measures MTTF, MTTR and MTBF with their applications.	6M	CO1	L2
	(OR)			
4(a)	Derive the mean and standard deviation of failure density function with exponential distribution.	6M	CO2	L3
(b)	Derive the reliability of a 2-component series system using exponential probability distribution.	6M	CO1	L3
5(a)	Describe the evaluation of limiting state probabilities of a two identical component system.	6M	CO2	L2
(b)	Explain the Markov process for single component repairable case.	6M	CO1	L2
	(OR)			
6(a)	Differentiate Preventive and Corrective maintenance.	6M	CO1	L2
(b)	Consider the 3-state system shown in Figure and the transition probabilities indicated. Evaluate (i) the limiting state probabilities associated with each state and, (ii) the average number of time intervals spent in each state if state 3 is defined as an absorbing state. 	6M	CO2	L3

7 (a)	Describe the procedure to compute the frequency encountering state for two repairable component.	6M	CO1	L2
(b)	A parallel system consists of two identical components each with failure rate of 0.005 failures/hour and a repair rate of 0.1 repairs/hour. Find the steady state availability of the system.	6M	CO2	L3
	(OR)			
8 (a)	A Single repairable generator unit capacity of 20 MW, has Availability of 0.98, r = 2.0408 days, find the mean cycle time for encountering either up or down states.	6M	CO2	L3
(b)	Consider the 3-state system shown in Figure and the transition probabilities indicated. Evaluate the frequency of encountering and duration of residing in each of the three states 	6M	CO2	L3
9(a)	Discuss the evaluation of transition rates for merged state model.	6M	CO1	L2
(b)	Describe the recirsive relation algorithm for unit removal in a generation system.	6M	CO2	L2
	(OR)			
10(a)	Describe the merging of load generation model.	6M	CO1	L2
(b)	Summarize the Loss of Load Expectation concept in a generation system.	6M	CO2	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EC29-EMBEDDED SYSTEM DESIGN

(EEE)

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)	Mention different types of IC technologies used in embedded system design.	6M	CO1	L2
(b)	Sketch the graph used in understanding the time-to market design metric.	6M	CO1	L2
	(OR)			
2(a)	Sketch the circuits of basic logic gates used in implementation of combinational logic design.	6M	CO1	L2
(b)	Describe RT-Level custom single purpose processor design with an example.	6M	CO1	L3
3(a)	List the steps involved in describing the system as a state machine.	6M	CO3	L2
(b)	Identify some commonly used models for describing embedded systems.	6M	CO3	L2
	(OR)			
4(a)	Describe synchronization among processes in concurrent process model.	6M	CO3	L2
(b)	Mention the types of communication among processes in concurrent process model.	6M	CO3	L2
5(a)	Describe the processor of analog-to- digital converters with necessary diagrams.	6M	C01	L2
(b)	Given an analog input signal whose voltage should range from 0 to 15 volts, and an 8-bit digital encoding, calculate the correct encoding for 5 volts. Then trace the successive-approximation approach to find the correct encoding.	6M	C01	L3
	(OR)			
6(a)	Name different types of Read-Only Memories.	6M	C01	L2
(b)	Draw the external block diagram and internal view of an 8 x 4 ROM.	6M	C01	L2
7(a)	Classify different types of serial protocols.	6M	CO4	L2
(b)	Show the two-level bus architecture in microprocessor based embedded system.	6M	CO4	L2
	(OR)			
8(a)	Classify different types of wireless protocols.	6M	CO4	L2
(b)	Draw flow chart with flow of action from peripheral to memory transfer *without* DMA, using vectored interrupt.	6M	CO4	L3
9(a)	Discuss about standard semi-custom IC technology.	6M	CO4	L2
(b)	Illustrate automation in design technology with codesign ladder.	6M	CO2	L2
	(OR)			
10(a)	Explain minimum cover implementation using K-map approach.	6M	CO2	L2
(b)	Draw the NAND circuit schematics, layers and top-down view of the NAND circuit on an IC.	6M	CO2	L3

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EE20-MEASUREMENTS AND INSTRUMENTATION

(EEE)

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)	Illustrate Functional elements of an instrument.	6M	CO1	L2
(b)	Describe the construction and working of PMMC instrument.	6M	CO1	L2
	(OR)			
2(a)	How would you extend the range of DC ammeters and voltmeters? Discuss with suitable diagrams.	6M	CO1	L2
(b)	Compare the attraction and repulsion type instruments.	6M	CO1	L2
3(a)	State the various methods of measurement of low resistance. Discus the voltmeter-ammeter method.	6M	CO2	L2
(b)	Draw the circuit of a Kelvin's double bridge used for measurement of low resistance. Derive the condition for balance.	6M	CO2	L3
	(OR)			
4(a)	Summarize the advantages and disadvantages of Anderson's bridge.	6M	CO2	L2
(b)	Derive equation for balance and phasor diagram for schering bridge.	6M	CO2	L3
5(a)	Discuss the comparison of C.T and P.T.	6M	CO3	L2
(b)	What are the ratios of instrument transformers and discuss?	6M	CO3	L2
	(OR)			
6(a)	Describe the construction and working of Frequency meter.	6M	CO3	L2
(b)	Recite the characteristics of potential transformers.	6M	CO3	L2
7(a)	Describe the construction and theory of operation of a single phase electrodynamometer type wattmeter.	6M	CO4	L2
(b)	Illustrate the errors caused due to pressure coil inductance and pressure coil capacitance in electrodynamometer type wattmeter.	6M	CO4	L2
	(OR)			
8(a)	Discuss the shape of scale of electrodynamometer type wattmeter with the help of a neat sketch.	6M	CO4	L2
(b)	List the differences between LPF and UPF wattmeters.	6M	CO4	L1
9.	With neat diagram, discuss in detail about construction and working of LVDT.	12M	CO5	L2
	(OR)			
10.	Describe successive approximation type ADC with its characteristics.	12M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EE19-POWER ELECTRONICS
(EEE)

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)	How efficiency of string can be calculated for series and parallel string operation of SCR?	6M	CO2	L2
(b)	Ratings of SCRs with 2500V and 250A are available to be used in a string to handle 12kV and 2kA. Calculate the number of series and parallel units required in case derating factor is 0.3.	6M	CO2	L3
	(OR)			
2(a)	Mention turn-on methods of SCR. Give details about (i) dv/dt triggering (ii) gate pulse triggering.	6M	CO2	L2
(b)	500V DC input supply is given to SCR circuit. Peak voltage and current rating are equal to 200V/μs and 50A/μs. Determine the circuit parameters L , snubber reistance and capacitance.	6M	CO4	L3
3(a)	Why Class-D commutation is called as parallel capacitor commutation? How the main thyristor gets reverse voltage polarity by auxiliary thyristor – Justify?	6M	CO4	L2
(b)	Class C commutation circuit has V_s=200V, R_1=10Ω and R_2=100Ω. Determine (i) peak value of current through thyristors T1 and T2 (ii) value of capacitor C if each thyristor has turn-off time 40μs. Take factor of safety 2.	6M	CO4	L3
	(OR)			
4.	Prove the rms output voltage of single phase full-wave controlled rectifier is equal to $\frac{V_m}{\sqrt{2}}\left[\frac{V_m}{\pi}\left(\pi-\alpha+\frac{\sin 2\alpha}{2}\right)\right]^{0.5}$	12M	CO1	L3
5(a)	With help of operating waveform, discuss the working function of full-wave 1-Ph AC voltage controller.	6M	CO2	L2
(b)	A single phase AC voltage controller feeds RL load. For a α=120⁰, β=220⁰, find the rms output voltage. Controller is connected 230V, 50Hz source.	6M	CO2	L3
	(OR)			
6.	A 6 pulse, 230V cycloconverter is powered to load of 5Ω. Calculate the output voltage if firing angle is 30⁰. Also find (i) input supply p.f. (ii) form factor (iii) voltage ripple factor (iv) transformer utilization factor (v) PIV and commutation time of thyristor.	12M	CO2	L3

7(a)	Define the pulse width modulation and draw the waveform for variations of T_{ON} time period.	6M	CO1	L2
(b)	A Step-up/Step-down chopper has input dc voltage of 100V and output voltage of 300V. If the conduction time of thyristor chopper is 120μs, determine the pulse width of load voltage.	6M	CO2	L3
	(OR)			
8.	Sketch output voltage and output current of chopper connected with resistive load. Also obtain the expressions for (i) Average and rms ouput voltage (ii) Average and rms load currents.	12M	CO1	L2
9(a)	Design an inverter circuit and discuss its operation with neat waveforms.	6M	CO3	L4
(b)	A single phase full-bridge inverter using transistors and diodes is feeding a load of R=3Ω with input dc voltage of 60V. Calculate (i) rms value of output voltage (ii) fundamental component of output voltage (iii) rms of all harmonic voltages (iii) THD.	6M	CO2	L3
	(OR)			
10(a)	By the help of diagram, discuss about sinusoidal PWM technique and draw output waveform.	6M	CO1	L2
(b)	3 Phase inverter supplying power to a resistive load from a 440V dc source. For star connected load of 12Ω per phase, determine for 180^0 mode (i) RMS load current (ii) load power.	6M	CO2	L3

