LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

A.Y. 2019-20

B.Tech. (VI Semester)(R17) Regular Examinations, October/November 2020

TIME TABLE

Regulations : R17

DATE	Time : 10.00 AM - 1.00 PM				Time : 10.45 AM - 01.45 PM			
	CSE	ECE	EIE	IT	ASE	CE	EEE	ME
28-10-2020 (Wednesday)	17CS05 Android Technologies	17EC20 Linear Control Systems	17EI10 Process Control Instrumentation	17CI20 Information Security	17AE16 Propulsion –II	17CE20 Design of Steel Structures	17EE17 Analog and Digital Signal Processing	17ME20 Heat Transfer
31-10-2020 (Saturday)	17CI16 Data Mining and Data Warehousing	17CI07 OOPs through Java	17EI11 Bio Medical Instrumentation	17CI16 Data Mining and Data Warehousing	17AE17 Aircraft Structures-II	17CE21 Irrigation and Water Resources Engineering	17EE18 Power System Analysis	17ME21 Mechanical Engineering Design - II
03-11-2020 (Tuesday)	17CI17 Data Communications and Computer Networks	17EC21 Antenna and Wave Propagation	17EC10 Digital Signal Processing	17IT03 R Programming	17AE18 Flight Dynamics	17CE22 Water and Waste Water Engineering	17EE19 Power Electronics	17ME22 CAD/CAM
05-11-2020 (Thursday)	17EC22 Microprocessors and Microcontrollers	17EC22 Microprocessors and Microcontrollers	17EI12 Opto Electronics and Laser Instrumentation	17CI15 Automata Theory and Compiler Design	17AE19 Finite Element Methods in Engineering	17CE23 Geo Technical Engineering – II	17EE20 Measurements and Instrumentation	17ME23 Finite Element Analysis
07-11-2020 (Saturday)	17CS08 PHP Programming (PE-II)	17EC25 Cellular and Mobile Communications (PE-II)	17EI13 Virtual Instrumentation (PE-II)	17CI24 Image Processing (PE-II)	17AE23 Space Mechanics (PE-II)	17CE25 Railways, Airport Planning and Harbour Engineering (PE-II)	17EC29 Embedded System Design (PE-II)	17ME24 Automobile Engineering (PE-II)
09-11-2020 (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)	17MB82 Logistics and Supply Management (OE-I)
11-11-2020 (Wednesday)	17CS91 Software Testing Methodologies (AoC-II)	17EC91 Telecommunication Switching Systems and Networks (AoC-II)	17EI91 Remote Sensing (AoC-II)	17IT91 Network Programming (AoC-II)	17AE91 Industrial Aerodynamics (AoC-II)	17CE91 Low Cost and Eco-Friendly Building Technology (AoC-II)	17EE91 Electrical Reliability Engineering (AoC-II)	17ME91 Design of Experiments (AoC-II)

NOTE: (i) Any omissions or clashes in this time table may please be informed to the Controller of Examinations immediately.
(ii) Even if government/JNTUK/College declares holiday on any of the above dates, the examinations shall be conducted as notified only.
(iii) For any clarification in respect of the above examinations, please contact the Controller of Examinations.

Date: 08-10-2020

CONTROLLER OF EXAMINATIONS

PRINCIPAL

Copy to: 1. All H.o.Ds for N.A., 2. All Notice Boards

H.T.No										

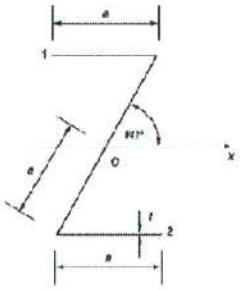
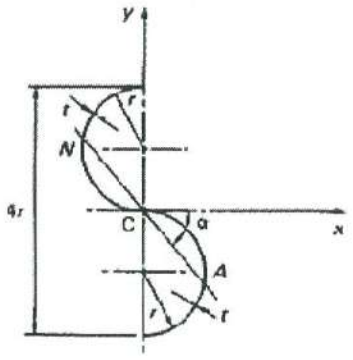
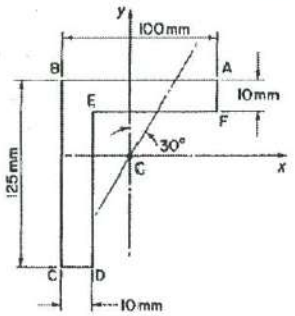
31 OCT 2020

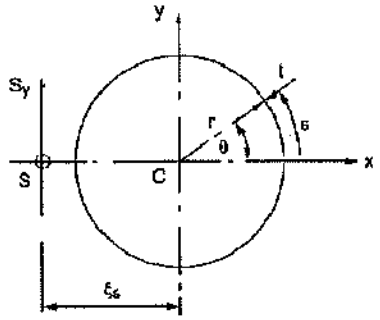
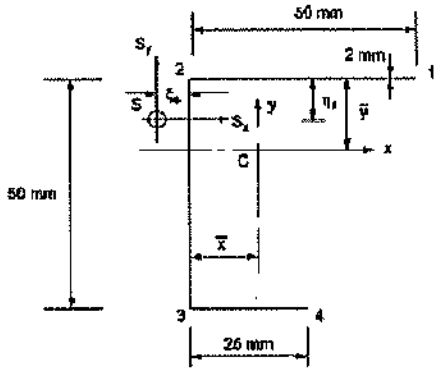
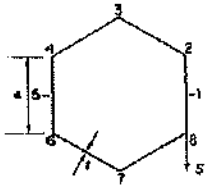
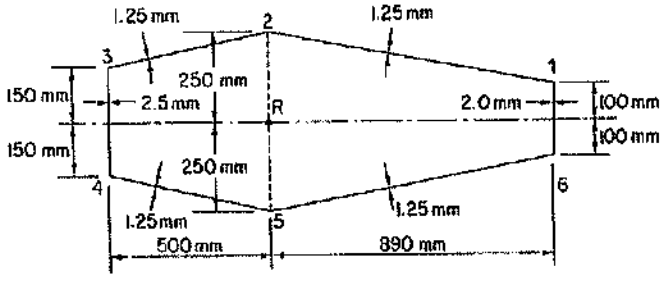
R17

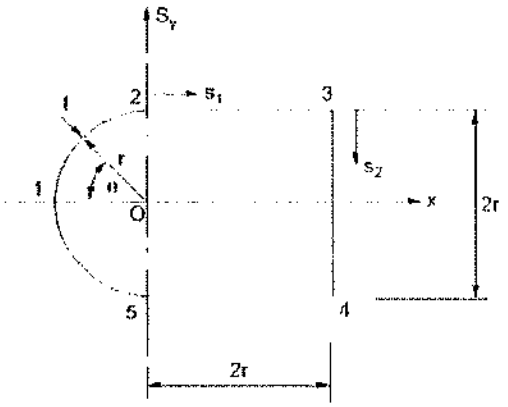
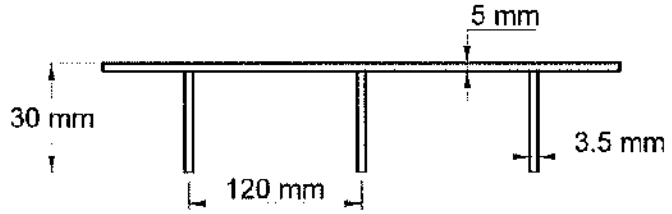
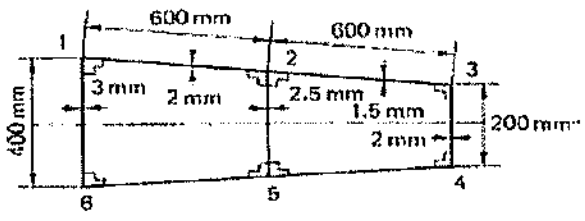
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.
B.Tech. (VI Semester) Regular Examinations
17AE17-AIRCRAFT STRUCTURES-II
(ASE)

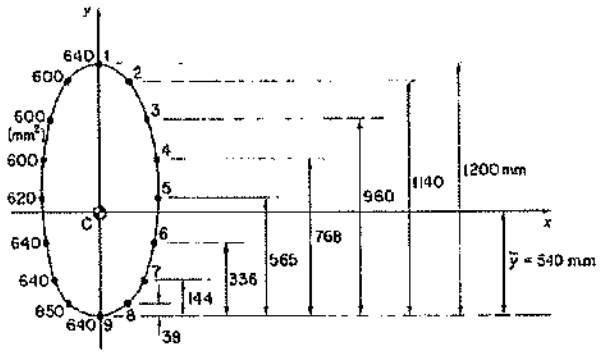
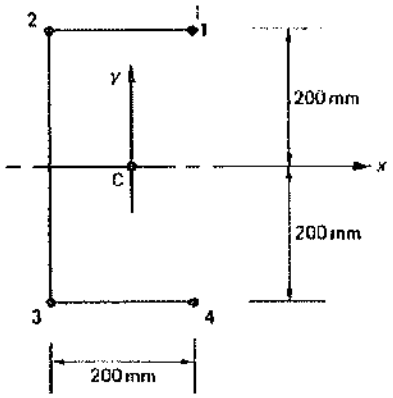
Time : 3 hours Max. Marks : 60

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

Q.No	Questions	Marks	CO	BI
1(a)	Derive the direct stress distribution equation due to bending for a beam having Unsymmetrical cross section.	6M	CO1	L3
(b)	The thin-walled beam section shown in Figure. is subjected to a bending moment M_y applied in a positive 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 = 150 mm and t = 10 mm.  Figure	6M	CO1	L3
	(OR)			
2(a)	A uniform thin-walled beam has the open cross-section shown in Figure. The wall thickness t is constant. Calculate the position of the neutral axis and the maximum direct stress for a bending moment M_y= 4.5 kN-m applied about the vertical axis C-y. Take $I_{xx} = 3r^3t$, $I_{yy} = r^3t$, $I_{xy} = -4r^3t$, when r = 5 mm, t = 0.64 mm. 	6M	CO1	L3
(b)	Figure. shows the section of an angle purlin. A bending moment of 5000 N-m is applied to the purlin in a vertical plane. If the sense of the bending moment M_x is positive, calculate the direct stress at points B, D and E in the purlin. Take I_{xx} = 3.37 × 10⁶ mm⁴, I_{yy} = 1.93 × 10⁶ mm⁴, I_{xy} = 1.50 × 10⁶ mm⁴. 	6M	CO1	L3

3(a)	Prove that the shear center lies at the junction for a T- section.	6M	CO2	L3
(b)	Calculate the shear flow distribution in the thin-walled open section shown in Figure.3 (b) produced by a vertical shear load, S_y, acting through its shear centre. Take the second moment of area, $I_{xx} = \pi r^3 t$.  Figure.3(b)	6M	CO2	L3
	(OR)			
4.	Calculate the position of the shear center of the thin-walled section shown in Figure the thickness of the section is 2 mm and is constant throughout.  Figure	12M	CO2	L4
5(a)	Figure shows the regular hexagonal cross-section of a thin-walled beam of sides a = 25 mm and constant wall thickness t = 2 mm. The beam is subjected to a transverse shear force S = 200 N, its line of action being along a side of the hexagon, as shown. Calculate the shear flow of planes 5-4, and 4-3. Take $I_{xx} = 2.5a^3t$.  Figure	6M	CO3	L3
(b)	A single cell, thin-walled beam with the double trapezoidal cross-section shown in Figure., is subjected to a constant torque T = 90,500 N-m and is constrained to twist about an axis through the point R. Calculate the shear stress distributed according to the Bredt–Batho theory of torsion. The shear modulus G = 27 500 N/mm² and is constant throughout.  Figure	6M	CO3	L3
	(OR)			

6.	Determine the shear flow distribution in the walls of the thin-walled closed section beam shown in Figure; the wall thickness, t, is constant throughout.  Figure	12M	CO3	L3
7(a)	Explain plates subjected to bending and twisting.	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 500 mm. The material has a Young's modulus of 70 000 N/mm² and its elasticity may be taken as falling catastrophically when a compressive stress of 300 N/mm² 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.  Figure	6M	CO4	L3
	(OR)			
8(a)	A plate 10 mm thick is subjected to bending moments M_x equal to 10 N m/mm and M_y equal to 5 N m/mm, find the maximum twisting moment per unit length in the plate and the direction of the planes on which this occurs.	6M	CO4	L3
(b)	Discuss when a thin plate subjected to uniform loading.	6M	CO4	L2
9(a)	Part of a wing section is in the form of the two-cell box shown in Figure.in which the vertical spars are connected to the wing skin through angle sections all having a cross-sectional area of 400 mm². Idealize the section into an arrangement of direct stress carrying booms and shear stress only carrying panels suitable for resisting bending moments in a vertical plane. Position the booms at the spar/skin junctions.  Figure	6M	CO5	L

(b)	The fuselage section shown in Figure. is subjected to a bending moment of 200 kN-m applied in the vertical plane of symmetry. If the section has been completely idealized into a combination of direct stress carrying booms and shear stress only carrying panels, determine the direct stress in booms 6 to 9 only. Take I_{xx} = 1854 × 10^6 mm^4.  Figure	6M	CO5	L3
	(OR)			
10(a)	Explain the effect of idealization on shear flow of the section.	6M	CO5	L2
(b)	The singly symmetrical channel section shown in Figure. has been idealized into an arrangement of direct stress carrying booms; the boom areas are all 350 mm^2. Calculate the direct stresses in the booms when the section is subjected to a bending moment of 150 kN-m in a vertical plane.  Figure	6M	CO5	L3

****

H.T.No										

3 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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(a)	Derive an expression for minimum power condition in steady level flight.	6M	CO1	L3
(b)	Prove that flight velocity for minimum power required is 0.76 times the flight velocity for minimum thrust required in the case of steady level flight.	6M	CO1	L3
	(OR)			
2.	Derive the aerodynamic relations associated with maximum C_L/C_D, $C_L^{3/2}/C_D$ and $C_L^{1/2}/C_D$.	12M	CO1	L3
3(a)	Derive the equation for velocity corresponding to maximum climb angle.	6M	CO2	L3
(b)	Data for a light single engine propeller driven aircraft in a steady level flight at sea level is as follows. Velocity is 40 m/s, weight W = 13kN, Lift Coefficient C_L = 0.65, $C_D = 0.025+0.04C_L^2$ and power available is 100 kJ/s. Calculate the rate of climb possible for this aircraft under given conditions.	6M	CO2	L3
	(OR)			
4(a)	Explain the importance of the V-n diagram for jet aircraft.	6M	CO2	L2
(b)	Define Absolute and service ceiling. Derive the expression for time to climb for an aircraft at a given altitude.	6M	CO2	L3
5(a)	What are the primary aerodynamic controls of an aircraft? Explain with neat sketches the effect of deflection of each control on roll, pitch and yaw.	6M	CO3	L2
(b)	Define static margin. Derive the expression related to static margin.	6M	CO3	L3
	(OR)			
6.	A wing body model is tested in a subsonic wind tunnel. The lift is found to be zero at a geometric angle of attack $\alpha = -1.5°$. At $\alpha = 5°$ the lift coefficient (C_L) is measured as 0.52. The moment coefficient about the center of gravity (C.G) are measured as -0.01 and 0.05 for $\alpha = 1^o$ and 7.88^o respectively. The center of gravity (C.G) is located at 0.35c ('c' is chord length). Calculate the location of the aerodynamic centre and the value coefficient of pitching moment about the aerodynamics center ($C_{Mac\ wb}$).	12M	CO3	L4

7(a)	Discuss the contribution of various parts of an airplane to the rolling moment.	6M	CO4	L2
(b)	What is the function of ailerons? Discuss the functions of various types of ailerons.	6M	CO4	L2
	(OR)			
8(a)	Explain the control of airplane in the case asymmetric power and control of adverse yaw.	6M	CO4	L2
(b)	Derive the expression for coefficient of yawing moment produced by the rudder.	6M	CO4	L3
9(a)	Explain Dutch roll mode of motion and Spiral mode of motion of an aircraft of an aircraft with suitable diagrams.	6M	CO5	L2
(b)	The longitudinal motion of an airplane is described by the following characteristics equation $\lambda^4+5.05\lambda^3+13.15\lambda^2+0.6735\lambda+0.593=0$. Determine the roots of this equation.	6M	CO5	L3
	(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 pitching moment equation of the aircraft.	12M	CO5	L4

****

H.T.No										

5 NOV 2020 **R17**

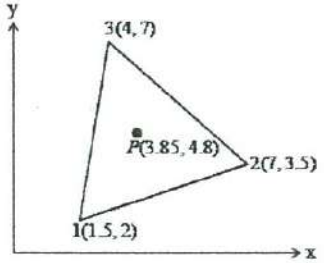
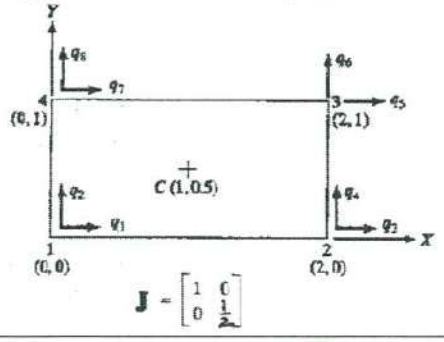
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

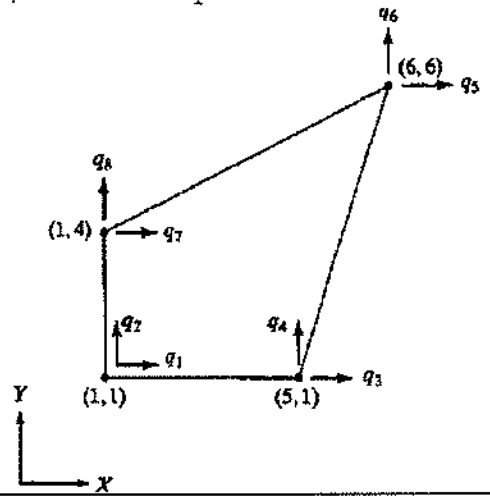
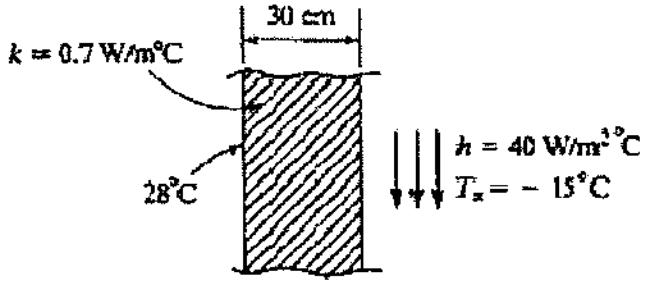
B.Tech. (VI Semester) Regular Examinations