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

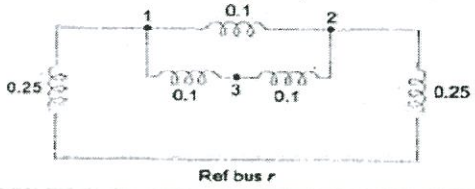
17EE18-POWER SYSTEM ANALYSIS

(EEE)

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)	Discuss the step by step method of formulation of Y_{bus} .	6M	CO1	L2
(b)	Form Y_{bus} for the 4-bus system .The shunt admittances at the buses are negligible.if the line impedances are as under: Line(bus to bus) 1-2 2-3 3-4 1-4 R(p.u) 0.025 0.02 0.05 0.04 X(p.u) 0.10 0.08 0.20 0.16	6M	CO1	L3
	(OR)			
2(a)	Define the following terms: (i)Graph (ii) tree (iii) cotree (iv) link (v) element	6M	CO1	L2
(b)	For the 3-Bus network shown in figue , form Z_{bus}. 	6M	CO1	L3
3(a)	Discuss the significance of Load flow studies.	6M	CO2	L2
(b)	With the help of a neat flow chart, describe the Newton-Raphson method of load flow solution when the system contains voltage controlled busses in addition to swing bus and load bus.	6M	CO2	L2
	(OR)			
4(a)	Compare G-S method and N- R methods of load flow solutions.	6M	CO2	L2
(b)	The schedule of active and reactive powers of a 3-bus system is shown in following table. Bus | P(p.u) | Q(p.u) | V(p.u) | Bus specification 1 | - | - | 1.06+j0 | slack 2 | 0.5 | -0.2 | Not specified | PQ 3 | -1.0 | 0.5 | Not specified | PQ The admittance matrix is $Y_{bus} = \begin{bmatrix} 3-j9 & -2+j6 & -1+j3 \\ -2+j6 & 3.666-j11 & -0.666+j2 \\ -1+j3 & -0.666+j2 & 3.666-j11 \end{bmatrix}$ Assume a flat voltage start; find the voltages and bus angles at the buses at the end of first iteration using G-S method.	6M	CO2	L3
5(a)	Develop the equations for determining the elements of J_1 and J_4 matrices in Fast decoupled load flow method. State the assumptions made for faster convergence.	6M	CO2	L2
(b)	$\begin{bmatrix} 18.002 & -8.868 & -2.035 \\ -8.868 & 17.736 & 3.948 \\ 2.096 & -4.192 & 16.623 \end{bmatrix} \begin{bmatrix} \Delta\delta_2^1 \\ \Delta\delta_3^1 \\ \frac{\Delta V_3}{V_3} \end{bmatrix} = \begin{bmatrix} 1.437 \\ -1.078 \\ 0.0757 \end{bmatrix}$ Determine $\Delta\delta_2^1, \Delta\delta_3^1$ and ΔV_3 using triangular factorization method.	6M	CO2	L3
	(OR)			

6 (a)	Illustrate the load flow solution using decoupled method.	6M	CO2	L2
(b)	Discuss the assumptions made for faster convergence in Fast decoupled load flow method.	6M	CO2	L2
7 (a)	Derive the expression for the fault current when a line to ground fault occurs at the terminal of an unloaded 3-phase alternator. Assume that the alternator has an isolated neutral.	6M	CO2	L2
(b)	The line currents in amperes in phases a, b and c respectively are 500+j150,100-j600 and -300+j600 referred to same reference vector. Find the symmetrical components of line currents.	6M	CO2	L3
	(OR)			
8 (a)	What is the importance of short circuit analysis? Discuss the possible causes of short circuits in the power system	6M	CO3	L2
(b)	Draw zero sequence network of (i) star-star transformer with star points grounded (ii)delta-delta transformers.	6M	CO3	L2
9 (a)	What is equal area criterion? Illustrate how it can be used to study transient stability.	6M	CO4	L2
(b)	A synchronous generator of reactance 1.2 p.u is connected to an infinite bus bar (|V|=1.0 p.u) through transformers and a line of reactance of 0.6p.u.The generator no load voltage is 1.2 p.u and its inertia constant is H= 4MW-s/MVA. The resistance and damping is negligible. Calculate the frequency of natural oscillations if generator is loaded to 50% of its maximum power limit.	6M	CO4	L3
	(OR)			
10(a)	Describe the following (i) Critical clearing angle (ii) critical clearing time	6M	CO4	L2
(b)	A 50HZ 4pole turbo generator rated 20MVA 13.2KV has an inertia constant of 9KW-sec/KVA (i) find kinetic energy stored in rotor at synchronous speed (ii)find acceleration if input less rotational losses is 25000hp and electrical power developed is 15000KW.	6M	CO4	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EE17-ANALOG AND DIGITAL SIGNAL PROCESSING
(EEE)

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)	State and prove the convolution theorem in signal processing.	6M	CO1	L2
(b)	Write the equations for the following functions in continuous time domain and discrete time domain with neat sketches. (i) Impulse (ii) Step (iii) Ramp (iv) Exponential.	6M	CO1	L2
	(OR)			
2(a)	Determine the solution for linear constant coefficient differential equation.	6M	CO1	L3
(b)	Check whether the following systems are causal or non-causal and static or dynamic: (i) $y(n) = a^n u(n)$ (ii) $y(n) = x(n)*x(n-2)$ (iii) $y(t) = x(2-t) + x(t-4)$	6M	CO1	L2
3(a)	State and prove the properties of Discrete Time Fourier Series.	6M	CO2	L2
(b)	Determine the Fourier Series representation of the following discrete time signals: (i) $x(n) = 2sin\frac{\sqrt{3}}{2}\pi n$ (ii) $x(n) = 3cos\frac{\pi n}{4}$ (iii) $x(n) = e^{\frac{j5\pi n}{2}}$	6M	CO2	L3
	(OR)			
4(a)	What are the advantages of FFT? Describe the step by step procedure for calculating the 8-point DFT using Radix-2 DIT FFT with equations.	6M	CO2	L2
(b)	Compute 8-point DFT of x(n) by Radix-2 DIF – FFT. $x(n) = \{1, 3, 2, 2, 1, 3, 2, 2\}$.	6M	CO2	L3
5(a)	How direct form – II structure is obtained from direct form – I structure in FIR systems?	6M	CO3	L2
(b)	Find the impulse response of the following systems described by the difference equation (i) $y(n) - 4y(n-1) + 4y(n-2) = x(n) - 5x(n-3)$ (ii) $y(n) - 3y(n-1) - 4y(n-2) = x(n) + 2x(n-1)$.	6M	CO3	L3
	(OR)			
6(a)	Discuss about the types of structures for realization of FIR systems with block diagram and equations.	6M	CO3	L2

(b)	Draw the direct form structure of the FIR systems described by the following equations, (i) y(n) = x(n) + 1/2 x(n-1) + 1/4 x(n-2) + 1/6 x(n-3) +1/8 x(n-4) (ii) y(n) = 0.2x(n) + 0.25x(n-1) + 0.3x(n-2) – 0.35x(n-3) – 0.4 x (n-4) – 0.45x(n-5) – 0.5x(n-6).	6M	CO3	L3
7(a)	Draw the ideal and practical frequency response characteristic of different types of basic filters and describe their function.	6M	CO4	L2
(b)	The normalized transfer function of an analog filter is given by $$H(s) = \frac{1}{(s_n^2 + 1.414s_n + 1)}$$ Convert the analog filter to a digital filter with a cutoff frequency of 0.4π, using bilinear transformation.	6M	CO4	L3
	(OR)			
8(a)	Write the procedure for design of low pass digital Chebyshev IIR filter with necessary equations.	6M	CO4	L3
(b)	Draw the magnitude response of Butterworth filters and Chebyshev filters and write the differences between Butterworth and Chebyshev filters.	6M	CO4	L2
9(a)	What are the basic steps involved in designing of FIR filters? List out the advantages and disadvantages of FIR filters.	6M	CO4	L2
(b)	Derive the frequency response of linear phase FIR filter when impulse response is antisymmetric with centre of antisymmetry at (N - 1)/2 and N is even.	6M	CO4	L3
	(OR)			
10.	Determine the coefficients of a linear phase FIR filter of length N = 15 which has a symmetric unit sample response and a frequency response that satisfies the conditions $$H\left(\frac{2\pi k}{15}\right) = \begin{cases} 1 & ; for\ k = 0,1,2,3 \\ 0.4 & ; for\ k = 4 \\ 0 & ; for\ k = 5,6,7 \end{cases}$$	12M	CO4	L3

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B.Tech.(VI Semester) Regular/Supplementary Examinations

17EI91-REMOTE SENSING
(EIE)

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)	Discuss the possible limitations of remote sensing data.	6M	CO1	L2
(b)	List and describe the two models used in Electromagnetic Radiation.	6M	CO1	L1
	(OR)			
2(a)	What are the specific energy interactions that take place when Electromagnetic energy from the Sun hits the Earth's surface?	6M	CO1	L1
(b)	Explain the concept of Atmospheric Absorption and Atmospheric transmission.	6M	CO1	L2
3(a)	Predict two types of passive and two types of active sensors.	6M	CO2	L3
(b)	Discuss the characteristics of optical sensors.	6M	CO2	L2
	(OR)			
4(a)	Illustrate the concept of imaging modes.	6M	CO2	L3
(b)	Discuss the characteristics of detectors.	6M	CO2	L2
5(a)	Discuss Geometric characteristics of thermal imagery.	6M	CO3	L2
(b)	Explain signal to noise ratio in detail.	6M	CO3	L2
	(OR)			
6(a)	Illustrate the working of Photomultiplier tube.	6M	CO3	L2
(b)	Explain spectral sensitivity and radiometric resolution.	6M	CO3	L2
7(a)	How can you enhance thermal images for visual interpretation? Explain in detail.	6M	CO4	L2
(b)	Discuss the characteristics of Data Products.	6M	CO4	L2
	(OR)			
8(a)	Restate any six sources of Ground truth and explain.	6M	CO4	L2
(b)	Explain the different steps of the radiometric correction process.	6M	CO4	L2
9(a)	Give three reasons for field observations in the process of image interpretation and explain.	6M	CO5	L2
(b)	Illustrate the concept of spatial resolution.	6M	CO5	L3
	(OR)			
10(a)	Discuss the Types of microwave remote sensing systems and explain.	6M	CO5	L2
(b)	Summarize the applications of Radar.	6M	CO5	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

17EI13-VIRTUAL INSTRUMENTATION

(EIE)

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.	Describe about LabVIEW in detail.	12M	CO1	L2
	(OR)			
2(a)	Describe about Distributed Virtual Instrumentation.	6M	CO1	L2
(b)	Illustrate the real world applications of LabVIEW.	6M	CO1	L2
3(a)	State whether G programming is an objective oriented programming or not. Justify with suitable example.	6M	CO2	L2
(b)	List out different types of indicators with their functionalities.	6M	CO2	L1
	(OR)			
4(a)	Differentiate controls and indicators in LabVIEW along with examples.	6M	CO2	L2
(b)	What is the need of functions in G programming? Explain with suitable example.	6M	CO2	L2
5(a)	Discuss the use of Sub VIs in LabVIEW.	6M	CO3	L2
(b)	Illustrate the need of feedback node with suitable example.	6M	CO3	L2
	(OR)			
6(a)	Demonstrate the use of case structures with an example.	6M	CO3	L2
(b)	Demonstrate the need of clusters in data handling with an example.	6M	CO3	L2
7(a)	Differentiate waveform graph and waveform chart.	6M	CO4	L2
(b)	Discuss the difference between numeric indicator and numeric control.	6M	CO4	L2
	(OR)			
8(a)	Explain the conversion process of sampled data to time axis data in waveform graph.	6M	CO4	L2
(b)	Discuss the need of local variables and global variables in loop operations.	6M	CO4	L2
9(a)	List out the different Data acquisition devises available with NI.	6M	CO5	L1
(b)	Discuss about RSE, NRSE and Differential modes of Data Acquisition.	6M	CO5	L2
	(OR)			
10.	Discuss about the components of DAQ.	12M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EI12-OPTO ELECTRONICS AND LASER INSTRUMENTATION

(EIE)

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)	Illustrate the construction and working principle of an optical fibre with relevant diagram.	6M	CO1	L2
(b)	List out the required properties of a fiber connector.	6M	CO1	L1
	(OR)			
2(a)	Discuss in detail about bending losses occurred in optical fibres.	6M	CO1	L1
(b)	Describe how couplers and connectors are used in optical fibre communication system.	6M	CO1	L2
3(a)	Describe the construction and working of an Argon-ion laser with energy level diagram.	6M	CO1	L2
(b)	Show your understanding about Active Q-Switching.	6M	CO2	L3
	(OR)			
4(a)	How could you differentiate ordinary and laser light? Write the characteristics of a laser.	6M	CO2	L2
(b)	With the assistance of a neat diagram, describe the process of stimulated emission.	6M	CO2	L1
5(a)	Discuss in detail about prism and grating based displacement sensors based on wavelength modulation technique with suitable diagrams.	6M	CO2	L2
(b)	Mention the reasons for requirement of reference associated with loss in intensity in the case of intensity modulated sensors.	6M	CO3	L3
	(OR)			
6(a)	Show your understanding about Faraday effect and explain the working of Magnetic field and electric current sensors.	6M	CO3	L3
(b)	Draw neat sketches depicting working of dual and multiple beam interferometers.	6M	CO3	L2
7(a)	Describe briefly about optical tweezers with focus on its functioning.	6M	CO4	L2
(b)	List down the military applications of optical tweezers.	6M	CO4	L2
	(OR)			
8(a)	List out the applications of holography and discuss in detail about any two.	6M	CO4	L2
(b)	Outline the properties of hologram.	6M	CO4	L2
9(a)	Describe briefly about usage of lasers in dentistry.	6M	CO5	L2
(b)	Mention the advantages and disadvantages associated with lasers in dental applications.	6M	CO5	L2
	(OR)			
10(a)	Outline the procedure of plastic surgery using lasers and list out their classifications.	6M	CO5	L2
(b)	Mention the drawbacks of lasers in plastic surgery.	6M	CO5	L1

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EC10-DIGITAL SIGNAL PROCESSING
(EIE)

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)	Determine whether the following signals are energy or power signals (i) $x(n) = (1/4)^n u(n)$ (ii) $x(n) = u(n)$.	6M	CO1	L2
(b)	Explain about time shifting and time reversal operations with suitable examples.	6M	CO1	L2
	(OR)			
2(a)	Check the system $y(n)=T\{x(n)\}=x(n)+1/x(n-1)$ for linearity, shift invariant, causality and stability.	6M	CO1	L2
(b)	State and prove any 4 properties of DTFT.	6M	CO1	L2
3(a)	Determine the Z Transform and ROC of the following disrete time signal $x(n) = 0.3^n u(n) + 0.8^n u(-n-1)$.	6M	CO2	L3
(b)	Find the Z transform of the signal $x(n) = (-1/5)^n u(n)$.	6M	CO2	L3
	(OR)			
4(a)	Determine the inverse Z transform of the following z-domain function $X(z) = (3z^2 + 2z+1)/ (z^2 + 4z+1)$ using partial fraction method.	6M	CO2	L3
(b)	Obtain the DF-II realization of the LTI system governed by the equation $y(n)=-3/8y(n-1)+3/32y(n-2)+1/64y(n-3)+x(n)+3x(n-1)+2x(n-2)$	6M	CO2	L3
5(a)	What is twiddle factor? List out any four properties?	6M	CO3	L2
(b)	Compute the 8-point DFT of a sequence $x(n)=\{1,0,1,0,1,0,1,0\}$.	6M	CO3	L3
	(OR)			
6(a)	Compute 8 point DFT using radix 2 DITFFT where x(n) given by $\{2,1,2,1,1,2,1,2\}$.	6M	CO3	L3
(b)	Compute the circular convolution of sequences $x_1(n)=\{2,1,2,-1\}$ and $x_2(n)=\{1,2,3,4\}$.	6M	CO3	L3
7(a)	Draw the characteristics of LPF using chebyshev type-I and type-II approximations? Explain its properties.	6M	CO4	L2
(b)	Determine H(z) using impulse invariant transformation by assuming T= 0.1sec, for the analog transfer function, $H(s) = 2/(s^2+3s+2)$.	6M	CO4	L3
	(OR)			
8.	Obtain the transfer function of digital low pass IIR filter by using Butterworth approximation and bilinear transformation(T=1sec). Specifications of a filter are $0.8 \le \lvert H(jw)\rvert \le 1.0; 0 \le w \le 0.2\pi$, $\lvert H(jw)\rvert \le 0.2; 0.32\pi \le w \le \pi$	12M	CO4	L3
9(a)	Compare Hamming window and Blackman window.	6M	CO5	L2
(b)	List the advantages and disadvantages of DSP system.	6M	CO5	L1
	(OR)			
10.	Design a linear phase FIR low pass filter using hanning window by taking 7 samples of window sequence and with cut off frequency 0.2π rad/sample.	12M	CO5	L3

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B.Tech. VI Semester Regular/Supplementary Examinations

17EI11-BIO-MEDICAL INSTRUMENTATION

(EIE)