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)	Describe the importance of stress-strain relationships in solving the structural problem using FEM.	6M	CO1	L2
(b)	Write the basic procedure for evaluating the deformations in a bar under an axials loads using FEM.	6M	CO1	L2
	(OR)			
2(a)	List the various procedures available to solve for field variables in FEM. Describe any one of the approaches used in FEM.	6M	CO1	L2
(b)	Distinguish (i) Plane Stress problem and (ii) Plane Strain problem.	6M	CO1	L2
3(a)	State "Constant Strain Triangular (CST) Element and derive the stiffness matrix for CSTElement.	6M	CO2	L3
(b)	Evaluate the shape functions *N1*, *N2* and *N3*, at the interior point *P* for a Triangular element as shown in Figure. Also, determine the Jacobian, J. 	6M	CO2	L3
	(OR)			
4(a)	Distinguish the boundary conditions for a cantilever beam with point load, and simply supported beam with *UDL*.	6M	CO2	L2
(b)	State"Stiffness Matrix [K]" and derive the [K] matrix for a beam element.	6M	CO2	L3
5(a)	The four node quadrilateral element shown in Figure. Take $E=20\times10^6\ N/cm^2$, Poisson ratio, $\upsilon=0.3$ and q= [0, 0, 0.2, 0, 0.15, 0.1, 0, 0.05]^T. Evaluate (i) x and y coordinates of a point P whose location in the master element is given by $\xi=0.5$ &$\eta=0.5$ (ii) the u and v displacements of the point P.  $J = \begin{bmatrix} 1 & 0 \\ 0 & \frac{1}{2} \end{bmatrix}$	6M	CO3	L3

(b)	List the steps involved in solving the Axisymmetric solids subjected to axisymmetric loading using FEM.	6M	CO3	L1
	(OR)			
6(a)	Figure shows a four-node quadrilateral. The x and y coordinates of each node are given in the figure. The element displacement vector, q is given as $q= [0, 0, 0.01, 0.02, 0.05, 0.01, 0.10, 0.01]^T$ cm. Take $E=20\times10^6$ N/cm² and $\nu=0.25$. Evaluate Jacobian matrix, strain displacement matrix, and stress at $\xi=0$ &$\eta=0$. Assume plane stress condition. 	6M	CO3	L3
(b)	Write the generalized 3-D unsteady heat conduction equation and simply this to steady 1-D heat conduction equation with no heat generation and with proper boundary conditions.	6M	CO3	L2
7.	Consider a brick wall of thickness $L=30cm$, $k=0.8$ W/m°C. The inner surface is at 28°C and the outer surface is exposed to cold air at -15°C. The heat transfer coefficient is associated with the outside surface is $h=40$W/m²°C. Determine the steady state temperature distribution within the wall as shown in the Figure. Use a two-element model. 	12M	CO4	L3
	(OR)			
8(a)	Describe the 1D heat transfer in thin fins and derive the convection heat loss (Q) in the fin.	6M	CO4	L2
(b)	Derive heat conduction equation for one dimensional case with proper boundary conditions.	6M	CO4	L3
9.	Derive and Equations of motion of a dynamic system using a Lagrangian ($L=T-\pi$) for a spring-mass system.	12M	CO5	L3
	(OR)			
10(a)	Explain the Eigen value problem for un damped-free vibration system.	6M	CO5	L2
(b)	Describe the following with examples. (i) Lumped mass matrix model. (ii) Consistent mass matrix model	6M	CO5	L2

****

H.T.No										

7 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17AE23-SPACE MECHANICS
(ASE)

JC7

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 about earth's atmosphere space environment.	6M	CO1	L2
(b)	Define and write the equation for the conic section. Provide details and specify how one would obtain the eccentricity vector.	6M	CO1	L1
	(OR)			
2(a)	Discuss the elliptical orbit. Derive the equation for the elliptical orbit. Also, provide an equation for the period of an elliptical orbit.	6M	CO1	L2
(b)	Define the circular orbit, and the various aspects of the time period of motion of the circular motion.	6M	CO1	L1
3(a)	Explain the Non-dimensional Parameters.	6M	CO2	L2
(b)	Differentiate between boost phase and ballistic phase.	6M	CO2	L2
	(OR)			
4(a)	Analyze the position of the impact point on the spherical earth with the help of neat sketch.	6M	CO2	L3
(b)	Differentiate between ballistic missile and cruise missile.	6M	CO2	L3
5(a)	Illustrate about jacobi's integral with the help of neat sketch.	6M	CO3	L2
(b)	Differentiate between two body problem for circular and elliptic orbits.	6M	CO3	L2
	(OR)			
6(a)	Estimate the relative motions in the N body problem and also list the applications of space flight.	6M	CO3	L3
(b)	Differentiate between two body problem for parabolic and hyperbolic orbits.	6M	CO3	L2
7(a)	What are the perturbing forces? Describe the perturbation effect on satellite orbit using cowell's method.	6M	CO4	L2
(b)	Determine the Burnout velocity of a projectile without drag in a vertical trajectory with the following parameters e=2209 m/s; mp/m_0=0.57; t_a=5 sec and u_a=h_a=0.	6M	CO4	L3
	(OR)			
8(a)	Write short notes on launch vehicle ascent trajectories with the help of neat sketch.	6M	CO4	L1
(b)	Differentiate between cowell's method and Encke's method.	6M	CO4	L2
9(a)	Explain briefly about two dimensional interplanetary trajectories.	6M	CO5	L2
(b)	A communication satellite carried by the space shuttle into LEO at an altitude of 322km and is to be transferred to GEO at 35,860km using Hohmann transfer. Determine the characteristics of transfer ellipse and the total Δ_v required ΔV_T.	6M	CO5	L3
	(OR)			
10(a)	Explain briefly about three dimensional interplanetary trajectories.	6M	CO5	L2
(b)	Differentiate between 2 D interplanetary trajectories and fast interplanetary trajectories.	6M	CO5	L2

****

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

9 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations
17MB80-INDUSTRIAL ENGINEERING AND MANAGEMENT
(AE,CE & 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)	Explain and evaluate the process of scientific management.	6M	CO1	L2
(b)	Discuss the utility of organization structure in an organization.	6M	CO1	L2
	(OR)			
2(a)	Explain nature and scope of management.	6M	CO1	L2
(b)	Summarize the assumptions of Douglas McGregor about behavior of Managers.	6M	CO1	L2
3(a)	Describe the different methods of production.	6M	CO2	L2
(b)	Discuss the factors to be considered for the selection of a location for a factory construction.	6M	CO2	L2
	(OR)			
4(a)	What is work study? Explain its benefits.	6M	CO2	L2
(b)	Explain in detail the various types of plant layouts.	6M	CO2	L2
5.	The following table gives the number of defects in a casting used for making crank case of diesel engine. Casting No: 1 2 3 4 5 6 7 8 9 10 Number of defects: 15 11 25 10 12 20 15 10 17 13 Construct an appropriate control chart with the control limits and comment on the process.	12M	CO3	L4
	(OR)			
6(a)	Explain about ABC analysis. What is its importance in inventory control?	6M	CO3	L2
(b)	The following information is about the shock observers used by automobile workshop Annual demand 4800 units Unit price Rs 300 Cost of placing an order Rs 50 Storage cost 3 Percent per annum Interest rate 10 percent per annum. Calculate EOQ and also find the number of orders to be placed.	6M	CO3	L3
7(a)	What are the Steps in Manpower Planning?	6M	CO4	L1
(b)	Discuss the role of Human resource Manager in an Industrial setting.	6M	CO4	L2
	(OR)			
8(a)	Discuss about the principles of human resource management.	6M	CO4	L2
(b)	Distinguish between training and development.	6M	CO4	L2
9(a)	What is PERT? Define optimistic time, pessimistic time and most likely time and explain how you will estimate the expected time to complete the activity in PERT technique.	6M	CO5	L2
(b)	Distinguish between CPM and PERT.	6M	CO5	L2
	(OR)			
10.	A project schedule has the following characteristics Activity: 1-2 1-3 2-4 3-4 3-5 4-9 5-6 5-7 6-8 7-8 8-10 TIME: 4 1 1 1 6 5 4 8 1 2 5 (i) Construct the network (ii) Find the critical path	12M	CO5	L3

****

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

11 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17AE91-INDUSTRIAL AERODYNAMICS
(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)	Illustrate about periodic winds by considering an example of land and sea breeze.	6M	CO2	L2
(b)	Discuss about the main causes of variation of wind speeds and movements.	6M	CO2	L2
	(OR)			
2(a)	Develop an expression for adiabatic lapse rate and compare with standard ISA lapse rate.	6M	CO2	L3
(b)	Write a short note about the following wind turbine components (i) Nacelle and Yaw System (ii) Tower and Foundation.	6M	CO2	L2
3(a)	Define the following terms (i) Vehicle Soiling (ii) Splash (iii) Spray.	6M	CO1	L1
(b)	List out the structures that contribute the aerodynamic drag in train.	6M	CO1	L1
	(OR)			
4(a)	List out the classifications of motor cycles.	6M	CO1	L1
(b)	Discuss about aerodynamics of motor cycles.	6M	CO1	L2
5(a)	Discuss about the fundamental aspects of flow over flat plates and walls inclined to the flow.	6M	CO2	L2
(b)	Draw the pressure plots over model building of pioneer boundary layer measurements of Jensen.	6M	CO2	L2
	(OR)			
6(a)	Illustrate about wind forces on buildings with power law plot.	6M	CO2	L2
(b)	Differentiate between natural ventilation and mechanical ventilation.	6M	CO2	L2
7(a)	Plot the effect of Reynolds number vs drag co-efficient on streamlined and bluff bodies.	6M	CO3	L2
(b)	What is a vortex? Illustrate its types and examples in real world.	6M	CO3	L2
	(OR)			
8(a)	Develop an expression for aerodynamic damping in along wind direction.	6M	CO3	L3
(b)	Discuss about the types of flutter.	6M	CO3	L2
9(a)	Elaborate the actual shape of birds wing.	6M	CO4	L2
(b)	Illustrate about powered flight in birds.	6M	CO4	L2
	(OR)			
10(a)	Discuss about the importance of changing the lift in fractions of sections in bird flight.	6M	CO4	L2
(b)	Illustrate about unpowered flight in birds.	6M	CO4	L2

****

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

13 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	Draw a schematic diagram of an SCREAMJET engine and explain its operation.	6M	CO1	L2
(b)	Explain the critical, subcritical and supercritical modes of inlet operation with neat sketches.	6M	CO1	L2
	(OR)			
2(a)	Mention the preliminary concepts in supersonic combustion.	6M	CO1	L2
(b)	Compare the general features of a ramjet and turbojet engines.	6M	CO1	L2
3(a)	Derive the thrust equation.	6M	CO2	L3
(b)	Outline the requirements of rocket propulsion.	6M	CO2	L2
	(OR)			
4(a)	Derive the equations of motion for an accelerating rocket.	6M	CO2	L3
(b)	Identify and explain various efficiencies used in rocket propulsion and also mention typical valves.	6M	CO2	L2
5(a)	Explain the various types of Liquid propellants.	6M	CO3	L2
(b)	State and Explain cycles of operation in propellant feed systems.	6M	CO3	L2
	(OR)			
6(a)	Evaluate combustion chamber Calculation of efficiency of liquid propellant Rockets.	6M	CO3	L3
(b)	Give a detailed explanation on computing rocket engine performance.	6M	CO3	L2
7(a)	Elaborate 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)	Describe the two types of solid propellant rockets.	6M	CO4	L2
(b)	Demonstrate the Ignition process of solid propellant rockets.	6M	CO4	L2
9(a)	Discuss Resisto jet and Arc jet with a neat sketch.	6M	CO5	L2
(b)	Elaborate about solar thermal propulsion with a neat sketch.	6M	CO5	L1
	(OR)			
10(a)	Illustrate about Gridded ion thrusters.	6M	CO5	L2
(b)	Compare between Nuclear Fusion and Nuclear Fission Rockets.	6M	CO5	L2

****

13.1 OCT 2020

H.T.No.										

R17

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

B.Tech. (VI Semester) Regular Examinations

17CE21-IRRIGATION AND WATER RESOURCES 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)	List out the merits and demerits of gravity dams.	6M	CO1	L1
(b)	Discuss various methods adopted to reduce uplift in masonry dams.	6M	CO1	L2
	(OR)			
2(a)	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. Determine the normal stresses at the toe and heel for reservoir full and reservoir empty conditions. 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)	Describe with neat sketches the various types of weirs.	6M	CO2	L2
(b)	Discuss various types of spillway crest gates.	6M	CO2	L2
	(OR)			
4(a)	List out the functions of spillway.	6M	CO2	L1
(b)	An 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 2.5 m. Neglecting the thickness of the weir floor, Determine analytically the uplift pressure at the junction of the inner faces of the pile with the weir floor, by using Khosla's theory.	6M	CO2	L3
5(a)	Discuss the benefits and ill-effects of irrigation.	6M	CO3	L2
(b)	A water course has a culturable commanded area of 1200 hectares. The intensity of irrigation for crop 'A' is 40 % and for 'B' is 35 %, both the crops being Rabi crops. Crop 'A' has a kor period of 20 days and crop 'B' has kor period of 15 days. Calculate the discharge of the water course if the kor depth for crop 'A' is 10 cm and for 'B' it is 16 cm.	6M	CO3	L3
	(OR)			

6(a)	Illustrate in detail the free flooding method and the border strip method of irrigation.	6M	CO3	L2
(b)	A loam soil has field capacity of 22% and wilting coefficient of 10%. The dry unit weight of soil is 15 kN/m^3. If the root zone depth is 70 cm, determine the storage capacity of the soil. Irrigation water is applied when moisture content falls to 14 %. If the water application efficiency is 75 %, determine the water depth required to be applied in the field.	6M	CO3	L3
7(a)	Explain various considerations for alignment of a canal.	6M	CO4	L2
(b)	Design a channel by lacey's theory for 40 cumecs capacity. The side slopes may be assumed to be 1:1. The Average size of the bed material may be taken as 0.8 mm.	6M	CO4	L3
	(OR)			
8(a)	List out the advantages and disadvantages of canal lining.	6M	CO4	L1
(b)	Design an irrigation canal to carry a discharge of 28 m^3/sec. Assume N = 0.0225, m = 1 and (B/D) = 7.6 and (Use Kennedy's theory).	6M	CO4	L3
9(a)	Describe the Vertical drop fall and glacis type fall with neat sketches.	6M	CO5	L2
(b)	Differentiate between aqueduct and syphon aqueduct.	6M	CO5	L2
	(OR)			
10(a)	Illustrate by drawing a neat sketch of level crossing and inlets and outlets types of cross drainage structures.	6M	CO5	L2
(b)	Discuss the various considerations for the selection of suitable type of cross-drainage works.	6M	CO5	L2

****

H.T.No										

3 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17CE22-WATER AND WASTE WATER 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)	Explain the following methods of population forecasting: (i) Graphical Extension Method (ii) Logistic Curve Method.	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 incremental increase method. The population in the years 1920, 1930, 1940, 1950, 1960 and 1970 are 75,000, 85,000, 110,000, 140,000, 180,000 and 220,000 respectively.	6M	CO1	L3
	(OR)			
2(a)	Define the terms: Carbonate hardness (CH) and non-carbonate hardness (NCH). Illustrate the relation among CH, NCH and Total Alkalinity.	6M	CO1	L2
(b)	Convert the following into equivalent concentrations of meq/L. Mg^{+2}: 100 mg/L, $MgCl_2$: 200 mg/L, $Ca(HCO_3)_2$: 250 mg/L. Assume MW of Ca=40g, Cl=35.5g, Mg=24g, C=12g, O=16g, H=1g.	6M	CO1	L3
3(a)	Define a coagulant and state its purpose in water treatment. Explain the factors affecting coagulant dosage.	6M	CO2	L2
(b)	Design a circular clari-flocculator for a raw water flow of 4 MLD. Assume the detention periods of flocculator and sedimentation tank as 20 minutes and 2 hours respectively. Assume any other data.	6M	CO2	L3
	(OR)			
4(a)	Define and explain the following terms (i) detention period (ii) surface overflow rate (iii) scour velocity.	6M	CO2	L2
(b)	Explain the purpose and working of the following: Flash mixer and Flocculator.	6M	CO2	L2
5(a)	Describe different types of disinfectants.	6M	CO3	L2
(b)	A wastewater is to be disinfected to obtain 95% kill of microorganisms. The number of micro-organisms remaining alive (Nt) at time t, is modeled by $Nt = No\ (e^{-kt})$, where No is number of microorganisms at t = 0, and k is the rate of kill. Determine the contact time if $k = 0.20\ min^{-1}$.	6M	CO3	L3
	(OR)			
6(a)	Illustrate the working of a Slow sand Gravity Filter using neat sketch.	6M	CO3	L2