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)	Describe in detail about Man Instrumentation system with the help of Block diagram	6M	CO1	L2
(b)	What are the problems that encounters while taking the measurements from Living cells of Human Body?	6M	CO1	L1
	(OR)			
2(a)	Describe the importance of cell and its structure.	6M	CO1	L2
(b)	Illustrate the Working of Action Potential and Resting Potential with the help of neat sketch.	6M	CO1	L2
3(a)	Discuss the placement of chest leads on the subject to study the ECG waveform.	6M	CO3	L2
(b)	Describe about the Brain and its lobes along with the neat sketch.	6M	CO3	L2
	(OR)			
4(a)	Interpret the functioning of Heart and cardiovascular system.	6M	CO3	L2
(b)	Summarize the working of Electro Encephalo Grapy with the help of blockdiagram	6M	CO3	L2
5(a)	Discuss the direct method for measurement of BP.	6M	CO5	L2
(b)	Illustrate the working of Ventilators with the help of Block diagram.	6M	CO5	L2
	(OR)			
6(a)	Describe the principle and operation of Ultrasonic blood flow meter.	6M	CO5	L2
(b)	Illustrate the physiology of respiratory system with the help of neat sketch.	6M	CO5	L2
7(a)	Discuss the connection and working of fixed rate Pacemaker.	6M	CO4	L2
(b)	Illustrate the working principle of Flame Photometer.	6M	CO4	L2
	(OR)			
8(a)	Describe the operation of synchronized DC defibrillator with suitable diagram.	6M	CO4	L2
(b)	Summarize the principle and working of Spectrophotometer with the help of neat sketch.	6M	CO4	L2
9(a)	Illustrate the working principle and construction of Magnetic resonance Imaging system with the help of neat sketch.	6M	CO2	L2
(b)	Describe how electrical safety Analyzer is used for testing both medical facility power systems and medical equipment	6M	CO2	L2
	(OR)			
10(a)	Discuss the principle and working of Computer Tomography.	6M	CO2	L2
(b)	Summarize the electrical shock hazards that occur due to usage of medical equipment.	6M	CO2	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17EI10-PROCESS CONTROL INSTRUMENTATION
(EIE)

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)	Describe the process control characteristics.	6M	CO1	L2
(b)	Interpret dynamics of simple pressure.	6M	CO1	L2
	(OR)			
2(a)	Distinguish between interacting and non interacting systems.	6M	CO1	L2
(b)	What is the purpose of a Piping and Instrumentation Diagram?	6M	CO1	L1
3(a)	Discuss the types of control actions with neat sketch.	6M	CO2	L2
(b)	Distinguish between two and three position controller characteristics.	6M	CO2	L2
	(OR)			
4(a)	What is the response with PI, PD and PID controllers?	6M	CO2	L2
(b)	Explain the electric and electronic controllers with a neat sketch.	6M	CO2	L2
5(a)	What is the physical significance of finding ISE?	6M	CO3	L1
(b)	What is the importance of time integral performance criteria?	6M	CO3	L1
	(OR)			
6(a)	Explain the performance indices of IAE.	6M	CO3	L2
(b)	Distinguish between ISE, IAE and ITAE.	6M	CO3	L2
7(a)	What is the difference between I to P and P to I converter?	6M	CO4	L2
(b)	Explain about pneumatic, hydraulic and electric actuators.	6M	CO4	L2
	(OR)			
8(a)	What are the major components to a sliding stem control valve?	6M	CO4	L2
(b)	Discuss the importance of final control elements in process control.	6M	CO4	L2
9(a)	What is the objective of an advanced process control?	6M	CO5	L1
(b)	Explain the analysis and application of advanced control strategies to a Heating Element by taking Nonlinear Model.	6M	CO5	L2
	(OR)			
10(a)	What are the control strategies in advanced regulatory control?	6M	CO5	L1
(b)	What is a cascaded control and what are its advantages?	6M	CO5	L1

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17IT91-NETWORK PROGRAMMING
(IT)

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)	Describe the TCP/IP reference model and Unix Standards.	6M	CO1	L2
(b)	Explain the procedure about TCP connection establishment.	6M	CO1	L2
	(OR)			
2(a)	Differentiate TCP and UDP.	6M	CO1	L2
(b)	Write a short note on buffer sizes and limitations.	6M	CO1	L2
3(a)	Write a note on Crashing and Rebooting of Server Host in TCP Client/Server application.	6M	CO2	L2
(b)	Explain about TCP connection establishment functions: socket(), listen().	6M	CO2	L2
	(OR)			
4(a)	Write about TCP connection establishment functions: bind(), accept().	6M	CO2	L2
(b)	Explain about fork() with example.	6M	CO2	L2
5.	Explain the IPv4 Socket Address Structure and IPv6 Socket Address Structure with suitable examples.	12M	CO3	L2
	(OR)			
6.	Describe with diagrams the following I/O models provided by Unix: (i) Blocking I/O model (ii) Non blocking I/O model (iii) signal driver I/O.	12M	CO3	L2
7(a)	Explain about types of Resources Records (entries in the DNS).	6M	CO4	L2
(b)	Describe the UDP Echo server functions and lost datagram with an example.	6M	CO4	L3
	(OR)			
8(a)	Explain the procedure, how a connected UDP socket can be used to determine the outgoing interface.	6M	CO4	L2
(b)	Discuss gethostbyname() function.	6M	CO4	L2
9(a)	Describe the functionality of message queues in IPC implementation.	6M	CO5	L2
(b)	What is advisory locking? Explain the file locking with semaphores.	6M	CO5	L2
	(OR)			
10(a)	What is a pipe? How are FIFO's different from Pipes? Explain with suitable example.	6M	CO5	L3
(b)	Discuss IPC implementation using pipes with suitable example.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17IT05-OBJECT ORIENTED SOFTWARE ENGINEERING
(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)	What are the three models involved in Object-modeling Technique? Define each one of them.	6M	CO1	L2
(b)	What is object? Discuss the main characteristics of the object with examples from the real world.	6M	CO1	L1
	(OR)			
2.	Define link and give five different examples of links and represent them using Object-modeling Technique notations.	12M	CO1	L2
3(a)	List the guidelines for finding use cases.	6M	CO2	L1
(b)	Analyze Booch's habits of a successful OO project.	6M	CO2	L2
	(OR)			
4(a)	Illustrate System architecture and write the minimal characteristics.	6M	CO2	L2
(b)	List the rules of Classes. Differentiate cohesion and coupling.	6M	CO2	L2
5(a)	Outline about the modularity in design concepts.	6M	CO3	L2
(b)	Write short notes on component level and deployment level design elements.	6M	CO3	L2
	(OR)			
6(a)	Illustrate the importance of design classes. Explain different types design classes.	6M	CO3	L2
(b)	Explain briefly about the design process and also explain its characteristics.	6M	CO3	L2
7.	What are the various testing strategies to software testing? Discuss them briefly.	12M	CO4	L2
	(OR)			
8(a)	Discuss in detail about basis path testing and explain its importance.	6M	CO4	L2
(b)	Illustrate briefly about control structure testing.	6M	CO4	L2
9(a)	What is method overloading and why we use method overloading? Explain the advantage of it.	6M	CO5	L1
(b)	Discuss the rules of method overriding.	6M	CO5	L1
	(OR)			
10(a)	Explain the similarities between Java and C++.	6M	CO5	L2
(b)	Summarize different kinds of implementations of object databases.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17CI24-IMAGE PROCESSING

(IT)

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)	Illustrate the concept of sampling and quantization.	6M	CO1	L2
(b)	Discuss about elements of visual perception.	6M	CO1	L1
	(OR)			
2(a)	Summarize various applications of image processing.	6M	CO1	L2
(b)	Describe the components of digital image processing.	6M	CO1	L1
3(a)	Write about Local enhancement technique.	6M	CO2	L1
(b)	Discuss about Unsharp masking and high-boost filtering .	6M	CO2	L2
	(OR)			
4(a)	Define histogram of a digital image. Sketch the histograms of dark, light, low contrast and high contrast images.	6M	CO2	L1
(b)	Apply histogram equalization on the given data (r_k): 0, 1, 2, 3, 4, 5, 6, 7 (p_k): 100, 90, 50, 20, 0, 0, 0, 0 where r_k is the gray level value and p_k is the no of pixels also sketch the histogram of original and equalized image	6M	CO2	L3
5(a)	Differentiate between Gaussian noise and Impulse noise.	6M	CO3	L2
(b)	Write about Adaptive filters used in image restoration.	6M	CO3	L1
	(OR)			
6(a)	Illustrate RGB model and give equations in converting colors from RGB to HSI.	6M	CO3	L2
(b)	Describe about Constrained Least Squares Filtering.	6M	CO3	L2
7(a)	Apply the Huffman coding technique to calculate the entropy and code length for the word COMMITTEE.	6M	CO4	L3
(b)	Discuss the region filling operation with an example.	6M	CO4	L3
	(OR)			
8(a)	Describe the dilation operation on a binary image.	6M	CO4	L2
(b)	Illustrate the image compression model with neat diagram.	6M	CO4	L2
9(a)	Discuss in detail about global processing via graph theoretic techniques.	6M	CO5	L2
(b)	Discuss any two region based segmentation techniques.	6M	CO5	L2
	(OR)			
10(a)	Outline the edge detection process in image segmentation.	6M	CO5	L2
(b)	Discuss about global processing using Hough transform.	6M	CO5	L2

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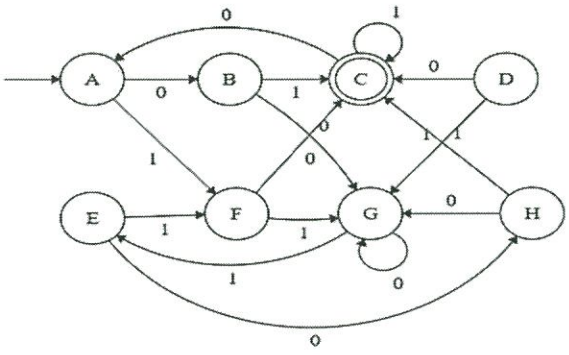
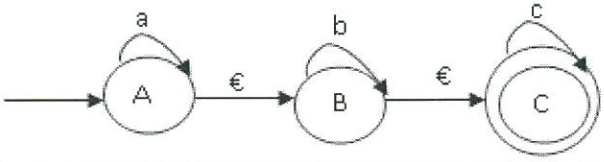
B.Tech. (VI Semester) Regular/Supplementary Examinations