(b)	For disinfecting water supply, it is required to treat 1 MLD of water using 1.5 mg/L of bleaching powder. If the bleaching powder contains 30% of available chlorine, calculate amount of chlorine and bleaching powder required per day.	6M	CO3	L3
7(a)	Discuss the purpose, types, and alignment of screens used in sewage treatment.	6M	CO4	L2
(b)	A grit channel is to be designed for removing inorganic particles of 0.2mm size of specific gravity 2.65 from sewage at 25C. A flow velocity of 0.3 m/s is used in the channel carrying a discharge of 10 MLD. Compute the dimensions of the channel.	6M	CO4	L3
	(OR)			
8(a)	Explain the following (i) Rising velocity (ii) Settling velocity (iii) Scrapers.	6M	CO4	L2
(b)	Determine the diameter and detention period of a Primary sedimentation for treating sewage from a town with average flow of 5 MLD and peak flow of 10MLD. Assume SOR=25m/d.	6M	CO4	L3
9(a)	Compare the salient features of complete mix and diffused aeration processes of ASP.	6M	CO5	L2
(b)	A complete mix ASP is provided for treating 2 MLD of sewage. The parameters available are: BOD entering ASP = 300 mg/L, BOD leaving ASP = 30 mg/L, HRT = 5 hours, SRT = 10 days, SVI = 100 mL/g, MLSS = 3000 mg/L. Calculate: (i) Volume of tank (ii) Volumetric loading (iii) F/M ratio (v) Return sludge concentration (vi) Sludge wasted.	6M	CO5	L3
	(OR)			
10(a)	Discuss the factors affecting sludge digestion.	6M	CO5	L2
(b)	Design sludge drying beds for handling 200 kg/d of mixed dry sludge with a moisture content of 95% and a specific gravity of 1.02. Assume a dry solids loading of 100 kg/m2/year.	6M	CO5	L3

****

5 NOV 2020

H.T.No										

R17

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

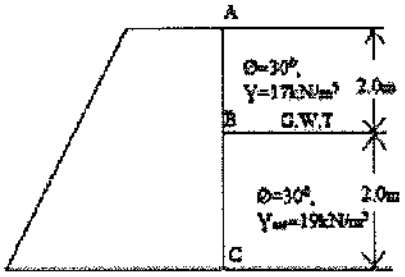
B.Tech. (VI Semester) Regular Examinations

17CE23-GEOTECHNICAL ENGINEERING-II
(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.	Derive an expression for determination of Undrained shear strength of soil by using vane shear test. A vane, 75 mm overall diameter and 150 mm high, was used in a clay deposit and failure occurred at a torque of 90 N-m . Compute the untrained shear strength of clay.	12M	CO1	L2
	(OR)			
2(a)	Discuss the stages involved in sub surface exploration programme.	6M	CO1	L2
(b)	Explain the different corrections to be made to SPT field values.	6M	CO1	L2
3(a)	Determine the ultimate bearing capacity of square footing of size 2.5 m*2.5 m and depth of 1.5 m below the ground level. Take $\emptyset=22^0$, $\gamma=18$ kN/m^3, and c = 15 kN/m^2. N_c = 17.7, N_q = 7.4 and N_γ = 5.0 what will be the change in the value of ultimate bearing capacity if water table rises to ground level from great depth?	6M	CO2	L3
(b)	Discuss the method for estimating immediate settlements of foundation on clay.	6M	CO2	L2
	(OR)			
4.	Illustrate the plate load test to be conducted to determine the bearing capacity of soil. State its limitations and uses.	12M	CO2	L2
5(a)	Illustrate the various types of piles based on the pile material used.	6M	CO3	L2
(b)	Explain the following formulae to determine ultimate load carrying capacity of piles (i) Engineers News Record Formula (ii) Danish Formula.	6M	CO3	L2
	(OR)			
6(a)	Discuss the settlement of soil under the pile groups.	6M	CO3	L1
(b)	A 30 cm diameter concrete pile is driven into a homogeneous consolidated clay deposit (c_u = 40 kN/m^2, α = 0.7). if the embedded length is 10 m, estimate the safe load (FOS=2.5).	6M	CO3	L3

7.	Determine lateral earth pressure at rest per unit length of the wall shown in fig.3 Also determine the location of the resultant earth pressure. Take K_0=1-sinØ and γ_w= 10 kN/m^3. 	12M	CO4	L3
	(OR)			
8(a)	Illustrate the different types of retaining wall.	6M	CO4	L2
(b)	Discuss the principles of the design of retaining walls.	6M	CO4	L2
9(a)	Explain the different types of factors of safety used in the stability of slopes.	6M	CO5	L2
(b)	A cutting of depth 10 m is to be made in soil which has c = 30kN/m^2, γ = 19 kN/m^3 and ø= 0^0. There is a hard stratum below the original soil surface at a depth of 12 m. Find the safe slope of cutting if the factor of safety is 1.50. for D_f = 1.20, S_n = 0.143 for i = 30^0 and S_n=0.101 for I = 15^0	6M	CO5	L3
	(OR)			
10.	Explain the following tests conducted on a soil: i) Free swell test ii) Unrestrained free swell test iii) Differential swell test	12M	CO5	L2

****

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

7 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular 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 in brief the basic requirements of a good alignment.	6M	CO1	L2
(b)	Draw a typical cross section of a BG double track in embankment and show therein all the components of the track.	6M	CO1	L1
	(OR)			
2(a)	Name the different methods of welding rails. Describe any one method.	6M	CO1	L1
(b)	Explain the functions of sleepers and ballast in a railway track. Give specific reasons for the necessity of regular maintenance of the ballast.	6M	CO1	L2
3(a)	Draw a neat sketch of points and crossings. Describe its components in detail.	6M	CO2	L1
(b)	Outline the functions of the following in a railway track. (i) Hook bolt (ii) Fish plate iii. Tie bar.	6M	CO2	L2
	(OR)			
4(a)	Discuss about the various types of Railway stations in Indian Railways.	6M	CO2	L2
(b)	Describe the various types of level crossings and Discuss their important features.	6M	CO2	L2
5(a)	Discuss the modern signalling principles.	6M	CO3	L2
(b)	Draw a neat diagram and explain the signals based on location.	6M	CO3	L1
	(OR)			
6(a)	What are the objectives of interlocking? Explain the tappet and lock systemof interlocking.	6M	CO3	L2
(b)	Write short notes on the track requirements for high-speed trains.	6M	CO3	L2
7(a)	What is the data required before the site selection for new airport?	6M	CO4	L1
(b)	What are the various systems involved in Airport Marking? Explain in detail.	6M	CO4	L2
	(OR)			
8(a)	Distinguish an apron and a hanger. Mention the functions of each.	6M	CO4	L2
(b)	Length of a runway at mean sea level, standard temperature and zero gradients is 1600m. The site has an elevation of 320m and rise in the temperature is 18^0C. Design the actual length of the runway at the site.	6M	CO4	L3
9(a)	Distinguish the following piers, wharves, jetties and quays.	6M	CO5	L2
(b)	Enumerate the various site investigation involved in harbour construction.	6M	CO5	L1
	(OR)			
10(a)	Explain in brief about berthing structures and factors governing the selection of the type of the berthing structure.	6M	CO5	L2
(b)	Define dredging. Explain the reasons for its adoptions. How dredged materials are disposed off?	6M	CO5	L2

****

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

11 NOV 2020

R17

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

17CE91-LOW COST AND ECO-FRIENDLY BUILDING TECHNOLOGY
(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)	Describe about stabilised soil bricks.	6M	CO1	L2
(b)	Discuss the use of improved mud and thatch in construction.	6M	CO1	L2
	(OR)			
2(a)	Discuss about the cementitious binder from rice husk and lime based binders.	6M	CO1	L2
(b)	List the advantages of stone block masonry units.	6M	CO1	L1
3(a)	Explain about use of red mud.	6M	CO2	L2
(b)	List the structural properties of alternate building materials.	6M	CO2	L1
	(OR)			
4(a)	Classify the types of lime based on the Bureau of Indian standards.	6M	CO2	L2
(b)	Describe the use of light clay as building material in construcion.	6M	CO2	L2
5(a)	Mention the permissible settlements of foundations on soil.	6M	CO3	L1
(b)	'Bricks have been used for walls for many centuries and they are still in great demand for housing and building construction." Justify the statement.	6M	CO3	L2
	(OR)			
6(a)	Discuss about the construction of roofs using precast reinforced concrete channel units.	6M	CO3	L2
(b)	Summarize the properties and use of cellular light weight concrete roofing units.	6M	CO3	L2
7(a)	'Industrialised building techniques were evolved and developed in post war Europe to meet the challenge of rapid construction.' Justify the statement.	6M	CO4	L2
(b)	Describe the variation and impact of wind speed on structures.	6M	CO4	L2
	(OR)			
8(a)	List the improvements on structural framing of thatched roof.	6M	CO4	L1
(b)	Discuss about the prefabrication system using in floors and roofs with an example.	6M	CO4	L2
9(a)	How the rammed earth was used for construction of walls?	6M	CO5	L1
(b)	Summarize the construction procedure of 'thatch wall house' and 'masonry house'.	6M	CO5	L2
	(OR)			
10(a)	Describe the process of fire retardant treatment for thatch roof.	6M	CO5	L2
(b)	List the measures in strengthening of mud house.	6M	CO5	L1

****

H.T.No										

13 NOV 2020

R17

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

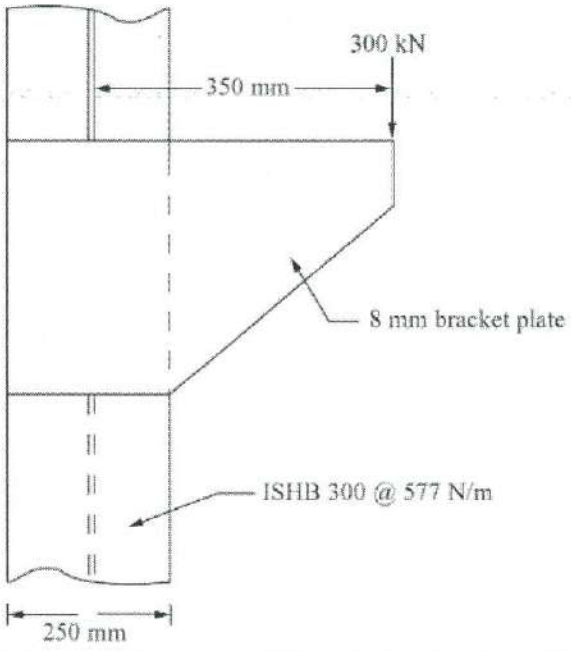
B.Tech. (VI Semester) Regular Examinations

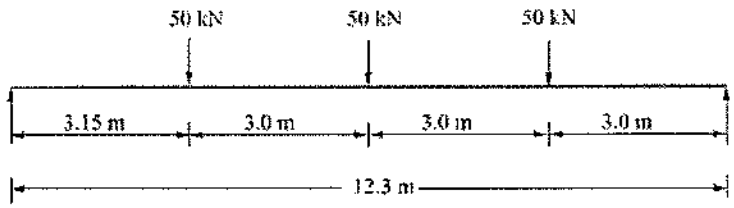
17CE20-DESIGN OF STEEL STRUCTURES
(CE)

JCY

Time : 3 hours Max. Marks : 60

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

Q.No.	Question	Marks	CO	BL
1.	A bracket is bolted to the flange of a column as shown in fig., using 8 mm thick bracket plate. Using M20 bolts of grade 4.6 design the section.  	12M	CO1	L3
	(OR)			
2.	A tie member of a roof truss consists of 2 ISA 100x75x8mm, the angles are connected to either side of a 10mm gusset plates and the member is subjected to a working pull of 300kN. Design the welded connection. Assume the connections are made in the workshop.	12M	CO1	L4
3.	A tension member of a roof truss of a single angle ISA 125x75x10mm carries a factored axial tension of 300kN, if 20mm diameter bolts are used. Design the connection to a gusset plate using lug angle.	12M	CO2	L4
	(OR)			
4.	An ISMB 150 is used as a column. It is laterally supported in the plane of the major axis at a height 2.5m and in the plane of minor axis at a height of 4.5m. The ends may be assumed as hinged. What will be allowable load on the column?	12M	CO2	L3

5.	Design the main floor beam shown in fig. The beam is laterally restrained.  	12M	CO3	L4
	(OR)			
6.	A hall measuring 15m x 6m consists of beam spaced at 3m C/C, RCC slab of 120mm is cast over the beam. The imposed load is 4kN/m^2. The beam is supported on 300mm wall. Design one intermediate beam.	12M	CO3	L4
7.	A column of 9m effective length has to support an axial factored load of 1500kN. Design the column which shall consists of two channels placed back to back at suitable spacing. Design also single angle lacing system.	12M	CO4	L4
	(OR)			
8.	Design a gusseted base to carry an axial factored load of 3000kN. The column is ISHB 450 @ 855 N/m with two 250x 22mm cover plates on either side. The effective height of the column is 5m. The column is to rest on M20 concrete pedestal.	12M	CO4	L4
9.	Design a channel section purlin for the following data: Spacing of truss = 4.0m Spacing of purlins = 1.8m Weight of sheets = 100 N/m^2 Weight of purlin= 100 N/m^2 Live load = 0.5 kN/m^2 Live load = 1.5 kN/m^2, suction Inclination of main rafter = 20^0	12M	CO5	L4
	(OR)			
10.	Determine the design loads on the purlins of an industrial building near Visakhapatnam, given: Class of building: general with life of 50 years Terrain: Category 2 Maximum dimension: 40m Width of the building: 15m Height at eve level: 8m Topography: less than 3^0 Permeability: Medium Span of truss: 15m Pitch: 1/5 Sheeting: AC Sheets Spacing of purlins: 1.35m Spacing of trusses: 4m	12M	CO5	L3

****

31 OCT 2020

H.T.No.										

R17

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

B.Tech. (VI Semester) Regular Examinations

17CI16-DATA MINING AND DATA WAREHOUSING
(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)	Differentiate Online Analytical Processing (OLAP) and Online Transactional Processing (OLTP).	6M	CO1	L2
(b)	Explain three-tier data warehouse architecture in detail.	6M	CO1	L2
	(OR)			
2(a)	Summarize the different OLAP operations.	6M	CO1	L2
(b)	Discuss the indexing methods for OLAP data.	6M	CO1	L2
3(a)	Consider the data for analysis includes the attribute age. The age values for the data tuples are (in increasing order) 13, 15, 16, 16, 19, 20, 20, 21, 22, 22, 25, 25, 25, 25, 30, 33,33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 70. i). Calculate the mean & median of the data. ii). Calculate the mode of the data. iii). Calculate the midrange of the data.	6M	CO2	L2
(b)	Describe the five primitives for specifying a data mining task.	6M	CO2	L2
	(OR)			
4(a)	What are the strategies for Data Reduction?	6M	CO2	L1
(b)	Illustrate the normalization techniques with example.	6M	CO2	L2
5(a)	Describe the steps involved in finding frequent item set by using Apriori algorithm.	6M	CO3	L2
(b)	How to extract the Multidimensional Association rules? And give the example.	6M	CO3	L2
	(OR)			
6.	Consider the following transactional database with min-sup = 50% and min-conf = 75%. TID | List of items 001 | milk, dal, sugar, bread 002 | Dal, sugar, wheat,jam 003 | Milk, bread, curd, paneer 004 | Wheat, paneer, dal, sugar 005 | Milk, paneer, bread 006 | Wheat, dal, paneer, bread i) Find all frequent item sets using Apriori algorithm. ii) List all the strong association rules.	12M	CO3	L3

7.	Consider the above training data and build a model for the prediction of class label using Naïve bayes.	12M	CO4	L3

ID	OUTLOOK	TEMP	HUMIDITY	WINDY	PLAY
1	SUNNY	HOT	HIGH	FALSE	NO
2	SUNNY	HOT	HIGH	TRUE	NO
3	OVERCAST	HOT	HIGH	FALSE	YES
4	RAINY	MILD	HIGH	FALSE	YES
5	RAINY	COOL	NORMAL	FALSE	YES
6	RAINY	COOL	NORMAL	TRUE	NO
7	OVERCAST	COOL	NORMAL	TRUE	YES
8	SUNNY	MILD	HIGH	FALSE	NO
9	SUNNY	COOL	NORMAL	FALSE	YES
10	RAINY	MILD	NORMAL	FALSE	YES
11	SUNNY	MILD	NORMAL	TRUE	YES
12	OVERCAST	MILD	HIGH	TRUE	YES
13	OVERCAST	HOT	NORMAL	FALSE	YES
14	RAINY	MILD	HIGH	TRUE	NO

(OR)

8(a)	Differentiate classification taskfrom Prediction task.	6M	CO4	L2
(b)	Illustrate the working principle of Support Vector Machine (SVM).	6M	CO4	L2
9(a)	Examine the various types of Clusters.	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	L2

(OR)

10(a)	Illustrate K-means algorithm with example.	6M	CO5	L2
(b)	What are the applications of Data Mining?	6M	CO5	L1

****

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

13 NOV 2020

R17

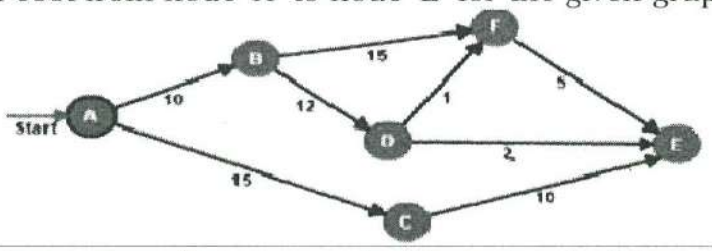
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B.Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (VI Semester) Regular 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.	Discuss the functionalities of different layers in OSI Model with the help of diagram.	12M	CO1	L2
	(OR)			
2(a)	Illustrate the working of coaxial cable with the help of diagram and list out the advantages and disadvantages.	6M	CO1	L2
(b)	Compare frequency division multiplexing and time division multiplexing.	6M	CO1	L2
3(a)	Design an algorithm for CRC. Calculate the checksum for given M(x) = 1101011011 and the generator polynomial is g(x) = x^4+x+1 using CRC on both sending side, receiving side.	6M	CO2	L3
(b)	Calculate 7-bit Hamming code word received by a receiver is 1011111. Assuming the even parity, state whether the received word is correct or wrong. If wrong locate the bit in the error.	6M	CO2	L3
	(OR)			
4(a)	Discuss in detail about GO-Back NARQ protocol with the help of algorithm and diagrams.	6M	CO2	L2
(b)	List out the different type's of data transmission techniques.	6M	CO2	L1
5(a)	Describe the design issues of data link layer.	6M	CO3	L2
(b)	Discuss in detail about IEEE 802.3 protocol.	6M	CO3	L2
	(OR)			
6(a)	Describe the procedure of token ring with an example.	6M	CO3	L2
(b)	Discuss how 1-persistant CSMA differs from p-persistent. Explain.	6M	CO3	L2
7.	Discuss in detail about link state routing algorithm.	12M	CO4	L1
	(OR)			
8(a)	Develop a Dijkstra's algorithm for finding shortest path. Compute minimum cost from node 'A' to node 'E' for the given graph. 	6M	CO4	L3
(b)	Describe how congestion occurs in the network. Discuss various congestion control mechanisms.	6M	CO4	L2
9(a)	Describe how Public Key and Private keys are generated using RSA Algorithm. Illustrate with an example.	6M	CO5	L2
(b)	Define encryption, decryption, public key and private key.	6M	CO5	L1
	(OR)			
10(a)	Describe how does SMTP works. Explain with a neat sketch.	6M	CO5	L2
(b)	Discuss in detail about HTTP protocol.	6M	CO5	L2