17CI15-AUTOMATA THEORY AND COMPILER DESIGN
(IT)

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)	Construct the DFA over ∑={a,b}which contains set of all strings which (i) Starts with **'ab'** (ii) Ends with **'ab'** (iii) Contains **'ab'** as sub string.	6M	CO1	L2
(b)	Construct the minimal state DFA for the given transistion diagram using Myhill nerode theorem. 	6M	CO1	L3
	(OR)			
2(a)	Find an equivalent deterministic automaton for the given automata: 	6M	CO1	L2
(b)	Use pumping lemma to show that the following language is not regular **L={ 0^n10^n/ n>=0}.**	6M	CO1	L3
3(a)	Eliminate useless symbols in the given grammar. S->AaA A->Sb/bCc/DaA C->abb/DD E->aC D->aDA	6M	CO2	L2
(b)	Consider the grammar G E → E+T ,E → T,T → T*F ,T →F,F → (E) ,F → id Find the left most derivation ,right most derivation and derivation trees for the string **" id+id*id".**	6M	CO2	L2
	(OR)			
4(a)	Write the steps involved to simply the given context free grammar.	6M	CO2	L2

(b)	Construct the Chomsky Normal form for the given grammar: S → ASB / € A → aAS / a B → SbS /A/bb	6M	CO2	L3
5.	Construct LALR(1) parsing table for the following grammar. S→L=R,S→R,L→*R,L→id,R→L	12M	CO3	L3
	(OR)			
6(a)	Consider the grammar G E → E+T ,E → T,T → T*F ,T →F,F → (E) ,F → id Trace the acceptance of the string "id+id+id" using shift reduce parsing.	6M	CO3	L2
(b)	Write the rules to compute First and Follow for the given grammar.	6M	CO3	L2
7(a)	Illustrate the concept of S-attributed and L-attributed grammars with example.	6M	CO4	L2
(b)	Construct quadruples, triples and indirect triples for the following statement (a+b)*(c+d)-(a+b+c).	6M	CO4	L3
	(OR)			
8.	Discuss various forms of intermediate code representations with a suitable example.	12M	CO4	L2
9(a)	Describe peephole optimization techniques with examples.	6M	CO5	L2
(b)	Construct Directed Acyclic Graph (DAG) for the statement a=(a*b+c)-(a*b+c).	6M	CO5	L3
	(OR)			
10(a)	How optimization of basic blocks done?	6M	CO5	L2
(b)	Describe the design issues of code generator.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17IT03-R PROGRAMMING
(IT)

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)	What is vectors in R? Two vectors X and Y are defined as follows: X <- c(3, 2, 4) and Y <- c(1, 2). What will be output of vector Z that is defined as Z <- X*Y?	6M	CO1	L2
(b)	Differentiate Array,Matrix and Data Frame.	6M	CO1	L2
	(OR)			
2(a)	Describe in detail about R Operators.	6M	CO1	L1
(b)	Differentiate among apply(),lapply() and sapply() functions.	6M	CO1	L2
3(a)	How user defined functions in R generated and give a suitable example?	6M	CO2	L2
(b)	Explain about default values and in return statements in functions.	6M	CO2	L1
	(OR)			
4(a)	Illustrate loops in R programming with examples.	6M	CO2	L2
(b)	Describe quick sort implementation using recursion.	6M	CO2	L1
5.	Create a matrix with (3,3) dimension and apply the following tasks and provide result of each case. write equal R code for task (i) to (iv) (i) x[c(1,2),c(2,3)] (ii) x[c(3,2),] (iii) x[,] (iv) x[-1,].	12M	CO3	L3
	(OR)			
6(a)	Write a R code to update given matrix , the elements with > 10 will be replaced with 0 and <=10 will be replaced with 1 21 10 15 8 36 2 12 5 36	6M	CO3	L2
(b)	Write R Program to reverse array elements.	6M	CO3	L3
7(a)	Write a R code to perform whether list is palindrome or not.	6M	CO4	L3
(b)	Describe how to create own package.	6M	CO4	L2
	(OR)			
8.	Create a data frame for students (ID,NAME,GRADE)and perform following tasks and write equivalent R code. (i) Extend data frame with variables GENDER,BRANCH (ii) Melt data accordance to GENDER (iii) Extract data frame with GRADE HIGH.	12M	CO4	L2
9(a)	What is pie chart? How it is created.	6M	CO5	L1
(b)	Write R code to create and plot pie chart with title, legend, percentage and colors with given data.	6M	CO5	L3

HP	DELL	Lenova	Acer
15	22	13	33

	(OR)			
10(a)	Create a vector and perform mean, median and mode operations with examples.	6M	CO5	L2
(b)	Write R code for (a).	6M	CO5	L3

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

17CI20-INFORMATION SECURITY

(IT)

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)	Describe the various active and passive information security attacks.	6M	CO1	L2
(b)	Describe the information security mechanisms that is designed to detect, prevent, or recover from a security attack.	6M	CO1	L2
	(OR)			
2(a)	Describe the Advanced Encryption Standard (AES)algorithm with necessary flow diagram.	6M	CO1	L2
(b)	Explain the difference between a block cipher and a stream cipher.	6M	CO1	L2
3(a)	Describe the role of a compression function in a hash function.	6M	CO2	L2
(b)	Illustrate RSA algorithm with an example.	6M	CO2	L2
	(OR)			
4(a)	Give an example of replay attacks and list the general approaches to dealing with replay attacks.	6M	CO2	L2
(b)	Discuss the principal differences between version 4 and version 5 of Kerberos.	6M	CO2	L2
5(a)	Discuss about Pretty Good Privacy (PGP) Message Generation.	6M	CO3	L2
(b)	Give examples of applications of IPsec.	6M	CO3	L3
	(OR)			
6(a)	Explain the difference between transport mode and tunnel mode.	6M	CO3	L2
(b)	Describe the roles of Internet Security Association and Key Management Protocol (ISAKMP) in IPsec.	6M	CO3	L2
7(a)	Explain the difference between an SSL connection and an SSL session.	6M	CO4	L2
(b)	List and briefly describe the parameters that define an SSL session connection.	6M	CO4	L1
	(OR)			
8(a)	Describe the steps involved in the SSL Record Protocol transmission.	6M	CO4	L1
(b)	Illustrate the working of SET.	6M	CO4	L3
9.	Explain the various phases in the lifetime of a typical virus.	12M	CO5	L1
	(OR)			
10.	Describe the different types of firewall highlighting the position of firewall in the protocol stack.	12M	CO5	L1

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8.	The yield of a chemical process was measured using five batches of raw material, five acid concentrations, five standing times, (A, B, C, D, E) and five catalyst concentrations (α, β, γ, δ, ε). The Graeco-Latin square that follows was used. Analyze the data from this experiment (use α = 0.05) and draw conclusions. Acid Concentration Batch | 1 | 2 | 3 | 4 | 5 1 | Aα=26 | Bβ=16 | Cγ=19 | Dδ=16 | Eε=13 2 | Bγ=18 | Cδ=21 | Dε=18 | Eα=11 | Aβ=21 3 | Cε=20 | Dα=12 | Eβ=16 | Aγ=25 | Bδ=13 4 | Dβ=15 | Eγ=15 | Aδ=22 | Bε=14 | Cα=17 5 | Eδ=10 | Aε=24 | Bα=17 | Cβ=17 | Dγ=14	12M	CO4	L4
9(a)	Define Quality and illustrate the factors that influence the quality of a product.	6M	CO5	L2
(b)	Twenty five samples of size 5 are drawn from a process at one hour intervals and the following data are obtained: $\sum_{i=1}^{25} x = 362.75 \sum_{i=1}^{25} r = 8.60$ Find the control limits for X bar- chart and R-chart.	6M	CO5	L3
	(OR)			
10(a)	Distinguish between control charts for variables and attributes.	6M	CO5	L2
(b)	Illustrate the process of implementing statistical process control(SPC) in an industry.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17ME91-DESIGN OF EXPERIMENTS

(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)	Illustrate the factorial experimentation strategy with an example.	6M	CO1	L2
(b)	Describe the best guess approach with an example.	6M	CO1	L2
	(OR)			
2(a)	Illustrate the application of experimental design in optimizing a process with a suitable example.	6M	CO1	L2
(b)	Discuss the basic principles of Experimental Design.	6M	CO1	L2
3(a)	The following are the burning times (in minutes) of chemical flares of two different formulations. The design engineers are interested in both the means and variance of the burning times. Type 1 | | Type 2 | 65 | 82 | 64 | 56 81 | 67 | 71 | 69 57 | 59 | 83 | 74 66 | 75 | 59 | 82 82 | 70 | 65 | 79 Test the hypotheses that the two variances are equal. Use α = 0.05. (i) Using the results of (i), test the hypotheses that the mean burning times are equal. Use α = 0.05.	6M	CO2	L3
(b)	The viscosity of a liquid detergent is supposed to average 800 centistokes at 25°C. A random sample of 16 batches of detergent is collected, and the average viscosity is 812. Suppose we know that the standard deviation of viscosity is σ = 25 centistokes. (i) State the hypotheses that should be tested. (ii) Test these hypotheses using α = 0.05. What are your conclusions? (iii) Find a 95 percent confidence interval on the mean.	6M	CO2	L3
	(OR)			

4(a) The shelf life of a carbonated beverage is of interest. Ten bottles are randomly selected and tested, and the following results are obtained:

Days	
108	138
124	163
124	159
106	134
115	139

(i) We would like to demonstrate that the mean shelf life exceeds 120 days. Set up appropriate hypotheses for investigating this claim. (ii) Test these hypotheses using $\alpha = 0.01$. What are your conclusions. (iii) Construct a 99 percent confidence interval on the mean shelf life. — 6M | CO2 | L3

(b) A new filtering device is installed in a chemical unit. Before its installation, a random sample yielded the following information about the percentage of impurity: mean $y_1 = 12.5$, $S_1^2=101.17$ and $n_1= 8$. After installation, a random sample yielded mean $y_2 = 10.2$, $S_2^2= 94.73$, $n_2= 9$. Can you conclude that the two variances are equal? Use $\alpha = 0.05$. — 6M | CO2 | L3

5(a) An article in the *ACI Materials Journal* (Vol. 84, 1987. pp. 213-216) describes several experiments investigating the rodding of concrete to remove entrapped air. A 3" x 6" cylinder was used, and the number of times this rod was used is the design variable. The resulting compressive strength of the concrete specimen is the response. The data are shown in the following table. — 6M | CO3 | L3

Rodding Level	Compressive Strength		
10	153	153	144
15	161	165	150
20	156	173	153
25	150	149	151

Is there any difference in compressive strength due to the rodding level? Use $\alpha = 0.05$.

(b) An experiment was run to determine whether four specific pressures affect the density of a certain type of brick. The experiment led to the following data: — 6M | CO3 | L4

pressure	Density				
10	20.3	20.4	20.2	20.1	20.2
15	20.2	19.9	20.0	19.9	
20	20.4	20.3	20.3	20.1	20.0
25	20.4	20.2	20.3	19.9	

Does the specific pressures affect the density of the bricks? Use $\alpha = 0.05$.

(OR)

6(a) A product developer is investigating the tensile strength of a new synthetic fiber that will be used to make cloth for men's shirts. Strength is usually affected by the percentage of cotton used in the blend of materials for the fiber. The engineer conducts an experiment with five levels of cotton content and replicated the experiment five times. The data are shown in the following table. Is there evidence to support the claim that cotton content affects the mean tensile strength? Use $\alpha = 0.05$. — 6M | CO3 | L4

Cotton Weight Percentage	Observations				
15	7	7	15	11	9
20	12	17	12	18	18
25	14	19	19	18	18
30	19	25	22	19	23
35	7	10	11	15	11

(b) An article in *Environment International* describes an experiment in which the amount of chlorofluorocarbons(CFC) released in air was investigated. CFC enriched air was used in the experiment and six different nozzle diameters were tested in air heads. The data from the experiment are shown in the following table. — 6M | CO3 | L4

Nozzle Dia.	CFC Released (%)			
0.5	70	73	73	75
1.0	65	65	69	69
1.5	64	63	66	67
2.0	57	62	64	64

Does the size of the orifice affect the mean percentage of radon released? Use $\alpha = 0.05$.

7. Three different washing solutions are being compared to study their effectiveness in retarding bacteria growth in five-gallon milk containers. The analysis is done in a laboratory, and only three trials can be run on any day. Because days could represent a potential source of variability, the experimenter decides to use a randomized block design. Observations are taken for four days, and the data are shown here. Analyze the data from this experiment (use $\alpha = 0.05$) and draw conclusions. — 12M | CO4 | L4

	Days			
Solution	1	2	3	4
1	13	22	18	39
2	16	24	17	44
3	5	4	1	22

(OR)

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17MB82-LOGISTICS AND SUPPLY MANAGEMENT

(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)	Identify the essence and complexity of handling supply chain.	6M	CO1	L1
(b)	Describe a model of supply chain management with a diagram.	6M	CO1	L2
	(OR)			
2(a)	Explain aggregate planning. Describe the role predictive visibility in supply chain performance.	6M	CO1	L2
(b)	What is "bullwhip effect"? How it affects the supply chain?	6M	CO1	L1
3(a)	Explore the connection between customer service and the management of demand.	6M	CO2	L3
(b)	Discuss the significance of information flow in logistics.	6M	CO2	L2
	(OR)			
4(a)	Discuss the characteristics, selection and mode of transport.	6M	CO2	L2
(b)	Address the scope and importance of handling logistics.	6M	CO2	L2
5(a)	Differentiate between purchasing and procurement.	6M	CO3	L2
(b)	Discuss the supplier/vendor selection criteria.	6M	CO3	L2
	(OR)			
6(a)	Discuss problems pertaining to international customer support in global logistics.	6M	CO3	L2
(b)	Discuss key areas for supply chain efficiency benchmarking.	6M	CO3	L2
7(a)	Discuss the multiple barriers to supply chain coordination.	6M	CO4	L2
(b)	Explore the various basic modes of transport, their advantages and disadvantages.	6M	CO4	L3
	(OR)			
8(a)	Analyze the consequences of lack of supply chain coordination within a supply chain.	6M	CO4	L3
(b)	Discuss the behavioral non behavioral causes of Bullwhip Effect.	6M	CO4	L2
9(a)	Discuss the role of Information in the supply chain.	6M	CO5	L2
(b)	Discuss the information characteristics that are useful to make supply chain decisions.	6M	CO5	L2
	(OR)			
10(a)	Describe the logistics information system.	6M	CO5	L2
(b)	Discuss the various computer based information systems.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17MB81-PROJECT MANAGEMENT
(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)	Demonstrate the important phases of project life cycle.	6M	CO1	L2
(b)	What are the future trends in project management?	6M	CO1	L1
	(OR)			
2.	Summarize the experiences and perspectives of project management research.	12M	CO1	L2
3(a)	Explain any three forms of organization structures.	6M	CO2	L2
(b)	Discuss key concepts pertaining to organization culture.	6M	CO2	L2
	(OR)			
4(a)	How the stakeholders' management will optimize the lead generation strategies?	6M	CO2	L2
(b)	Recall the creating aspects of project management culture.	6M	CO2	L1
5(a)	Memorize the nature and characteristic aspects of project planning.	6M	CO3	L2
(b)	Describe the approval process for the setting project charter.	6M	CO3	L2
	(OR)			
6(a)	In what way the project charter will monitor and control?	6M	CO3	L1
(b)	Explain the financial module development process for project planning.	6M	CO3	L2
7.	Evaluate various procedural steps in the project execution initiation process.	12M	CO4	L2
	(OR)			
8(a)	What is the importance of risk management in project management?	6M	CO4	L1
(b)	Discuss the four stage process of risk management.	6M	CO4	L2
9(a)	Write about tools and skills required tolead the project teams.	6M	CO5	L1
(b)	Explain the characteristics of effective team building.	6M	CO5	L2
	(OR)			
10(a)	Describe the key factors of conflicts management to enhance group outcomes.	6M	CO5	L2
(b)	Outline the negotiations mechanism in project management.	6M	CO5	L2

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17ME24-AUTOMOBILE 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)	Construct and explain the chassis and body of an automobile vehicle indicating all the components.	6M	CO1	L1
(b)	Elucidate the following terms (i) Camshaft (ii) Flywheel and (iii) Valves.	6M	CO1	L2
	(OR)			
2(a)	Differentiate between front wheel drive and Rear wheel drive systems. Also Mention some applications of four-wheel drive systems.	6M	CO1	L2
(b)	Describe the construction of piston with neat sketch.	6M	CO1	L1
3(a)	Illustrate the working of simple carburetor.	6M	CO2	L2
(b)	With neat diagram explain the working of Electrical Pump.	6M	CO2	L1
	(OR)			
4(a)	Elaborate the working of Zenith Carburetor with a neat sketch.	6M	CO2	L1
(b)	Construct the fuel supply system of Diesel engine with neat sketch.	6M	CO2	L1
5(a)	Mention the components of Battery ignition system and describe Ignition coil with neat sketch.	6M	CO3	L1
(b)	Justify the need of ignition systems in automobiles.	6M	CO3	L1
	(OR)			
6(a)	Illustrate the magneto ignition system.	6M	CO3	L2
(b)	Enumerate the advantages and disadvantages of Battery Ignition system over Magneto Ignition system.	6M	CO3	L1
7(a)	With a neat sketch, Demonstrate the working of Sliding mesh gear box.	6M	CO4	L1
(b)	Distinguish between fluid coupling and Torque convertor.	6M	CO4	L2
	(OR)			
8(a)	Demonstrate the working of solenoid switch with neat sketch.	6M	CO4	L1
(b)	List different types of tyres used in an automobile and explain.	6M	CO4	L1
9(a)	Demonstrate the working of Rack and pinion steering gear with neat sketch.	6M	CO5	L1
(b)	Illustrate the following (i) Toe-in & Toe-out and (ii) Center point steering.	6M	CO5	L2
	(OR)			
10(a)	What are the advantages of hydraulic brakes over mechanical brakes?	6M	CO5	L1
(b)	Illustrate the operational details of Disc braking system.	6M	CO5	L2