****

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

5 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	What are the different segments registers in 8086? Why memory segmentation is needed?	6M	CO1	L2
(b)	What is the minimum number of segment registers that are necessary to provide segmentation? How do access common data for different programs using segmentation?	6M	CO1	L2
	(OR)			
2(a)	Explain the following 8086 instructions : (i) TEST, (ii) XLAT.	6M	CO1	L2
(b)	Write a program using 8086 assembly language for interchanging the values of two memory location.	6M	CO1	L2
3(a)	Draw the timing diagrams of minimum mode read operation and explain in detail.	6M	CO2	L3
(b)	Interfacing of a two 4X4 PROM and two 8X4 RAM with 8086 CPU, draw the memory map and interfacing diagram for it, the RAM address follows the ROM address	6M	CO2	L3
	(OR)			
4(a)	What is Interrupt? Explain the process of interrupt handling with the help of diagrams.	6M	CO2	L2
(b)	Give the difference between maskable and non-maskable interrupts.	6M	CO2	L2
5(a)	What is the advantage of DMA controlled data transfer over interrupt driven or program controlled data transfer?	6M	CO3	L1
(b)	Write the operational control word formats of 8259.	6M	CO3	L2
	(OR)			
6(a)	Give the status register of 8251 and explain each bit.	6M	CO3	L2
(b)	Write about the different modes of operations in 8255.	6M	CO3	L2
7(a)	Write the salient features of 8051 family of microcontrollers.	6M	CO4	L2
(b)	What is the significance of PSEN pin of 8051 microcontroller?	6M	CO4	L2
	(OR)			
8(a)	How does 8051 differentiate between the internal and external program memory.	6M	CO4	L2
(b)	Discuss the bit format of PSW register of 8051.	6M	CO4	L2
9(a)	Explain the internal and external interrupts in 8051.	6M	CO5	L2
(b)	Discuss about the priority of the interrupts in 8051. And state for which interrupt highest priority is given?	6M	CO5	L2
	(OR)			
10(a)	Explain the Timers in 8051 and its modes.	6M	CO5	L2
(b)	Develop an interfacing program for 7-segment display with 8051.	6M	CO5	L3

****

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

7 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular Examinations

17CS08-PHP PROGRAMMING

(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)	What are the different branching statements in PHP and explain it with examples?	6M	CO1	L1
(b)	Write a short note on data types and expression in PHP with examples.	6M	CO1	L1
	(OR)			
2(a)	Write a php program to read a number at run time using a text field and find its Factorial.	6M	CO1	L3
(b)	Differentiate client-side and server-side scripting.	6M	CO1	L2
3(a)	Discuss about associative array with suitable example.	6M	CO2	L2
(b)	How to use foreach() loop, describe with suitable example.	6M	CO2	L2
	(OR)			
4(a)	Describe about string related library functions with example.	6M	CO2	L2
(b)	What are the different types of Arrays available in php? Explain.	6M	CO2	L2
5(a)	How to use static method in PHP and explain it with example.	6M	CO3	L2
(b)	What is exception? What are the advantages of exceptions in PHP.	6M	CO3	L2
	(OR)			
6(a)	Illustrate the concept of polymorphism in PHP.	6M	CO3	L2
(b)	How to use final keyword in PHP programming and explain it with example.	6M	CO3	L2
7.	Write PHP code to implement the concept validation using JQuery.	12M	CO4	L3
	(OR)			
8.	Write a PHP code to submit the form using JQuery without refreshing the page.	12M	CO4	L3
9.	What is session tracking? Write a program to demonstrate session tracking.	12M	CO5	L3
	(OR)			
10.	Design a static web-site required for "Bus-ticket reservation system" using PHP, The fields of the registration-page is as follows:	12M	CO5	L3

Name of the Field	Data-type
Passenger-Name	String
Date-of-birth	Date
Source	String
Destination	String
Mobile Number	Number
Fare	Number

i)Store the data in database
ii)Retrieve all the details of the passengers

****

H.T.No										

9 NOV 2020 **R17**

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

B.Tech. (VI Semester) Regular Examinations

17MB80-INDUSTRIAL ENGINEERING AND MANAGEMENT
(CSE,ECE,EIE&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)	Discuss Herzberg Two factor theory and Douglas Mc-Gregory's theory X and theory Y.	6M	CO1	L2
(b)	Explain 'Line and Staff' organization structure. What are its merits and demerits?	6M	CO1	L2
	(OR)			
2(a)	Explain Henry Fayol's principles of management.	6M	CO1	L2
(b)	Discuss the concept of Delegation of Authority in context to designing of organization structure.	6M	CO1	L2
3(a)	What are the different methods of production? Which method of production is suitable for Iron and Steel Manufacturing Unit like SAIL?	6M	CO2	L2
(b)	Define Method study. How do you carry it out?	6M	CO2	L2
	(OR)			
4(a)	What is work measurement explain the importance of work measurement?	6M	CO2	L2
(b)	Compare features, merits and demerits of Product and Process Type of Layouts. What layout do you suggest for TV Assembly?	6M	CO2	L3
5	A Beta electronic company manufactures resistors on mass production basis. At some intermediate point of production line, 10 samples of size 100 each have been taken. Resistors within sample were classified into good or bad. The related data are given in the following table. Construct an appropriate chart.	12M	CO3	L4

Sample no	1	2	3	4	5	6	7	8	9	10
No. of defective resistors	12	15	20	14	09	20	15	10	09	08

	(OR)			
6(a)	What are the elements involved in statistical quality control?	6M	CO3	L1
(b)	What are the objectives and Importance of EOQ Approach?	6M	CO3	L2
7(a)	What do you understand by Job Evaluation? What are the principles of job evaluation?	6M	CO4	L2
(b)	Distinguish between Recruitment and Selection.	6M	CO4	L2
	(OR)			

<table>
<tr><td>8(a)</td><td>Define Human Resource Management. Explain the important functions of HRM.</td><td>6M</td><td>CO4</td><td>L2</td></tr>
<tr><td>(b)</td><td>Explain and evaluate any four methods of Merit rating.</td><td>6M</td><td>CO4</td><td>L2</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>9(a)</td><td>How does the PERT technique help a business manager in decision making?</td><td>6M</td><td>CO5</td><td>L2</td></tr>
<tr><td>(b)</td><td>Write a short note: i) Earliest time ii) Latest time iii) critical path.</td><td>6M</td><td>CO5</td><td>L2</td></tr>
<tr><td colspan="5">(OR)</td></tr>
<tr><td>10.</td><td>The following table provides project cost and time details.
<table>
<tr><th>Activity</th><th>Normal time(days)</th><th>Crash time(days)</th><th>Normal cost(Rs)</th><th>Crash cost</th></tr>
<tr><td>1-2</td><td>20</td><td>17</td><td>600</td><td>720</td></tr>
<tr><td>1-3</td><td>25</td><td>25</td><td>200</td><td>200</td></tr>
<tr><td>2-3</td><td>10</td><td>8</td><td>300</td><td>440</td></tr>
<tr><td>2-4</td><td>12</td><td>6</td><td>400</td><td>700</td></tr>
<tr><td>3-4</td><td>5</td><td>2</td><td>300</td><td>420</td></tr>
<tr><td>4-5</td><td>10</td><td>5</td><td>300</td><td>600</td></tr>
</table>
Draw the network diagram, find the optimum duration and cost of the project, when fixed cost is Rs 300 per day.</td><td>12M</td><td>CO5</td><td>L4</td></tr>
</table>

****

H.T.No.										

11 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17CS91-SOFTWARE TESTING METHODOLOGIES
(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)	Differentiate testing and debugging.	6M	CO1	L2
(b)	List out levels of testing.	6M	CO1	L1
	(OR)			
2(a)	Write the steps to derive the importance of bug.	6M	CO1	L2
(b)	List out the consequences of bug.	6M	CO1	L1
3(a)	What are the general elements of control flow graph?	6M	CO2	L2
(b)	Discuss the different kinds of predicate blindness with examples.	6M	CO2	L2
	(OR)			
4(a)	What are data-flow anomalies and draw the basic data flow model.	6M	CO2	L2
(b)	Differentiate static versus dynamic anomaly detection.	6M	CO2	L2
5(a)	Write short note on bug assumptions for domain testing.	6M	CO3	L2
(b)	List out the properties of nice domain.	6M	CO3	L1
	(OR)			
6(a)	What are the different domain bugs and how to test them?	6M	CO3	L2
(b)	Draw the schematic representation of domain testing and explain in detail.	6M	CO3	L2
7.	Demonstrate node removal algorithm with an example.	12M	CO4	L3
	(OR)			
8(a)	Demonstrate reduction of the following functions using KV chart: $F(A, B, C, D) = \pi (4,5,6,7,8,12,13) + d(1,15)$.	6M	CO4	L3
(b)	Write about applications of KV chart.	6M	CO4	L2
9(a)	Demonstrate state graph with an example.	6M	CO5	L2
(b)	Write about state testing strategies.	6M	CO5	L2
	(OR)			
10.	Relate graph matrix to the node reduction algorithm.	12M	CO5	L2

****

H.T.No.										

13 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17CS05-ANDROID TECHNOLOGIES
(CSE)

JCY

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss about Dalvik Virtual Machine.	6M	CO1	L2
(b)	List the features of Android.	6M	CO1	L1
	(OR)			
2(a)	What is a Service? Explain different types of Services in Android.	6M	CO1	L1
(b)	Discuss the lifecycle of an Activity in Android.	6M	CO1	L2
3.	Develop an Android Application which changes the Color of Font and Button when the user clicks on the button.	12M	CO2	L3
	(OR)			
4(a)	Differentiate among the following Layouts: Relative and Linear Layout.	6M	CO2	L2
(b)	Write about the following views: Text View and Image View.	6M	CO2	L2
5(a)	Define the term Intent. Explain different types of intents in Android.	6M	CO3	L1
(b)	What is an Explicit Intent? Discuss explicit intent with an example program.	6M	CO3	L3
	(OR)			
6.	Write a program for dialing a number from an Android Application using implicit intent.	12M	CO3	L3
7(a)	Explain different methods used for creating a Shared Preference.	6M	CO4	L1
(b)	Discuss how to write shared preferences and how to read shared preferences.	6M	CO4	L2
	(OR)			
8(a)	How you can access data from External Storage? What permissions are required?	6M	CO4	L2
(b)	Outline the process of creating and deleting cache files. Give syntaxes also.	6M	CO4	L2
9(a)	Discuss about the Download Manager in Android.	6M	CO5	L2
(b)	Write a program that uses the Google Map to show current Location.	6M	CO5	L3
	(OR)			
10(a)	What is Android Alarm Manager? Explain with an Example.	6M	CO5	L3
(b)	Discuss the working of RSS Reader Application.	6M	CO5	L2

****

31 OCT 2020

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

R17

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

B.Tech. (VI Semester) Regular Examinations

17CI07-OOPS THROUGH JAVA
(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)	What is meant by byte code? Explain how Java is platform independent.	6M	CO1	L2
(b)	Explain different parts of a Java program with an appropriate example.	6M	CO1	L2
	(OR)			
2(a)	Differentiate between class and objects in java.	6M	CO1	L2
(b)	What is the purpose of constructor in Java Programming?	6M	CO1	L1
3(a)	Differentiate between class and interface.	6M	CO2	L2
(b)	Define interface. How do you implement interface?	6M	CO2	L2
	(OR)			
4(a)	Explain the process of defining and creating a package with suitable examples.	6M	CO2	L2
(b)	Describe the process of importing and accessing a package with suitable examples.	6M	CO2	L2
5(a)	How do you use try and catch? Explain with an example.	6M	CO3	L2
(b)	Describe Java-Built in exceptions.	6M	CO3	L2
	(OR)			
6(a)	What is thread? Explain the concept of multi thread programming.	6M	CO3	L2
(b)	Describe Java's thread model.	6M	CO3	L2
7(a)	Differentiate between applet and application. What is secure applet?	6M	CO4	L2
(b)	Explain about parameter passing to applets.	6M	CO4	L2
	(OR)			
8(a)	Discuss delegation event model.	6M	CO4	L2
(b)	Explain about events handling mechanisms.	6M	CO4	L2
9(a)	What are the limitations of AWT? Explain	6M	CO5	L2
(b)	Discuss about checkbox class with example.	6M	CO5	L2
	(OR)			
10(a)	What are the key features of swing?	6M	CO5	L1
(b)	Illustrate JButton class of swing package with an example.	6M	CO5	L2

****

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

3 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular 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 radiation resistance of monopole antenna is 36.5Ω.	6M	CO1	L3
(b)	Discuss the following antenna parameters (i) Horizontal pattern (ii) Radiation lobes (iii)Aperture efficiency (iv) Beam width.	6M	CO1	L2
	(OR)			
2(a)	The radiation resistance of antenna is 72Ω and the loss resistance is 8Ω. Calculate the directivity if the power gain is 16.	6M	CO1	L3
(b)	Differentiate half wave and monopole antennas.	6M	CO1	L2
3(a)	Summarize the characteristics of broadside and end fire arrays.	6M	CO2	L2
(b)	Analyze array of two point sources fed with currents of unequal magnitude and phase.	6M	CO2	L2
	(OR)			
4(a)	Examine the Dolph-Tchebyshev array of 5 elements with $\lambda/2$ spacing between the elements for required side lobe level of -20 dB.	6M	CO2	L3
(b)	Use pattern multiplication method to draw resultant radiation pattern for array of 4 point sources.	6M	CO2	L3
5(a)	Differentiate periodic and aperiodic antennas.	6M	CO3	L2
(b)	Describe the Yagi-Uda antenna of six elements if the operating frequency is 200MHz.	6M	CO3	L2
	(OR)			
6(a)	Determine the physical dimensions of rhombic antenna to operate at 20MHz with angle of elevation as 10^0 with respect to ground.	6M	CO3	L3
(b)	Discuss the characteristics of helical antenna in normal mode of radiation.	6M	CO3	L2
7(a)	Analyze the corner reflector antenna with corner angle 60^0 using method of image principle.	6M	CO4	L2
(b)	The length of an E-plane sectoral horn is 15cm. Calculate the horn dimensions such that it is optimum at 10GHz.	6M	CO4	L3
	(OR)			
8(a)	Apply Friis transmission equation for measurement of gain using 3 antennas method.	6M	CO4	L3
(b)	Demonstrate the measurement of impedance of an antenna using slotted line method.	6M	CO4	L2
9(a)	Describe the following terms (i) MUF (ii) Critical frequency.	6M	CO5	L2
(b)	Classify the different types of wave propagation with related frequencies between transmitting and receiving antennas.	6M	CO5	L2
	(OR)			
10(a)	Solve gain of transmitting antenna and effective aperture of receiving antenna for fundamental equation of space wave propagation.	6M	CO5	L3
(b)	Determine the radio horizon distance between transmitting and receiving antenna for space wave propagation.	6M	CO5	L3

****

H.T.No										

7 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	Explain why do we Prefer Hexagonal Cells rather than other Polygon structures.	6M	CO1	L2
(b)	Outline the Basic Cellular system.	6M	CO1	L2
	(OR)			
2(a)	Discuss the methods employed for Improving capacity of cellular systems.	6M	CO1	L2
(b)	Let the maximum call per hour Qi in one cell be 3000and an average calling time T be 1.76 min. Justify and calculate offered load would be interms of Q.	6M	CO1	L2
3(a)	Demonstrate the mobile signal propagation over water and flat area.	6M	CO4	L2
(b)	Outline the Omni directional antenna arrangement of cell cite for improving coverage for 90 radios (abnormal case) with neat figure.	6M	CO4	L2
	(OR)			
4(a)	Illustrate the 3-sector directional antenna arrangement of cell cite for interference reduction for 45 radios with neat figure.	6M	CO4	L3
(b)	There is a constant standard deviation along a path-loss curve. Justify.	6M	CO4	L3
5(a)	Interpret the C/I ratio in worst case situation for a six sectored cell with cluster size 7.	6M	CO3	L3
(b)	Determine the desired C/I from normal case for omni directional antenna system.	6M	CO3	L3
	(OR)			
6(a)	Interpret the C/I ratio in worst case situation for a six sectored cell with cluster size 4.	6M	CO3	L2
(b)	Compare k=4 and k=7 for directional antenna system.	6M	CO3	L2
7(a)	Explain channel assignment to travelling mobile units.	6M	CO1	L2
(b)	Outline various types of Handoffs.	6M	CO1	L2
	(OR)			
8(a)	Explain frequency management.	6M	CO1	L2
(b)	Outline the process of adjacent channel assignment.	6M	CO1	L2
9(a)	List out the advantages and disadvantages of TDMA.	6M	CO2	L1
(b)	Apply the inter modulation concept with an example with reference to FDMA.	6M	CO2	L3
	(OR)			
10(a)	Differentiate FDMA, TDMA and CDMA multiple access techniques in terms of bandwidth, time, channel access, guard time, etc.	6M	CO2	L2
(b)	Conclude 4G and 5G Technologies.	6M	CO2	L2

****

H.T.No.										

11 NOV 2020 **R17**

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

B.Tech. (VI Semester) Regular Examinations

17EC91-TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS
(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)	Draw and explain simplex and half-duplex telephone circuits.	6M	CO1	L2
(b)	Illustrate elements of switching system with diagram.	6M	CO1	L2
	(OR)			
2(a)	Compare centralized SPC and distributed SPC.	6M	CO1	L2
(b)	Explain two stage blocking network and derive the equation for blocking probability.	6M	CO1	L2
3(a)	Compare: Micro-programmed control vs. Hard-wired control.	6M	CO2	L2
(b)	Recall basic time division space switching with necessary switch configurations.	6M	CO2	L1
	(OR)			
4(a)	Draw the diagram of Time multiplexed Space Switch and explain it in detail.	6M	CO2	L2
(b)	Explain combination switching.	6M	CO2	L2
5(a)	Enlist the difference between In-channel and Common Channel Signaling.	6M	CO3	L1
(b)	Over a 20 minute observation interval, 40 subscribers initiate calls. Total duration of the calls is 4800 seconds. Calculate the load offered to the network by the subscribers and the average subscriber traffic.	6M	CO3	L3
	(OR)			
6(a)	Generalize the working of numbering plan used in telecommunication networks.	6M	CO3	L2
(b)	A subscriber makes three phone calls of 3 minutes, 4 minutes and 2 minutes duration in a one hour period. Calculate the subscriber traffic in erlangs, CCS and CM.	6M	CO3	L3
7(a)	Explain ISDN Channels. What is significance and maximum data rate supported by each ISDN channel?	6M	CO3	L2
(b)	Illustrate ISO-OSI reference model with functionality of each layer.	6M	CO3	L2
	(OR)			
8(a)	Differentiate circuit switching and Packet switching.	6M	CO3	L2
(b)	Memorize the functionalities of data link layer and network layer.	6M	CO3	L1
9(a)	Compare DSL and ADSL lines.	6M	CO4	L2
(b)	What is cable modem and explain the traditional cable networks.	6M	CO4	L2
	(OR)			
10(a)	Explain HFC networks.	6M	CO4	L2
(b)	What is frame?Explain the frame transmission.	6M	CO4	L2

****

H.T.No.										

13 NOV 2020

R17

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

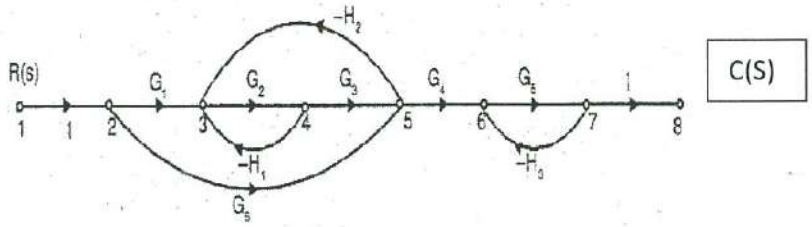
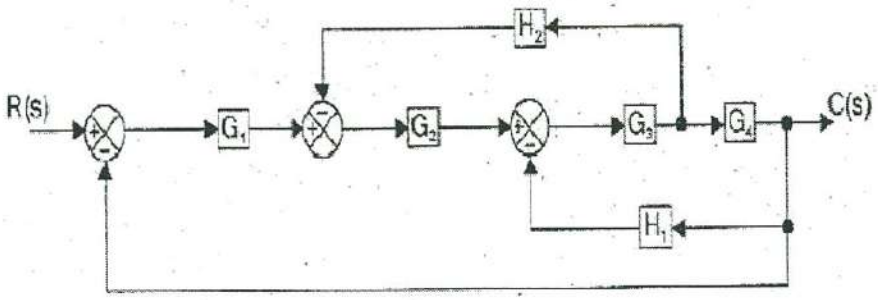
B.Tech. (VI Semester) Regular Examinations

17EC20-LINEAR CONTROL SYSTEMS
(ECE)

JCH

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 the closed loop transfer function for the given signal flow graph. 	6M	CO2	L3
(b)	Compare open loop and closed loop control systems.	6M	CO1	L2
	(OR)			
2(a)	Define the following terms. (i)Type (ii) Source node (iii) Non touching loops (iv) Branch transmittance (v) Forward path (vi) Order	6M	CO1	L2
(b)	Using Block diagram reduction technique, determine the transfer function C/R. 	6M	CO2	L3
3(a)	Determine the step, ramp and parabolic error constants of the unity feedback control system with the given open loop transfer function $G(S) = \frac{10}{S(1+0.1S)(1+10S)}$	6M	CO3	L3
(b)	Derive the expression for rise time of a second order system.	6M	CO3	L2
	(OR)			
4(a)	Analyze the first order system response for unit step signal as an input.	6M	CO3	L2
(b)	A unity feedback control system has an open loop transfer function $G(s) = \frac{k}{s(s+10)}$. Determine the gain 'K' so that the system will have a damping ratio of 0.7. For this value of 'K', determine the settling time, peak over shoot and peak time for an unit step input.	6M	CO3	L3

5.	Sketch the root-locus of the system whose open-loop transfer function is $G(S)=\frac{K}{S(S+1)(S+2)}$.	12M	CO3	L3
	(OR)			
6(a)	The characteristic polynomial of a system is $s^5+4s^4+8s^3+8s^2+7s+4=0$. Obtain the location of roots on the s-plane and hence stability of the system using RH criteria.	6M	CO3	L3
(b)	Determine the range of K for stability of unity feedback system whose open loop transfer function is $G(S)=\frac{K}{S(S+4)(S+2)}$.	6M	CO3	L3
7(a)	Sketch the polar-plot for Type-0, Order-3 system.	6M	CO1	L2
(b)	Construct the Nyquist-plot for given open loop transfer function $G(S)=\frac{K}{S(S+2)(S+10)}$. Determine the range of K for which closed loop system is stable.	6M	CO3	L3
	(OR)			
8.	Sketch the Bode plot for the given transfer function and determine phase margin & gain margin. $G(S)=\frac{10}{S(1+0.4S)(1+0.1S)}$	12M	CO3	L3
9(a)	Draw a suitable signal flow graph and obtain the state model of a feedback system is characterized by the closed loop transfer function $T(s)=\frac{S^2+3S+3}{S^3+2S^2+3S+1}$	6M	CO4	L3
(b)	Find the observability of the system with $A=\begin{bmatrix}-1 & 0\\ 0 & -2\end{bmatrix}$; $C=\begin{bmatrix}1 & 3\end{bmatrix}$	6M	CO2	L3
	(OR)			
10(a)	Evaluate the controllability of the system with $\dot{X}=AX+BU$ with $A=\begin{bmatrix}1 & 1\\ 0 & -1\end{bmatrix}$; $B=\begin{bmatrix}1\\ 0\end{bmatrix}$	6M	CO2	L3
(b)	Derive the state model by Foster's form of a system whose transfer function is $T(s)=\frac{S+4}{(S+3)(S+2)(S+7)}$	6M	CO4	L3

****

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

13 1·OCT 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

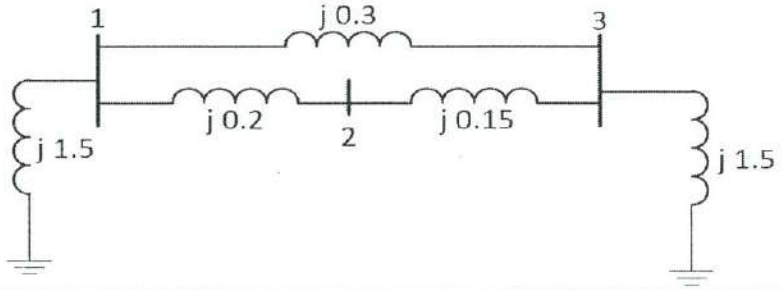
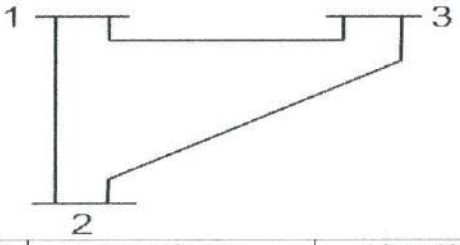
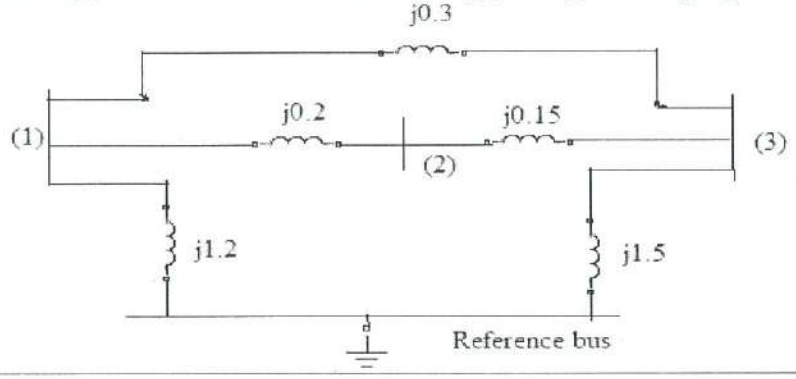
B.Tech. (VI Semester) Regular Examinations

17EE18-POWER SYSTEM ANALYSIS

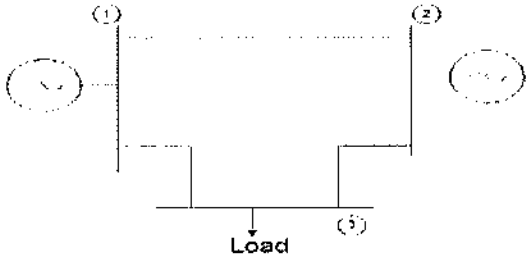
(EEE)

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)	For the system shown in Fig., determine the bus impedance matrix using building algorithm. 	6M	CO1	L3
(b)	Find out the Y matrix of the sample power system as shown in Fig. Data for this system are given in the below Table. All parameters are in PU.  Bus Code (i-k) / Impedance (Z_{ik}) / Line Charging ($y'_{ik/2}$) 1-2 / 0.02+j0.06 / j0.03 1-3 / 0.08+j0.24 / j0.025 2-3 / 0.06+j0.18 / j0.020	6M	CO1	L3
	(OR)			
2(a)	Find the Y_{bus} matrix of a 3-bus power system. Data for the system are given in the below Table. Per unit impedances and line charging admittances Bus Code / Impedance / Line Charging admittance 1-2 / 0.03+j0.06 / j0.02 1-3 / 0.05+j0.16 / j0.04 2-3 / 0.03+j0.18 / j0.02	6M	CO1	L3
(b)	Determine Z_{bus} for the network shown in Fig., using building algorithm. 	6M	CO1	L3

3.	A three-bus power system is shown in Fig. The system parameters and the generation and demand data are given in below Tables. The voltage at bus 2 is maintained at 1.04 *pu*. The maximum and minimum reactive power limits of the generation at bus 2 are 35 and 0 MVAR respectively. Determine one iteration of the load flow solution using the Gauss-Seidel method. Assume bus 1 as slack bus and acceleration factor α = 1.6.	12M	CO2	L3

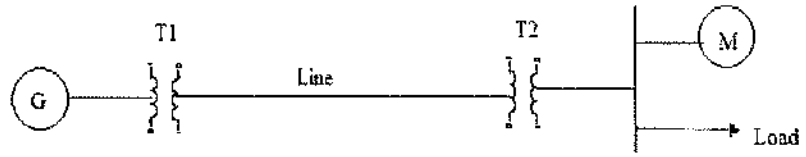


Bus code	Impedance in *pu*	Half line charging admittance $\frac{y'_{ij}}{2}$
1 - 2	0.06 + j0.18	j0.05
1 - 3	0.02 + j0.06	j0.06
2 - 3	0.04 + j0.12	j0.06

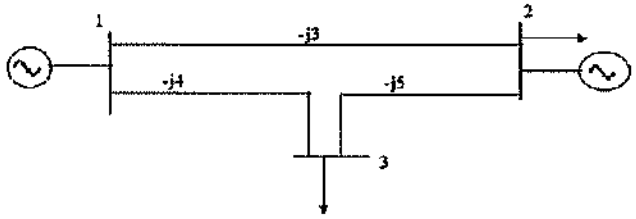
Bus no.	Bus voltage	Generation		Demand	
		MW	MVAR	MW	MVAR
1	1.06 + j0.0	-	-	0	0
2	1.04 + j0.0	20	-	0	0
3	-	0	0	60	25

(OR)

4(a)	Draw the reactance diagram in per unit of the system shown in Fig. Generator G_1: 20 MVA, 11 kV, X" = 15% Synchronous motor M: 15 MVA, 11 kV, X" = 15% Transformer T_1: 25 MVA,12.5 Δ /132 Y kV, X = 10% Transformer T_2: 20 MVA, 132 Y /11 Δ kV, X = 10% Line impedance: (200+j500) Ω, Static load: 5MVA, 11 kV, 0.8 p.f. lagging. Choose a base values of 20 MVA and 132 kV in the line.	6M	CO2	L3



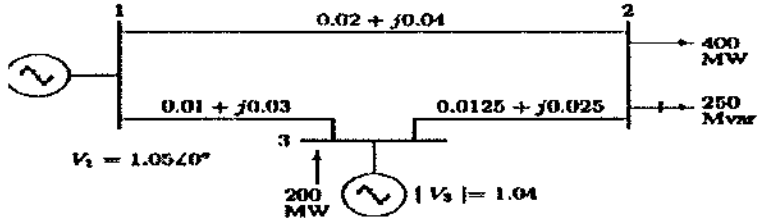
(b)	The following is the system data for the network shown in Fig.	6M	CO2	L3

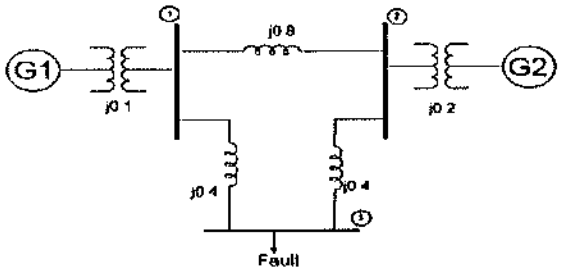


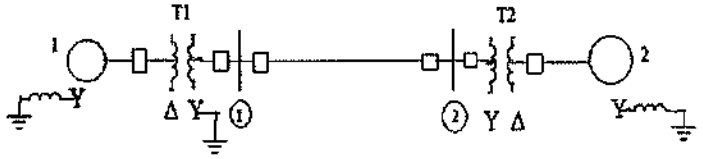
Bus	V (pu)	P_G (MW)	Q_G (MVAR)	P_L (MW)	Q_L (MW)
1	1.02	-	-	-	-
2	-	25	15	50	25
3	-	-	-	60	30

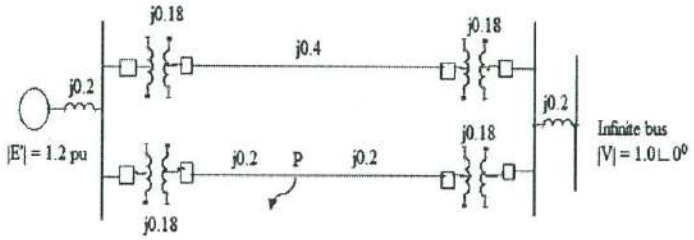
Determine the voltages at the end of the first iteration using the Gauss-Seidel method. Take the base value of 100 MVA.

5(a)	Perform one iteration of the Newton Raphson load flow method and determine the power flow solution for the given system. Take base MVA as 100. Line Data: Bus Data:	6M	CO2	L3
(b)	Explain the step by step computational procedure for conducting Load Flow solutions using Fast- decoupled method.	6M	CO2	L2
	(OR)			
6(a)	Obtain the power flow solution (one iteration) by the Fast Decoupled method for a three bus system shown in fig. The magnitude of the voltage at bus 1 is adjusted to 1.05 p.u. The magnitude of the voltage at bus 3 is 1.04 p.u with a real power generation of 200 MW. A load consisting of 400 MW and 250 MVAR is taken from bus 2. Line impedances are marked in p.u. on 100 MVA base. Calculate the power generated by the slack bus.	6M	CO2	L3
(b)	Compare and contrast Load Flow solutions using Gauss-Seidel and Fast-decoupled methods in Analyzing a power system network.	6M	CO2	L2
7(a)	Consider the three bus systems as shown in Fig. Each generator is represented by an emf behind the transient reactance. All impedances are expressed in per unit on a common 100 MVA base. A three-phase fault with a fault impedance Z_f = j0.15 *pu* occurs at bus 3. Calculate the fault current, the bus voltages and the line current during the fault.	6M	CO3	L3
(b)	What are the various types of faults? Discuss their frequency of occurrence and severity? Find the fault current when an L-L-G fault occurs at the terminals of an unloaded generator.	6M	CO3	L2
	(OR)			
8(a)	The machines connected to the two high voltage buses shown in Fig. are each rated 100 MVA, 20 kV with reactances of $X_d'' = X_1 = X_2 = 20\%$ and $X_0 = 4\%$. Each three phase transformer is rated 100 MVA, 345 Y / 20 Δ kV, with leakage reactance of 8%. On a base of 100 MVA, 345 kV the reactances of the transmission line are $X_1 = X_2 = 15\%$ and $X_0 = 50\%$. If no prefault current is flowing in the network, find the subtransient current to ground for a double line-to-ground fault on lines B and C at bus 1.	6M	CO3	L3







8(b)	Obtain the expression of fault current for the line to line fault on an unloaded generator.	6M	CO3	L2
9.	Derive the swing equation of a synchronous machine.	12M	CO4	L2
	(OR)			
10.	Find the critical clearing angle for the system shown in Fig. for a three-phase fault at the point P. The generator is delivering 1.0 pu power under pre fault conditions. 	12M	CO4	L3