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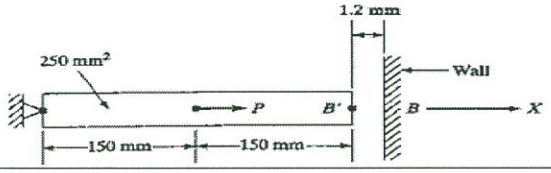
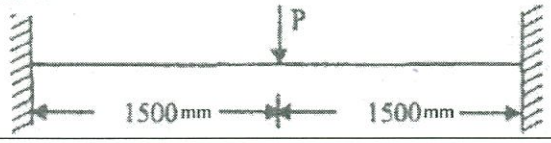
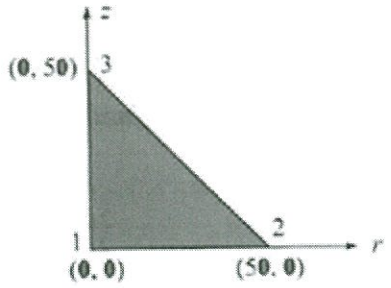
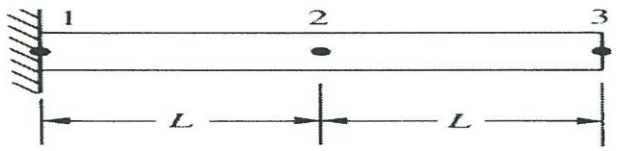
B.Tech. VI Semester Regular/Supplementary Examinations

17ME23-FINITE ELEMENT ANALYSIS
(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 strain displacement relation for a 2 dimensional element.	6M	CO1	L3
(b)	Define shape function. Derive shape function in terms of Cartesian coordinates	6M	CO1	L2
	(OR)			
2(a)	Write the advantages, disadvantages and applications of FEM.	6M	CO1	L3
(b)	In the figure shown, a load P = 60 X 10^3 N is applied. Determine the displacement field, elemental stresses and support reactions in the body. Take E = 20 X 10^3 N/mm^2. 	6M	CO1	L3
3(a)	Derive the shape functions for a beam element.	6M	CO2	L3
(b)	A concentrated load P = 60 KN is applied at the centre of a fixed beam of length 3 m, depth 200 mm and width 120 mm. Calculate the deflection and slope at the midpoint. Also find reactions at the supports. Assume E = 2.1 × 10^5 N/mm^2 as shown in figure. 	6M	CO2	L3
	(OR)			
4.	Derive the expression for strain displacement matrix for a constant strain triangular element. Also derive the stiffness matrix.	12M	CO2	L2
5(a)	For the axisymmetric element shown in Figure determine the element stiffness matrix. Take E=200 GPa, and υ=0.3 	6M	CO3	L3

(b)	Discuss a few applications of axi-symmetric elements.	6M	CO3	L3
	(OR)			
6(a)	Derive the stiffness matrix for axisymmetric element.	6M	CO3	L2
(b)	Derive the shape functions of two dimensional four noded iso-parametric element. Plot the shape functions	6M	CO3	L3
7.	Determine the temperature distribution along a circular fin of length 5 cm and radius 1 cm. The fin is attached to boiler whose wall temperature 140^{0}C and the free end is open to the atmosphere. Assume Ta = 40^{0}C, h = 10 W/cm^2 / ^{0}C, k = 70W/cm ^{0}C	12M	CO4	L3
	(OR)			
8(a)	A furnace wall is made up of three layers, inside layer with thermal conductivity 8.5 W/mK, the middle layer with conductivity 0.25 W/mK, the outer layer with conductivity 0.08 W/mK. The respective thicknesses of the inner, middle and outer layer are 2.5 cm, 5 cm and 3 cm respectively. The inside temperature of the wall is 600 K and outside of the wall is exposed to atmospheric air at 30K with heat transfer coefficient of 45 W/m^{2}K. Determine the nodal temperatures	6M	CO4	L3
(b)	Define heat transfer.Derive the finite element equation for 1-D heat conduction with free end convection	6M	CO4	L1
9(a)	Determine the Eigen values and Eigen vectors of the bar shown in figure. Take E=200 GPa, ρ = 2800 kg/m^3, A=0.258m^2,L=0.4m 	6M	CO5	L3
(b)	Define lumped mass and consistent mass.			
	(OR)			
10(a)	Derive the consistent mass matrix for a bar element in its local coordinate system.	6M	CO5	L3
(b)	Discuss Eigen value and Eigen vector analysis	6M	CO5	L3

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17ME22-CAD/CAM
(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)	How the product cycle is revised with introduction of CAD/CAM.	6M	CO1	L2
(b)	Write short notes on 2D reflection and scaling.	6M	CO1	L1
	(OR)			
2(a)	A rectangle has corner co-ordinates (10,20) (40,20), (40,40), (10,40). This rectangle is rotated by 30° anticlockwise about (i) origin and (ii) about the point (40,20). Compute the new co-ordinates in both cases.	6M	CO1	L3
(b)	Write short notes on any two display devices.	6M	CO1	L1
3(a)	A cubic spline curve is defined by the equation $P(u) = C_3u^3+C_2u^2+C_1u+C_0$ Assume the coefficients C_3, C_2, C_1 and C_0 are known, find the four control points that define an identical Hermite curve.	6M	CO2	L3
(b)	Give the parametric representation of circular, helix, parabola.	6M	CO2	L1
	(OR)			
4(a)	Give the Bezier surface representation for a given set of "nxm" points, expand the terms for n=3 and m=2.	6M	CO2	L3
(b)	Explain in detail B-rep solid modeling approach.	6M	CO2	L1
5(a)	Differentiate CNC and DNC machines.	6M	CO3	L2
(b)	Briefly describe the CNC machining centers. With the help of a diagram differentiate between the operations of canned cycles G81 and G83.	6M	CO3	L1
	(OR)			
6(a)	Discuss the four types of statements used in APT part programming.	6M	CO3	L2
(b)	What is the importance of G-codes in part programming? Give examples.	6M	CO3	L1
7(a)	What is meant by a part family in Group Technology? Name and explain three parts classification and coding systems commonly used in GT.	6M	CO4	L2
(b)	What is flexible manufacturing cell explain with suitable illustrations.	6M	CO4	L1
	(OR)			
8(a)	Differentiate between retrieval type and generative type CAPP systems? List out the merits and demerits of each type.	6M	CO4	L2
(b)	What are the benefits of FMS and explain the need of FMS in modern manufacturing environment?	6M	CO4	L1
9(a)	Illustrate the objectives of CAQC. Explain the different computer aided inspection methods.	6M	CO5	L2
(b)	Explain any one non-contact and non-optical inspection method with suitable sketch.	6M	CO5	L2
	(OR)			
10(a)	Outline CIM integration of all activities of industry.	6M	CO5	L2
(b)	Discuss the role of CAPP in CIM in detail.	6M	CO5	L2

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H.T.No. | | | | | | | | | | |

7 AUG 2021

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular/Supplementary Examinations

17ME21-MECHANICAL ENGINEERING DESIGN-II

(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)	A 150 mm diameter shaft supporting a load of 10 kN has a speed of 1500 r.p.m. The shaft runs in a bearing whose length is 1.5 times the shaft diameter. If the diametral clearance of the bearing is 0.15 mm and the absolute viscosity of the oil at the operating temperature is 0.011 kg/m-s, find the power wasted in friction.	6M	CO1	L3
(b)	For a 2212 series ball bearing, the load varies as follows. S.No | Radial load (N) | Axial load (N) | Cycle time ratio | Speed (rpm) 1 | 6000 | 3000 | 0.5 | 400 2 | 7500 | 2000 | 0.3 | 650 3 | 4000 | 1000 | 0.2 | 900 The inner ring rotates, loads are steady. Evaluate the expected average life of the bearing in million revolutions.	6M	CO1	L3
	(OR)			
2(a)	Select a journal bearing for a steam turbine, the shaft of the turbine is supported on two bearings one at each side of the turbine and is coupled with a generator for power production. The weight of the turbine with shaft is 40 kN and the shaft rotates at 1500 rpm. Diameter of the shaft is 100 mm. Assume suitable data.	12M	CO1	L3
3(a)	Draw a neat sketch of crank shaft and mention its parts.	6M	CO2	L1
(b)	Design piston of a 4 stroke diesel engine based on the following data. Maximum gas pressure = 7 N/mm^2 Cylindrical bore = 100 mm, Allowable bearing pressure in main for skirt = 0.45 MPa, Ratio of side thrust on liner to maximum gas load on piston = 0.12. Width of top land 20 mm, Width of ring grooves = 2.6 mm, Total number of piston rings = 4, Axial thickness of piston rings = 3 mm.	6M	CO2	L3
	(OR)			
4(a)	Write the procedure in designing the center crankshaft which is at dead center.	6M	CO2	L1
(b)	Estimate the dimensions of cross section of connecting rod for a four stroke petrol engine for the following date. Bore=80mm, Stroke=120mm, Weight of reciprocating parts=15N, Maximum speed = 2800rpm, Length of connecting rod from center to center=240mm, Explosion pressure =3 MPa, Compression ratio= 4:1, Factor of safety =6.	6M	CO2	L3
5(a)	A flat belt is required to transmit 30 kW from a pulley of 1.5 m effective diameter running at 300 rpm. The angle of lap is 165 degrees. Coefficient of friction is 0.3, Determine the width of the belt, if thickness of the belt is 9.5 mm, centre distance = 4 m and permissible working stress is 2.5 MPa.	6M	CO3	L4