****

H.T.No										

3 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular 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)	What are the characteristics expected from power electronic device to operate as switch? Suggest the best power electronic device in each case for (i) High power applications (ii) High switching frequency applications (iii) High power and high frequency applications	6M	CO1	L2
(b)	Mention at least three examples for transistor family devices and thyristor family devices. List the differences between transistor family devices and thyristor family devices.	6M	CO2	L2
	(OR)			
2(a)	What is the purpose of snubber circuit? Draw the circuit diagram of snubber circuit and explain its operation.	6M	CO3	L2
(b)	A thyristor is placed between a constant dc voltage source of 220 V and a resistance load R. The specified limits for di/dt and dv/dt for the SCR are 50 A/μSec and 240 V/μSec respectively. Determine the value of di/dt protecting inductor and snubber circuit parameters. Take damping ratio as 0.5.	6M	CO3	L2
3(a)	Analyze the purpose of connecting an antiparallel diode across main thyristor with or without a series inductor.	6M	CO4	L2
(b)	Describe complimentary commutation used for thyristors.	6M	CO1	L1
	(OR)			
4(a)	What is natural or line commutation. How it is achieved in phase controlled rectifiers?	6M	CO1	L2
(b)	A single phase full bridge converter feeds power to RLE load with R = 6 Ohm, L = 6mH and E = 60 V. The AC voltage is 230 V, 50 Hz single phase source. For continuous conduction, find the average value of load current for a firing angle delay of 50^0	6M	CO2	L3
5(a)	What is an AC voltage controller? List some of its industrial applications. Enumerate its merits and demerits.	6M	CO4	L2
(b)	Analyze the operation of single phase AC voltage controller with RL load using circuit diagram and waveforms.	6M	CO4	L2
	(OR)			
6(a)	Describe the principle of operation of cyclo converter.	6M	CO1	L2
(b)	Discuss the operation of single phase to single phase step down cyclo converter.	6M	CO1	L2
7(a)	What is a chopper? What are the different types of choppers? Mention at least five applications of choppers.	6M	CO4	L2
(b)	Discuss the control strategies of chopper control.	6M	CO1	L2
	(OR)			
8(a)	Illustrate the operation of step down chopper with neat diagram and waveforms.	6M	CO1	L2
(b)	For a type A chopper (step down chopper or buck converter), the source voltage is 230 V, load resistance = 10 Ω. For a duty cycle of 0.4, calculate average and rms values of output voltage.	6M	CO2	L3
9(a)	Distinguish between voltage source inverter (VSI) and current source inverter (CSI).	6M	CO4	L2
(b)	What is pulse width modulation (PWM)? Discuss the objective of PWM techniques? List the various PWM techniques.	6M	CO1	L2
	(OR)			
10(a)	Derive output rms phase voltage and rms line voltage expressions for 180^0 and 120^0 mode three phase inverter operation.	6M	CO3	L3
(b)	A three phase bridge inverter delivers power to a resistive load from a 600 V DC source. For a star connected load 0f 15 Ohm per phase, determine rms value of load current for both (i) 180^0mode and (ii) 120^0 mode.	6M	CO2	L3

****

H.T.No										

5 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	Discuss with the neat sketches the working of an attraction type MI instrument.	6M	CO1	L2
(b)	Illustrate Functional elements of an instruments.	6M	CO1	L2
	(OR)			
2(a)	Predict the shunts and multiplier. Derive expression for both, with reference of meters used in electrical circuits.	6M	CO1	L3
(b)	Describe various forces required for proper operation of an indicating instrument.	6M	CO1	L2
3(a)	Show the circuit of Kelvin's double bridge, used for measurement of low resistance. Derive condition for balance.	6M	CO2	L2
(b)	Derive equation of balance for an Anderson's bridge.	6M	CO2	L3
	(OR)			
4(a)	What are the various methods of measurement of low resistance? Discuss the voltmeter-ammeter method.	6M	CO2	L2
(b)	Derive equation of balance for an Maxwell's inductance-capacitance bridge.	6M	CO2	L3
5(a)	Differentiate between current transformer and potential transformer.	6M	CO3	L2
(b)	Demonstrate the construction and working of power factor meter.	6M	CO3	L2
	(OR)			
6(a)	Discuss the principle of slide wire DC Potentiometer.	6M	CO3	L2
(b)	Discuss the characteristics of potential transformers.	6M	CO3	L2
7(a)	Summarize the advantages and disadvantages of induction type energy meter.	6M	CO4	L2
(b)	Demonstrate about braking system in an energy meter.	6M	CO4	L2
	(OR)			
8(a)	Discuss a note on low power factor wattmeter.	6M	CO4	L2
(b)	Describe the errors in electrodynamometer wattmeter.	6M	CO4	L2
9.	Describe in detail about construction and working of LVDT.	12M	CO5	L2
	(OR)			
10.	Illustrate data acquisition system. Give the block diagram arrangement and describe the function of each component.	12M	CO5	L2

****

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

7 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	List the different classification of embedded systems.	6M	CO1	L1
(b)	Mention the components of a typical embedded system in detail.	6M	CO1	L1
	(OR)			
2.	Discuss about various current technologies for Embedded System Design.	12M	CO1	L2
3(a)	Describe the high level language based embedded firmware development.	6M	CO2	L2
(b)	What are pseudo-operating systems? What is the use of it in assembly language programming?	6M	CO2	L1
	(OR)			
4(a)	List out the advantages of assembly language based embedded firmware development.	6M	CO2	L1
(b)	Explain Elevator controller using a sequential program model.	6M	CO2	L2
5(a)	Given a clock frequency of 10 MHz, determine the number of clock cycles corresponding to a real-time interval of 100 ms.	6M	CO3	L3
(b)	Given an analog input signal whose voltage ranges from 0 to 5 V, and an 8-bit digital encoding, calculate the correct encoding, and then trace the successive approximation approach (i.e., list all the guessed encodings in the correct order) to finding the correct encoding.	6M	CO3	L3
	(OR)			
6(a)	Illustrate about LCD controller.	6M	CO3	L2
(b)	Outline about Stepper motor controller.	6M	CO3	L2
7(a)	Differentiate between instruction, machine and clock cycle.	6M	CO4	L2
(b)	What is the use of DMA controller?	6M	CO4	L1
	(OR)			
8(a)	Explain about serial protocols with example.	6M	CO4	L2
(b)	Explain about wireless protocols with example.	6M	CO4	L2
9(a)	Describe about Hardware Software Co-Design and issues involved in Embedded system Design.	6M	CO5	L2
(b)	Write a short note on i) Simulator ii) Emulator iii) Debugging and iv) Boundary scan.	6M	CO5	L2
	(OR)			
10(a)	What do you mean by hardware debugging? Explain different tools used for hardware debugging	6M	CO5	L1
(b)	Write a short note on testing on host machine.	6M	CO5	L2

****

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

11 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

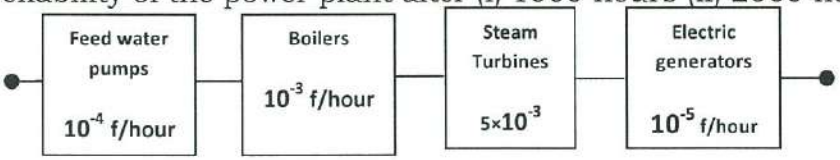
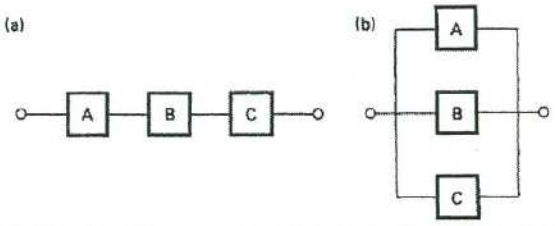
B.Tech. (VI Semester) Regular Examinations

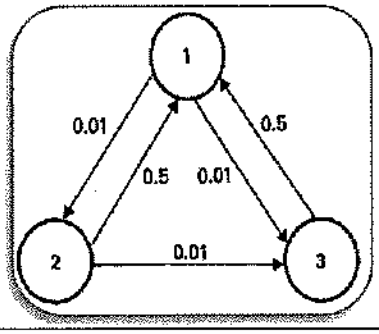
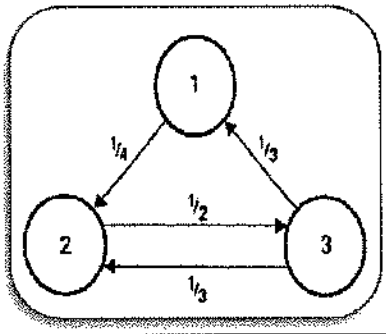
17EE91-ELECTRICAL RELIABILITY ENGINEERING

(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)	A system design requires 200 identical components in series. If the overall reliability must not be less than 0.99. What is the minimum reliability of each component?	6M	CO1	L2
(b)	List the properties of Binomial distribution function.	6M	CO1	L1
	(OR)			
2(a)	Define Reliability of component/system. Discuss experiments and events in electrical reliability engineering.	6M	CO1	L2
(b)	Illustrate the probability of success of the series-parallel connected components, with a failure density function of each component being an exponential.	6M	CO1	L2
3(a)	A simplified model of thermal power plant is shown in fig. Where the failure rates of each component are indicated. Determine the reliability of the power plant after (i) 1000 hours (ii) 2000 hours.  Fig: Model of thermal power plant	6M	CO1	L3
(b)	Describe the Reliability measures MTTF, MTTR and MTBF in electrical reliability engineering applications.	6M	CO1	L2
	(OR)			
4(a)	A system consists of three black boxes A, Band C. These may be arranged in the configurations shown in Figure. The individual component reliabilities are $R_A(t) = e^{-\alpha t}$ $R_B(t) = e^{-\beta t}$ $R_C(t) = e^{-\gamma t}$ Write an expression for the system reliability in each of the two cases. 	6M	CO1	L2
(b)	Derive the reliability of a 2-component series system using exponential probability distribution.	6M	CO1	L3
5(a)	The following stochastic transitional probability matrix P shows the transition rates in per hour of a continuous Markov process. Construct the state space diagram and discuss particular features of it. $P = \begin{bmatrix} 0.9 & 0.05 & 0.05 \\ 0 & 0.95 & 0.05 \\ 0 & 0 & 1 \end{bmatrix}$	6M	CO1	L2

(b)	Discuss the evaluation procedure of limiting state probabilities using STPM.	6M	CO1	L2
	(OR)			
6(a)	Illustrate the two state transition tree and the state transition matrix for four time intervals and evaluate the transient response of the states.	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)	Explain the concepts of frequency and duration applied to reliability evaluation of Single repairable component.	6M	CO1	L2
(b)	Two Identical components have the repair rate of λ= 0.005 per hour and repair rate of μ = 0.01 per hour, find the Availability and Unavailability of the system, when the components are in Parallel, also compute the frequency encountering state-1 of the system.	6M	CO2	L3
	(OR)			
8(a)	Discuss the Cumulative probability of encountering of merged states.	6M	CO2	L2
(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)	Summarize the reliability model of Generation system.	6M	CO2	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	CO2	L2
(b)	Derive the Loss of Load Expectation in a generation system.	6M	CO2	L3

****

H.T.No.										

13 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.
B.Tech. (VI Semester) Regular 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)	Summarize with neat sketches about unit ramp, exponential and Unit step signals.	6M	CO1	L2
(b)	Define stability of a system. Explain about BIBO stability criterion of a discrete system.	6M	CO1	L2
	(OR)			
2(a)	Determine whether the following signals are stable or not (i) y[n]=8x[n-4] (ii) x[n]=2^{-n}u[n] (iii) x^2[n-2]	6M	CO1	L3
(b)	State and derive sampling theorem.	6M	CO1	L2
3(a)	State and prove linearity, time shifting and symmetry properties of DFS.	6M	CO2	L2
(b)	With the help of N = 8, Illustrate radix-2 decimation-in-frequency (DIF) FFT algorithm for computation of DFT. Give the computational efficiency of FFT over DFT.	6M	CO2	L3
	(OR)			
4(a)	A sequence is defined as x[n] = {1,-1,2,-2,3,-3}. Find the DFT.	6M	CO2	L3
(b)	Derive the relationship between DFT and z Transform.	6M	CO2	L2
5(a)	Obtain the cascade and parallel form structures for the following systems described the difference equation: y (n) + 0.1 y (n − 1) − 0.72 y (n − 2) = 0.7 x (n) − 0.252 x (n − 2).	6M	CO3	L3
(b)	Summarize various properties of Continuous wavelet transforms.	6M	CO3	L2
	(OR)			
6(a)	Illustrate how the analysis of discrete time invariant system can be obtained by using convolution properties of the Z- Transform.	6M	CO3	L2
(b)	Find out the Z-transform for the following discrete time sequence x(n) = kn, n≥0.	6M	CO3	L3
7(a)	Paraphrase various analog and digital transformations.	6M	CO4	L2
(b)	Using bilinear transformation, design a digital Butterworth filter with the following specifications (i) sampling frequency Fs = 8KHz, ii) αp = 2dB in the passband 800Hz≤ f ≤ 1000Hz (iii) αs = 20dB in the stopband 0≤ f ≤ 400Hz and 2000Hz≤ f ≤ ∞.	6M	CO4	L3
	(OR)			
8(a)	Discuss about characteristics of analog Butterworth low pass filter and give its pole locations. Discuss about pole locations of digital Chebyshev filter.	6M	CO4	L2
(b)	Determine the order and the poles of the low pass Butterworth filter that has -3dB bandwidth of 500Hz and an attenuation of 40dB at 1000Hz.	6M	CO4	L3
9(a)	Design an FIR low pass filter using Hanning windows with pass band gain of 1dB, cutoff frequency of 400Hz, sampling frequency of 1 kHz. Assume the length of the impulse response as 7.	6M	CO4	L3
(b)	Summarize the process of inverse discrete wavelets transform computation by filter banks.	6M	CO4	L2
	(OR)			
10(a)	Describe the designing of FIR filter using frequency sampling technique.	6M	CO4	L2
(b)	Compare Hanning and Hamming windows.	6M	CO4	L2

****

H.T.No										

31 OCT 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. VI Semester Regular 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 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
	(OR)			
2(a)	Illustrate the working of pH electrode and mention the ranges of pH ranges of Intra cellular fluids.	6M	CO1	L2
(b)	Describe in detail about Blood Gas electrodes with the help of diagram.	6M	CO1	L2
3(a)	Discuss how electrical pulses are transmitted in the heart of a cardiac cycle.	6M	CO3	L2
(b)	Summarize the connections of Bipolar limb leads with the help of Einthoven triangle.	6M	CO3	L2
	(OR)			
4(a)	Explain the typical resting rhythms of Brain.	6M	CO3	L2
(b)	Describe the measurement of EEG using 10-20 Electrode placement system.	6M	CO3	L2
5(a)	Discuss the indirect method of blood Pressure measurement in detail.	6M	CO5	L2
(b)	Explain the principle and operation of Electromagnetic blood flow meters	6M	CO5	L2
	(OR)			
6(a)	Describe the principle and operation of Dilution method for blood flow measurement.	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 ventricular asynchronous Pacemaker.	6M	CO4	L2
(b)	Illustrate the principle and working of Spectrophotometer with the help of neat sketch.	6M	CO4	L2
	(OR)			
8(a)	Describe the operation of square pulse defibrillator with suitable diagram.	6M	CO4	L2
(b)	Discuss the working details of Short wave diathermy.	6M	CO4	L2
9(a)	Illustrate the working principle and construction of MRI Scanner with the help of neat sketch.	6M	CO2	L2
(b)	Summarizing the physical effects produced on human body due to electrical currents.	6M	CO2	L2
	(OR)			
10(a)	Describe the electrical shock hazards that occur due to medical equipment.	6M	CO2	L2
(b)	Discuss the principle and working of Computer Axial Tomography.	6M	CO2	L2

****

H.T.No										

3 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	Compute x(n+2), x(n-2), x(-n) and x(2-n) from the sequence $x(n) = \{1,2,\underset{\uparrow}{3},4,5,6,7,8,9\}$	6M	CO1	L3
(b)	Determine whether the following signal is periodic or not. If periodic find the fundamental period x(n) = e^(j7nπ)/4.	6M	CO1	L2
	(OR)			
2(a)	Check the system y(n)=T{x(n)}=x(n)-bx(n-1) for linearity, shift invariant and causality.	6M	CO1	L2
(b)	Determine the even and odd parts of the signal X(n) = {2,-2,6,-2}.	6M	CO1	L2
3(a)	Determine the Z Transform and ROC of the following disrete time signal x(n) = 0.8^nu(-n-1)	6M	CO2	L3
(b)	Find the Z transform of the signal x(n) = na^nu(n).	6M	CO2	L3
	(OR)			
4(a)	Determine the inverse Z transform of the following z-domain function X(z) = (z-0.6)/ (z^2 + z+1) using partial fraction method.	6M	CO2	L3
(b)	Obtain the DF-II realization of the LTI system governed by the equation $y(n)-1/2y(n-1)-1/3y(n-2)-1/4y(n-3)=2x(n)+3x(n-1)+4x(n-2)$	6M	CO2	L2
5(a)	Compute the 4- point DFT of a sequence x(n)={4,5,6,7}. Obtain its magnitude and phase spectrum.	6M	CO3	L3
(b)	Compute the 4-point IDFT of X(k) = {1,0,1,0}.	6M	CO3	L3
	(OR)			
6(a)	Compute 8 point DFT using radix 2 DIFFFT where x(n) given by {2,1,2,1,1,2,1,2}.	6M	CO3	L3
(b)	Compute the circular convolution of sequences $x_1(n)$={1,2,3,4} and $x_2(n)$={5,6,7,8}.	6M	CO3	L3
7(a)	Draw ideal and practical characteristics of LPF using butterworth approximation. Explain its properties.	6M	CO4	L2
(b)	Determine H(z) using bilinear transformation by assuming T= 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 impulse invariant transformation (T=1s). Specifications of a filter are $0.707 \le \lvert H(jw)\rvert \le 1.0; 0 \le w \le 0.3\pi$, $\lvert H(jw)\rvert \le 0.2; 0.75\pi \le w \le \pi$	12M	CO4	L3
9(a)	Compare Hanning window and Hamming window.	6M	CO5	L2
(b)	List the applications of DSP system.	6M	CO5	L1
	(OR)			
10.	Design a linear phase FIR high pass filter using hamming window by taking 7 samples of window sequence and with cut off frequency 0.8π rad/sample.	12M	CO5	L3

****

H.T.No.										