(b)	Select a wire rope for a vertical mine hoist to lift a load of 45 KN from a depth 300m. A rope speed of 500 m/min is to be attained in 10 sec.	6M	CO3	L3
	(OR)			
6 (a)	An overhung pulley transmits 35 kW power at 240 r.p.m. The belt drive is vertical and the angle of wrap may be taken as 180^0. The distance of the pulley center line from the nearest bearing is 350 mm. μ=0.25. Determine; (i) Diameter of the pulley; (ii)Width of the belt assuming the thickness of 10 mm.	6M	CO3	L3
(b)	A rope drive is required to transmit 900 kW from a pulley of 1.2 m diameter running at 450 r.p.m. The safe pull in each rope is 2500 N and the mass of the rope is 1 kg/m length. The angle of lap and the groove angle is 160° and 45° respectively. Find the number of ropes required for the drive if the coefficient of friction between the rope and the pulley is 0.3.	6M	CO3	L3
7 (a)	Design a helical compression spring for a static load of 400 N at a deflection of 45mm with a factor of safety of 2.5. Use spring index C = 8.	6M	CO4	L3
(b)	A semi elliptical leaf spring consists of two extra full length leaves and 10 graduated length leaves including the master leaf. Each leaf is 7.5 mm thick and 60 mm wide. The center to center distance between the two eyes is 1.2 m. The maximum stresses induced in all the leaves are equal to $350N/mm^2$. Determine the maximum force that the spring can withstand. And also determine the maximum deflection.	6M	CO4	L3
	(OR)			
8.	A semi-elliptical laminated spring is made of 60 mm wide and 3 mm thick plates. The length between the supports is 700 mm and the width of the band is 60 mm. The spring has two full length leaves and five graduated leaves. If the spring carries a central load of 1800 N, find : (i) Maximum stress in full length and graduated leaves for an initial condition of no stress in the leaves. (ii) The deflection in leaves. (iii) Lengths of all leaves.	12M	CO4	L4
9(a)	A pair of 20^0 full depth involute spur gears with module 6mm and face width 60 mm is made of steel having 400HB. The pinion has 28 teeth and runs at 1000 rpm. The gear ratio is 4. Calculate the power transmitted as indicated by the Lewis equation.	6M	CO5	L2
(b)	Design a 4 speed gear box for the following details. Motor power= 3KW, maximum speed= 800 rpm and minimum speed= 120 rpm.	6M	CO5	L3
	(OR)			
10.	A pair of helical gears with 30° helix angle is used to transmit 15 kW at 10 000 r.p.m. of the pinion. The velocity ratio is 4 : 1. Both the gears are to be made of hardened steel of static strength 100 N/mm2. The gears are 20° stub and the pinion is to have 24 teeth. The face width may be taken as 14 times the module. Find the module and face width from the standpoint of strength and check the gears for wear.	12M	CO5	L3

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B.Tech. (VI Semester) Regular/Supplementary Examinations

17ME20-HEAT TRANSFER
(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)	Derive Fourier's Law of equation for heat transfer by conduction. State some essential features of the Law.	6M	CO1	L3
(b)	The door of a cold storage plant is made from two 6 mm thick glass sheets separated by a uniform air gap of 2 mm. The temperature of the air inside the room is -20°C and the ambient air temperature is 30°C. Assuming the heat transfer coefficient between glass and air to be 23.26 W/m²K. Determine the rate of the heat leaking into the room per unit area of the door. Neglect convection effects in the air gap. K_{glass} = 0.75 W/mK; K_{air} = 0.02 W/mK.	6M	CO1	L3
	(OR)			
2.	A reactor's wall, 320 mm thick, is made up of an inner layer of fire brick (k = 0.84W/m°C) covered with a layer of insulation (k = 0.16W/m°C). The reactor operates at a temperature of 1325°C and the ambient temperature is 25°C. (i) Determine the thickness of fire brick and insulation which gives minimum heat loss; (ii) Calculate the heat loss presuming that the insulating material has a maximum temperature of 1200°C.	12M	CO1	L3
3(a)	Find out the amount of heat transferred through an iron fin of length 50 mm, width 100 mm and thickness 5mm. Assume k = 210 kJ/mh°C and h = 210 kJ/m²h°C for the material of the fin and the temperature at the base of the fin as 80°C. Also determine the temperature at tip of the fin, if the atmosphere temperature is 20°C.	6M	CO2	L3
(b)	A solid copper sphere of 10 cm diameter [ρ = 8954 kg/m³, C_p = 383 J/kg K, k = 386 W/m K], initially at a uniform temperature t_i = 250°C, is suddenly immersed in a well-stirred fluid which is maintained at a uniform temperature t_a = 50°C. The heat transfer coefficient between the sphere and the fluid is h = 200 W/m²K. Determine the temperature of the copper block at τ = 5 min after the immersion.	6M	CO2	L3
	(OR)			
4(a)	Explain the efficiency and effectiveness of fin.	6M	CO2	L2
(b)	An egg with mean diameter of 40 mm and initially at 20°C is placed in a boiling water pan for 4 minutes and found to be boiled to the consumer's taste. For how long should similar egg for same consumer be boilded when taken form a refrigerator at 5°C. take the following properties for egg: K = 10 W/m°C, ρ = 1200 kg/m³, C = 2kJ/kg °C, and h= 100 W/m² °C. Use Lump theory.	6M	CO2	L3

5(a)	What is dimensional analysis? What are the uses of dimensional analysis?	6M	CO3	L1
(b)	A vertical cylinder 1.5 m high and 180 mm in diameter is maintained at 100°C in an atmosphere environment of 20°C. Calculate heat loss by free convection from the surface of the cylinder. Assume properties of air at mean temperature as, ρ = 1.06 kg/m^3, ν = 18.97 x 10^{-6} m^2/s, C_p = 1.004 kJ/kg°C and k = 0.1042 kJ/mh°C.	6M	CO3	L3
	(OR)			
6(a)	Describe the Buckingham Pi theorem method for dimensional analysis.	6M	CO3	L2
(b)	Atmospheric air at 20°C if flowing parallel to a flat plate at a velocity of 2.8 m/s. Assuming cubic velocity profile and using exact Blasius solution, estimate the boundary layer thickness and the local coefficient of drag (or skin friction)at x = 1.2 m from the leading edge of the plate. Also find the deviation of the approximate solution from the exact solution. Take the kinematic viscosity of air at 20°C = 15.4 x 10^{-6} m^2/s.	6M	CO3	L3
7(a)	Differentiate between the mechanism of film wise and drop wise condensation.	6M	CO4	L3
(b)	The effective temperature of a body having an area of 0.1 m^2 is 627°C. Calculate: (i) The total rate of energy emission (ii) The intensity of normal radiation and (iii) The wavelength of maximum monochromatic emissive power.	6M	CO4	L3
	(OR)			
8(a)	Water is boiled at the rate of 25kg/h in a polished copper pan, 280 mm in diameter, at atmospheric pressure. Assuming nucleate boiling conditions, calculate the temperature of the bottom surface of the pan. Properties of water at atmospheric pressure are: t_{sat} = 100°C; ρ_{liq} = 958.4 kg/m^3; ρ_{vap} = 0.5955 kg/m^3; c_{pl} = 4220 J/kg K; μ_{liq} = 279x10^{-6}Ns/m^2; Pr_{liq} = 1.75; h_{fg} = 2257 kJ/kg; σ = 58.9x10^{-3} N/m; n=1 (for water)	6M	CO4	L3
(b)	Derive an expression for the shape factor in case of radiation exchange between two surfaces.	6M	CO4	L3
9(a)	Derive an expression for logarithmic mean temperature difference in the case of Parallel flow heat exchangers.	6M	CO5	L3
(b)	An oil cooler for a lubrication system has to cool 1000 kg/h of oil (c_p = 2.09 kJ/kg °C) from 80°C to 40°C by using a cooling water flow of 1000 kg/h at 30°C. Give your choice for parallel flow or counter-flow heat exchanger, with reasons. Calculate the surface area of the heat exchanger, if the overall heat transfer coefficient is 24 W/m^2 °C. Take c_p of water = 4.18 kJ/kg °C.	6M	CO5	L3
	(OR)			
10(a)	Derive an expression for effectiveness by NTU method for the Counter flow heat exchangers.	6M	CO5	L3
(b)	Saturate steam at 100°C is condensing on the shell side of a shell and tube heat exchanger. The cooling water enters the tube at 30°C and leaves at 70°C. Calculate the mean temperature difference if arrangement is (i) parallel flow, (ii) counter flow.	6M	CO5	L3

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