5 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	Compare step index and graded index fibers.	6M	CO1	L2
(b)	Illustrate structure of fibers.	6M	CO1	L2
	(OR)			
2.	Discuss fiber connections.	12M	CO1	L2
3(a)	Describe the construction of He-Ne laser.	6M	CO2	L2
(b)	Explain quantum properties of light.	6M	CO2	L2
	(OR)			
4(a)	Distinguish spontaneous emission and stimulated emission.	6M	CO2	L2
(b)	Derive the relation between Einstein coefficients.	6M	CO2	L2
5.	Discuss wavelength modulated sensors.	12M	CO3	L2
	(OR)			
6(a)	What is Kerr effect? Explain.	6M	CO3	L2
(b)	Show your understanding about strain sensor.	6M	CO3	L2
7(a)	Explain military applications of laser.	6M	CO4	L2
(b)	Summarize the advantages of Holography? Explain.	6M	CO4	L2
	(OR)			
8(a)	Explain practical Holography.	6M	CO4	L2
(b)	What are the applications of Holography? Explain.	6M	CO4	L2
9(a)	Outline the advantages of laser surgery? Explain.	6M	CO5	L2
(b)	Describe the application of laser in Cosmetic surgery.	6M	CO5	L2
	(OR)			
10(a)	Explain the application of laser in Dentistry.	6M	CO5	L2
(b)	Discuss in detail application of laser in Oncology.	6M	CO5	L2

****

H.T.No										

7 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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.	Illustrate the architecture of Virtual Instrumentation with a neat diagram.	12M	CO1	L2
	(OR)			
2(a)	Differentiate Conventional Instrument and Virtual Instrument.	6M	CO1	L2
(b)	List the drawbacks of recent approaches of Virtual Instrumentation system.	6M	CO1	L1
3(a)	Describe the process of Creating and saving VI.	6M	CO2	L2
(b)	Build a VI to convert binary number to a decimal number.	6M	CO2	L2
	(OR)			
4(a)	Interpret the basic blocks used in constructing front panel in LABVIEW.	6M	CO2	L2
(b)	Design VI program to find sum and carry for three binary bits.	6M	CO2	L3
5(a)	With a suitable diagram explain the use of shift registers in For Loops and While Loops.	6M	CO3	L2
(b)	Build the VI to find the sum of first n natural numbers using While loop with a feedback node.	6M	CO3	L3
	(OR)			
6(a)	Explain how to set For loop count using auto-indexing.	6M	CO3	L2
(b)	Create the VI to find the decimal equivalent of a binary number using sub VI.	6M	CO3	L3
7(a)	List various chart components.	6M	CO4	L1
(b)	Create two 2D numeric arrays and add them. Change the number of rows and number of columns of each array and show the result.	6M	CO3	L3
	(OR)			
8.	Describe different types of operations available in File I/O palette.	12M	CO4	L2
9(a)	Illustrate the general model of a DAQ system with a neat sketch.	6M	CO5	L2
(b)	Create a VI to add or subtract two numbers. Use Case Structures to switch between addition and subtraction.	6M	CO3	L3
	(OR)			
10(a)	Explain the DAQ operation with a neat block diagram.	6M	CO5	L2
(b)	Summarize the tasks generated at the time of analog output task.	6M	CO5	L2

****

H.T.No.										

11 NOV 2020 R17

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

B.Tech. (VI Semester) Regular Examinations

17EI91-REMOTE SENSING
(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)	Differentiate Passive Radiation Remote sensing and Active Radiation Remote sensing.	6M	CO1	L2
(b)	Discuss about the role of Electromagnetic radiation in Remote Sensing.	6M	CO1	L2
	(OR)			
2(a)	Describe the process of Energy interactions with the Earths' surface.	6M	CO4	L2
(b)	Explain the availability of Atmospheric Transmission Windows in Remote sensing.	6M	CO4	L2
3(a)	Explain about (i) Aerial Film Cameras (ii) Multispectral Scanners (iii) Hyperspectral Scanners.	6M	CO2	L2
(b)	Explain about (i) Digital Area Cameras (ii) Thermal Scanners	6M	CO2	L2
	(OR)			
4(a)	Illustrate the concepts of (i)Spatial Resolution (ii) Spectral Resolution	6M	CO3	L2
(b)	List the types of Platforms present in Remote Sensing and describe their working.	6M	CO3	L2
5(a)	Describe the construction and working of Photographic film.	6M	CO2	L2
(b)	Summarize the concept of Rayleigh's Criterion of Resolution.	6M	CO2	L2
	(OR)			
6(a)	Illustrate the working of Photomultiplier tube.	6M	CO2	L2
(b)	List the types of thermal detectors. Describe the functioning of each detector.	6M	CO2	L2
7(a)	Classify the Data products present in Remote Sensing.	6M	CO3	L2
(b)	Describe the significance of Image Interpretation in Remote sensing.	6M	CO3	L2
	(OR)			
8(a)	List the Value-added products and describe their significance.	6M	CO4	L2
(b)	Describe the factors governing interpretability in Visual image interpretation.	6M	CO4	L2
9(a)	Explain about the impact of Radar Shadow in Microwave Remote sensing with necessary diagrams.	6M	CO5	L2
(b)	Illustrate Slant range and Ground range Microwave Remote sensing with necessary diagrams.	6M	CO5	L2
	(OR)			
10(a)	Describe the following parameters used in Microwave Remote Sensing with necessary diagrams. (i) Back scatter (ii) Speckle	6M	CO5	L2
(b)	Illustrate the sensing types involved in Microwave Remote sensing.	6M	CO5	L2

****

H.T.No.										

13 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17EI10- PROCESS CONTROL INSTRUMENTATION
(EIE)

JC4

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 are various process variables with relevant examples?	6M	CO1	L2
(b)	Describe operation of Liquid-Level Process with Constant-Flow Outlet.	6M	CO1	L2
	(OR)			
2(a)	Illustrate Performing a degree of freedom analysis on a process with an example.	6M	CO1	L2
(b)	Outline the terms self-regulation and dead time.	6M	CO1	L2
3(a)	Derive the transfer functions of PI and PD controllers.	6M	CO2	L2
(b)	Write short notes on Electronic controllers with examples.	6M	CO2	L2
	(OR)			
4(a)	Explain about PID control modes.	6M	CO2	L2
(b)	Illustrate hydraulic controllers.	6M	CO2	L2
5(a)	Outline Damped oscillation method of tuning a controller.	6M	CO3	L2
(b)	Compare IAE ,ISE and ITAE methods of evaluation.	6M	CO3	L2
	(OR)			
6(a)	Elaborate the evaluation criteria of IAE, ISE, and ITAE.	6M	CO3	L2
(b)	What is meant by Controller tuning? Explain any one controller tuning method.	6M	CO3	L2
7(a)	Compare various Sliding stem Control Valves.	6M	CO4	L2
(b)	Describe about pneumatic and hydraulic controllers with examples.	6M	CO4	L2
	(OR)			
8(a)	Describe the operation of Valve sizing.	6M	CO4	L2
(b)	A valve with a Cv rating of 3.0 is used to throttle the flow of glycerine for which sg =1.26. Determine the maximum flow through the valve for a pressure drop of 100 psi.	6M	CO4	L3
9(a)	Illustrate Split range control strategy with suitable example.	6M	CO5	L2
(b)	What are the implementation issues of cascade control system?	6M	CO5	L2
	(OR)			
10(a)	Compare Cascade and feed forward control systems with relevant examples.	6M	CO5	L2
(b)	Illustrate about override control mechanism with an example.	6M	CO5	L2

****

H.T.No.										

3 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	Discuss the features and evolution of R.	6M	CO1	L2
(b)	Differentiate between R-List and R-Vector with its merits and demerits.	6M	CO1	L2
	(OR)			
2(a)	Mention the different miscellaneous operators with example.	6M	CO1	L2
(b)	Explain in detail about R-Variables Find and Delete operations.	6M	CO1	L2
3(a)	Find the greatest among the three values using if..else..	6M	CO2	L1
(b)	Discuss ***lapply()*** and ***mapply()*** functions with an example.	6M	CO2	L1
	(OR)			
4(a)	Mention the different roles of ***paste()*** function with example.	6M	CO2	L1
(b)	Summarize any three string manipulation functions.	6M	CO2	L2
5(a)	Is different values are stored in a list? Justify with an example.	6M	CO3	L3
(b)	How to copy, add and subtract two lists? Explain with example.	6M	CO3	L2
	(OR)			
6(a)	Perform matrix multiplication using R-Matrices.	6M	CO3	L1
(b)	Discuss about how to manipulate and merge the list.	6M	CO3	L2
7(a)	Explain about Multidimensional R-Arrays with an example.	6M	CO4	L2
(b)	Describe how to extract and expand the data frame.	6M	CO4	L2
	(OR)			
8(a)	How Joins are working in Data Reshaping? Explain it.	6M	CO4	L2
(b)	Explain the roles of Namespace in R-Packages with an example.	6M	CO4	L2
9(a)	Write formulas, means and variances for various statistical distributions.	6M	CO5	L1
(b)	Discuss in detail about Random Forests.	6M	CO5	L2
	(OR)			
10(a)	What is ANOVA? Explain with neat examples.	6M	CO5	L2
(b)	Describe about Splines with an example.	6M	CO5	L2

****

H.T.No										

5 NOV 2020

R17

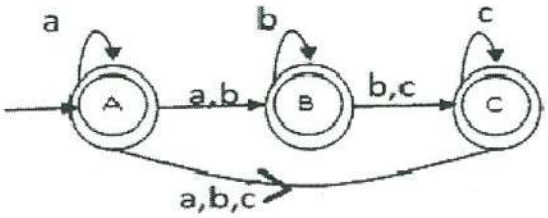
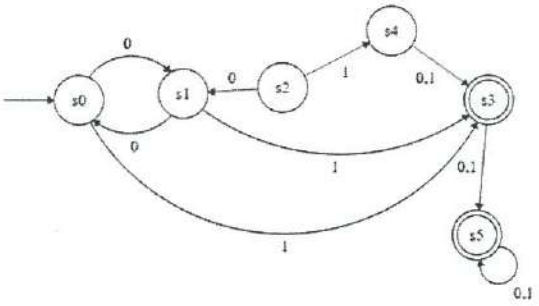
LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (VI Semester) Regular 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)	Convert the following NFA to DFA: 	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
	(OR)			
2(a)	Construct the minimal state DFA for the given transistion diagram using Myhill nerode theorem. 	6M	CO1	L3
(b)	Construct the regular expressions for the languages over ∑={a,b} which contains set of all strings in which i) Number of a's are exactly 2 ii) Number of a's are atleast 2 iii) Number of a's are atmost 2 iv) Starts with 'a' v) Ends with 'a' vi) Contains 'a'	6M	CO1	L2
3(a)	Define ambiguous grammar. Identify whether the following grammars are ambiguous or not: (i) S→aSbS | bSaS | ε (ii) S→AB | C A→ aAb | ab B→ cBd | cd C→ aCd | aDd D→ bDc | bc	6M	CO2	L1

(b)	Is the given grammar in Chomsky Normal Form? Justify your answer. S→AB,A→BS | b, B→SA | a	6M	CO2	L3
	(OR)			
4(a)	Construct a PDA equivalent to the following grammar: S→aAA,A→aS|bS|a	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
5.	Construct LALR(1) parsing table for the following grammar. S→CC,C→cC/d.	12M	CO3	L3
	(OR)			
6(a)	Construct Predictive Parsing table for the following and parse the input string **(a,(a,a))**. S→(L) | a L→L,S | S	6M	CO3	L3
(b)	Write the rules to compute First and Follow for the given grammar.	6M	CO3	L1
7.	Discuss various forms of intermediate code representations with a suitable example.	12M	CO4	L2
	(OR)			
8(a)	Generate the three address code and write the quadruples, triples and indirect triples representation for the following statement x=-a*b+a*b.	6M	CO4	L3
(b)	Illustrate the concept of S-attributed and L-attributed grammars with example.	6M	CO4	L2
9(a)	How optimization of basic blocks done?	6M	CO5	L1
(b)	Discuss about the principal sources of code optimization.	6M	CO5	L2
	(OR)			
10(a)	Discuss 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

****

H.T.No										

7 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular 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)	What are the various steps in image processing? Discuss briefly.	6M	CO1	L2
(b)	Describe the concept of sampling and quantization of an image.	6M	CO1	L2
	(OR)			
2(a)	Define an image. List out and explain the various areas of applications of image processing.	6M	CO1	L2
(b)	Illustrate, how image is acquired using sensor strips?	6M	CO1	L2
3(a)	Discuss how the various filter masks are generated to sharpen images in spatial filters.	6M	CO2	L2
(b)	Illustrate homomorphic filtering approach for image enhancement.	6M	CO2	L2
	(OR)			
4(a)	What effect would setting to zero the half of lower-order bit planes have on the histogram of an image in general?	6M	CO2	L1
(b)	Discuss the limiting effect of repeatedly applying a 3x3 low-pass spatial filter to a digital image. You may ignore border effects. Is this effect different from applying 5x5 filter.	6M	CO2	L3
5(a)	What are the different ways to estimate the degradation function? Explain.	6M	CO3	L1
(b)	With relevant mathematical expressions, explain how a Wiener filter achieves restoration of a given degraded image.	6M	CO3	L3
	(OR)			
6(a)	What is the purpose of image restoration? Explain the model of image degradation and restoration process using suitable block diagram.	6M	CO3	L2
(b)	Discuss Fast Fourier Transform (FFT) in detail.	6M	CO3	L2
7(a)	Draw and explain the general image compression system model.	6M	CO4	L2
(b)	What are the different image compression standards? Explain.	6M	CO4	L1
	(OR)			
8(a)	Prove that erosion and dilation are dual to each other.	6M	CO4	L3
(b)	Discuss about morphological hit-or-miss transform.	6M	CO4	L2
9(a)	Describe the significance of thresholding in image segmentation.	6M	CO5	L2
(b)	Explain about Boundary Extraction and Region Filling Algorithm.	6M	CO4	L2
	(OR)			
10(a)	Define image segmentation. Give classification. Explain region based segmentation.	6M	CO5	L1
(b)	Discuss about Roberts, Prewitt and Sobel edge detectors.	6M	CO5	L2

****

H.T.No.										

11 NOV 2020

R17

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

B.Tech. (VI Semester) Regular 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)	Illustrate three way handshake protocol.	6M	CO1	L2
(b)	Describe OSI reference model.	6M	CO1	L2
	(OR)			
2(a)	Discuss UNIX standards.	6M	CO1	L2
(b)	Summarize the protocol usage of common Internet applications.	6M	CO1	L2
3(a)	Discuss value-result parameter passing mechanism.	6M	CO2	L2
(b)	Describe each of the following socket functions. (i)Socket (ii) Listen (iii) Fork (iv) Exec	6M	CO2	L2
	(OR)			
4(a)	Differentiate between iterative and concurrent server.	6M	CO2	L2
(b)	List the necessary steps when server is crashing and rebooting.	6M	CO2	L1
5(a)	Differentiate getsockopt() and setsockopt() functions.	6M	CO3	L2
(b)	Describe the use of Generic Socket and Options.	6M	CO3	L2
	(OR)			
6.	Summarize various types of synchronous and asynchronous I/O models.	12M	CO3	L2
7(a)	Describe lost datagram in UDP.	6M	CO4	L2
(b)	Discuss the lack of flow control with UDP.	6M	CO4	L2
	(OR)			
8(a)	Summarize Domain Name System.	6M	CO4	L2
(b)	Contrast TCP and UDP.	6M	CO4	L2
9(a)	Discuss the significance of Name Spaces in IPC.	6M	CO5	L2
(b)	Describe file locking and record locking.	6M	CO5	L2
	(OR)			
10(a)	Compare binary semaphore and counting semaphore.	6M	CO5	L2
(b)	Summarize message queues in IPC.	6M	CO5	L2

****

H.T.No.										

13 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17CI20-INFORMATION SECURITY
(IT)

JC4

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)	Differentiate Active and Passive Attacks.	6M	CO1	L1
(b)	Discuss the six security services.	6M	CO1	L1
	(OR)			
2(a)	List the five ingredients of symmetric encryption scheme. Show the simplified model of symmetric encryption.	6M	CO1	L1
(b)	Outline the Cipher block modes of operation.	6M	CO1	L2
3(a)	Illustrate the public key encryption structure and requirements for public key cryptography.	6M	CO2	L2
(b)	Summarize the Kerberos version 5 message exchanges.	6M	CO2	L2
	(OR)			
4(a)	Solve the given problem by consider a Diffie-Hellman scheme with a common prime q =11 and a primitive root $\alpha = 2$. (i) If user A has public key Y_A =9, Calculate A's private key X_A. (ii) If user B has public key Y_B = 3, Calculate the shared secret key K.	6M	CO2	L3
(b)	Differentiate version 4 and version 5 of Kerberos.	6M	CO2	L2
5(a)	Describe the steps involved in providing authentication and confidentiality by PGP.	6M	CO3	L2
(b)	Outline the parameters that are required to identify a Security Association.	6M	CO3	L1
	(OR)			
6(a)	List the applications of IPsec.	6M	CO3	L1
(b)	Illustrate IPSec and ESP format.	6M	CO3	L2
7(a)	Discuss the payment authorization transaction supported by SET.	6M	CO4	L2
(b)	List the features of SET. Illustrate customer purchase request procedure done at the merchant side.	6M	CO4	L2
	(OR)			
8(a)	Demonstrate the Handshake protocol in Secure Socket Layer (SSL) with a neat sketch.	6M	CO4	L2
(b)	Discuss the roles of SET participants.	6M	CO4	L1
9(a)	Discuss about Application level gateway.	6M	CO5	L2
(b)	Outline common characteristics of a bastion host.	6M	CO5	L1
	(OR)			
10(a)	Discuss the different stages of Virus.	6M	CO5	L1
(b)	Outline the characteristics of a Firewall.	6M	CO5	L1

****

H.T.No										

31 OCT 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular Examinations

17ME21-MECHANICAL ENGINEERING DESIGN-II

(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)	What is meant by hydrodynamic lubrication?	6M	CO1	L1
(b)	A ball bearing subjected to a radial load of 5 kN is expected to have a life of 8000 hours at 1450 r.p.m with a reliability of 99%. Calculate the dynamic load capacity of the bearing so that it can be selected from the manufacturer's catalogue based on a reliability of 90%.	6M	CO1	L3
	(OR)			
2(a)	A Journal bearing 60 mm is diameter & 90 mm long runs at 450 r.p.m. The oil used for hydrodynamic lubrication has absolute viscosity is 0.06 kg/m-s. If the diametral clearance is 0.1 mm, find the safe load on the bearing.	6M	CO1	L3
(b)	What are the rolling contact bearings? Discuss their advantages over sliding contact bearings.	6M	CO1	L2
3.	Design a Cast iron piston for a single acting 4 stroke diesel engine with the following data cylinder bore = 200mm, length of stroke = 250mm, speed = 600 rpm, brake mean effective pressure = 0.6 MPa, Maximum gas pressure = 4 MPa, fuel consumption = 0.25 kg/bp/hour. l/d ratio for bush in small end of connecting rod = 1.5, Assume suitable data if required and state the assumptions you make.	12M	CO2	L4
	(OR)			
4.	Design a connecting rod for an I.C. Engine running at 1800 r.p.m. and developing a maximum pressure of 3.15 N/mm^2. The diameter of the piston is 100 mm; mass of the reciprocating parts per cylinder 2.25 kg; length of connecting rod 380 mm; stroke of piston 190 mm and compression ratio 6:1. Take a factor of safety 6 for the design. Take length to diameter ratio for big end bearing as 1.3 and small end bearing as 2 and the corresponding bearing pressures as 10 N/mm^2 and 15 N/mm^2. The density of material of the rod may be taken as 8000 kg/m^3 and the allowable stress in the bolts as 60 N/mm^2 and in cap as 80 N/mm^2. The rod is to be of I-section for which you can choose your own proportions. Draw a neat dimensioned sketch showing provision for lubrication. Use Rankine formula for which the numerator constant may be taken as 320 and the denominator constant 1/7500.	12M	CO2	L4
5(a)	Discuss the various important parameters necessary for the selection of a particular drive for power transmission.	6M	CO3	L2

(b)	A rope drive transmits 600 kW from a pulley of effective diameter 4 m, which runs at a speed of 90 r.p.m. The angle of lap is 160°; the angle of groove 45°; the coefficient of friction 0.28; the mass of rope 1.5 kg/m and the allowable tension in each rope 2400N. Find the number of ropes required.	6M	CO3	L3
	(OR)			
6(a)	A V-belt drive consists of three V- belts in parallel on grooved pulleys of the same size. The angle of groove is 30° and the coefficient of friction 0.12. The cross sectional area of each belt is 800 mm^2 and the permissible safe stress in the material is 3 MPa. Calculate the power that can be transmitted between two pulleys 400mm in diameter rotating at 960 r.p.m.	6M	CO3	L3
(b)	What are the advantages and disadvantages of V-belt drive over flat belt drive?	6M	CO3	L2
7(a)	Design a spring for a balance to measure 0 to 1000 N over a scale of length 80 mm. The spring is to be enclosed in a casing of 25 mm diameter. The approximate number of turns is 30. The modulus of rigidity is 85 kN/mm^2. Also calculate the maximum shear stress induced.	6M	CO4	L3
(b)	Explain different types of springs.	6M	CO4	L2
	(OR)			
8.	A concentric spring for an aircraft engine valve is to exert a maximum force of 5000 N under an axial deflection of 40 mm. Both the springs have same free length, same solid length and are subjected to equal maximum shear stress of 850 MPa. If the spring index for both the springs is 6, find (i) the load shared by each spring, (ii) the main dimensions of both the springs, and (iii) the number of active coils in each spring. Assume G=80 kN/mm^2 and diametral clearance to be equal to the difference between the wire diameters.	12M	CO4	L4
9.	A gear drive is required to transmit a maximum power of 22.5 kW. The velocity ratio is 1:2 and r.p.m of the pinion is 200. The approximate centre distance between the shafts may be taken as 600mm. The tooth has 20° stub involute profiles. The static stress for the gear material (which is cast iron) may be taken as 60 MPa and face width as 10 times the module. Find the module, face width and number of teeth on each gear. Check the design for dynamic and wear loads. The deformation or dynamic factor in the Buckingham equation may be taken as 80 and the material combination factor for the wear as 1.4.	12M	CO5	L4
	(OR)			
10.	A pair of helical gears is to transmit 15 kW. The teeth are 20° stub in diametral plane and have a helix angle of 45°. The pinion runs at 10,000 r.p.m. and has 80 mm pitch diameter. The gear has 320 mm pitch diameter. If the gears are made of cast steel having allowable static strength of 100 MPa; determine a suitable module and face width from static strength considerations and check the gears for wear, given oes = 618 MPa.	12M	CO5	L4

****

3 NOV 2020

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

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular Examinations

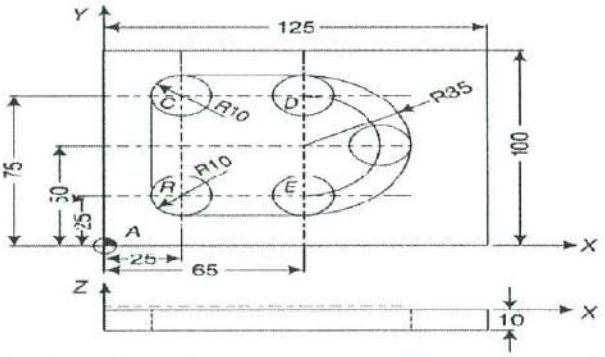
17ME22-CAD/CAM

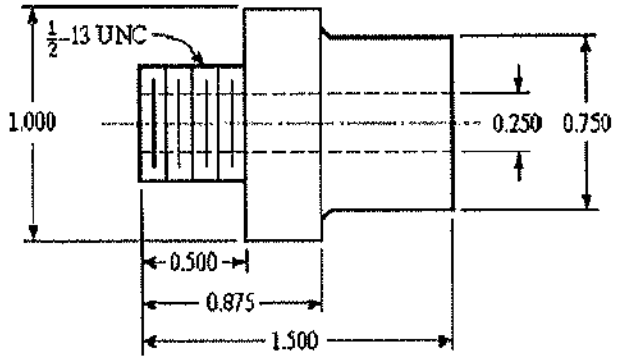
(ME)

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)	Justify the need for CAD in present competitive market environment.	6M	CO1	L2
(b)	Explain the different activities of product cycle with block diagram.	6M	CO1	L2
	(OR)			
2(a)	Build Transformation matrix for various geometrical transformations in computer graphics.	6M	CO1	L2
(b)	A triangle is defined in a two dimensional coordinate system by its vertices (0, 2), (0, 3) and (1, 2). Construct the following transformations on this triangle: (i) Rotate the triangle by 45^0 about the origin (ii) Translate the original triangle 2 units in X-direction and 3-units in Y direction.	6M	CO1	L3
3(a)	List out different types of analytical and synthetic curves and their properties.	6M	CO2	L2
(b)	Fit a cubic Bezier curve is defined by the control points as (1, 3), (4, 5), (5, 7), and (8, 4). Calculate the midpoint of the curve.	6M	CO2	L3
	(OR)			
4(a)	What is solid modeling. Illustrate different types of solid entities?	6M	CO2	L2
(b)	Distinguish between B-representation and CSG representation in solid modelling.	6M	CO2	L2
5(a)	What is numerical control? Illustrate various elements of NC with a neat diagram.	6M	CO3	L2
(b)	The component to be machined is shown in Fig. It is assumed that the pocket is through and hence only outside is to be machined as a finish cut of the pocket. The tool to be used is a 20 mm diameter slot drill. The setting is done with point A as reference (0, 0, 0) and the reference axes are along X and Y directions. Build NC part program for machining the component.  	6M	CO3	L3
	(OR)			

6(a)	What is canned cycle? Explain with suitable example.	6M	CO3	L2
(b)	Summarize about various types of actuation systems used in CNC machine tools.	6M	CO3	L2
7(a)	What are the methods of grouping parts into part families? Explain.	6M	CO4	L2
(b)	Develop the OPITZ form code and chat (first 5 digits) with justification for the component shown in Fig. 	6M	CO4	L3
	(OR)			
8(a)	What are various types of layouts used in FMS design? List out FMS benefits.	6M	CO4	L2
(b)	Illustrate the working of a retrieval and generative CAPP system.	6M	CO4	L2
9(a)	What is a CMM? Classify various types of CMM with neat sketches.	6M	CO5	L2
(b)	What is machine vision? Explain how it can be used for CAQC.	6M	CO5	L2
	(OR)			
10(a)	Discuss the benefits of Computer Integrated Manufacturing (CIM) technology.	6M	CO5	L2
(b)	What is lean manufacturing? List the various elements of lean manufacturing.	6M	CO5	L1

****

5 NOV 2020

H.T.No										

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

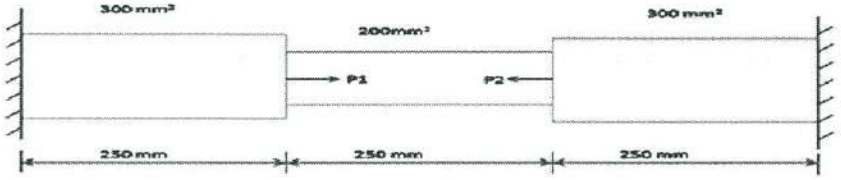
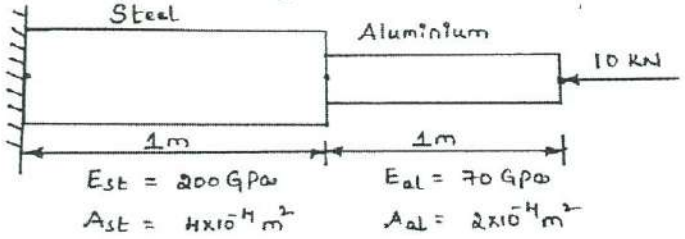
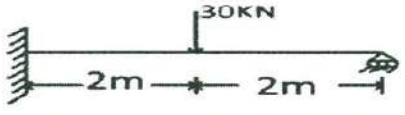
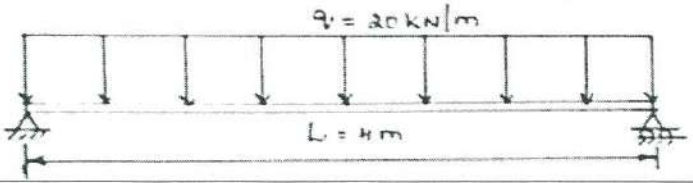
L.B.Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

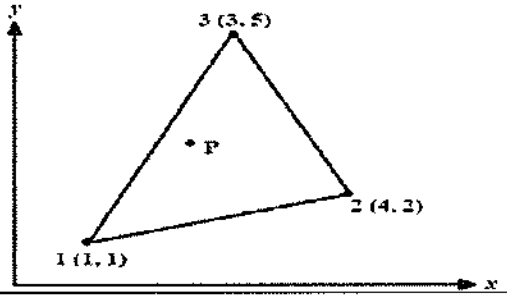
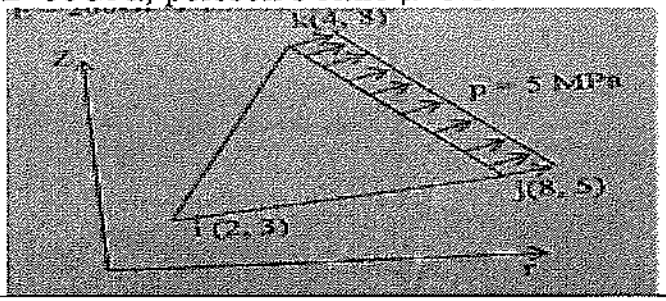
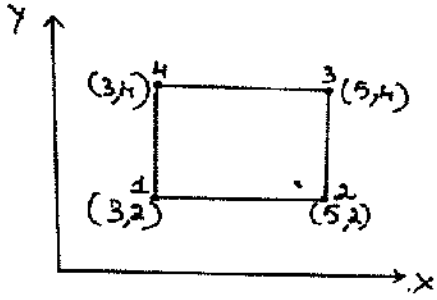
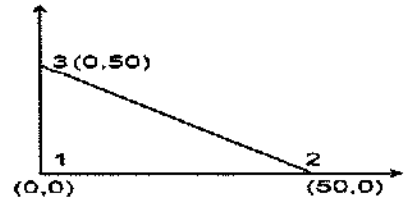
B.Tech. (VI Semester) Regular Examinations

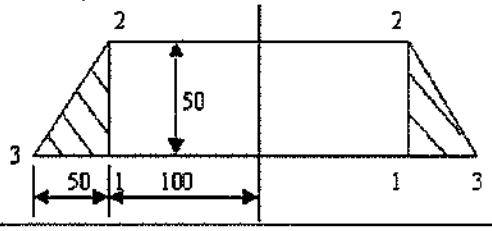
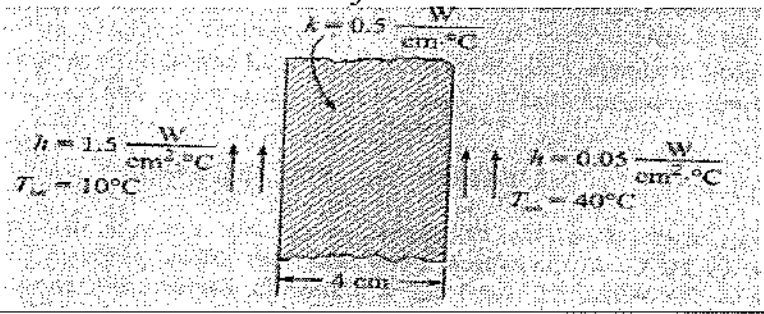
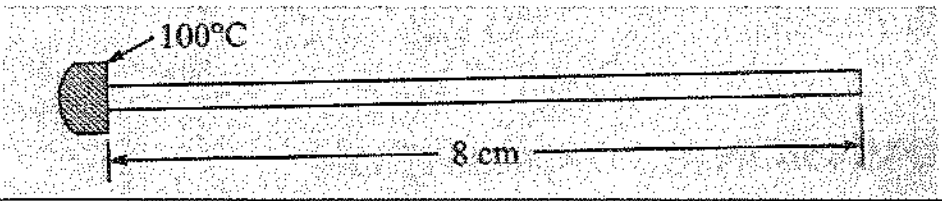
17ME23-FINITE ELEMENT ANALYSIS
(ME)

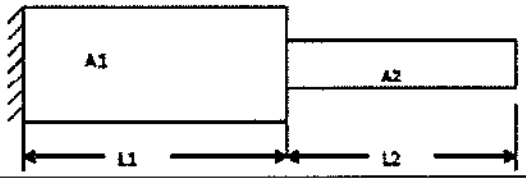
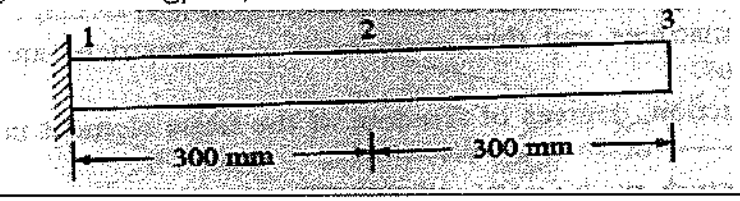
Time : 3 hours Max.Marks : 60

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

Q.No	Questions	Marks	CO	BL
1(a)	Explain the step by step procedure of Finite Element Analysis (FEA).	6M	CO1	L2
(b)	Determine the displacements in the bar subjected to an axial loads of P1=3000N (Tensile) and P2=2000N (Compression) as shown in figure. Take E=2.1×10^{5}MPa. 	6M	CO1	L3
	(OR)			
2(a)	In a plane strain problem, σ_x=1200MPa, σ_y=-1200MPa, Young's modulus E=210 GPa and poisson's ratio μ=0.28. Detremine the value of stress σ_z.	6M	CO1	L3
(b)	Determine the nodal displacements in each element for the stepped bar as shown in figure. 	6M	CO1	L3
3(a)	Derive the hermite shape functions of a beam element.	6M	CO2	L2
(b)	Evaluate the deflection under the load of the beam as shown in figure. 	6M	CO2	L3
	(OR)			
4(a)	Determine the midspan deflection for the beam subjected to the uniformly distributed load q=20KN/M as shown in fig. Given length L=4m,Young's modulus E=200 Gpa, moment of inertia I=0.5 m^4 	6M	CO2	L3

(b)	For point P located inside the triangle as shown in figure, the shape functions N1 and N2 are 0.15 and 0.25 respectively. Estimate the x and ycoordinates of point P. 	6M	CO2	L3
5(a)	The axi-symmetric element shown in figure is subjected to a uniformly distributed pressure as shown. Develop the strain displacement matrix, material matrix. Take Young's modulus E=80GPa, poisson's ratio μ=0.3. 	6M	CO3	L3
(b)	The nodal displacements of four node quadrilateral element shown in figure are given as Q= [0, 0, 0.01, 0.02, 0.05, 0.01, 0.10, 0.01] ^{T} cm. Take E=20X10^6 N/cm^2 and μ=0.25. Evaluate the Jacobian matrix and strain displacement matrix of the element at ξ=0 & η=0. Assume plane stress condition. 	6M	CO3	L3
	(OR)			
6(a)	Determine the stiffness matrix for the axisymmetric element shown in figure. Take Young's modulus E = 2.1 x 10^6 N/mm^2 and Poisson's ratio as 0.3. All dimensions are in mm only. 	6M	CO3	L3

(b)	An axi-symmetric ring element is shown in figure. Evaluate the matrices [B] and [D]. Take E = 2 X 10^5 N / mm^2 and Poisson's ratio (μ) = 0.33. 	6M	CO3	L3
7(a)	A composite wall consists of 4 cm thick wood, 10 cm glass fiber insulation and 1cm thick plaster. If the temperature on wood and plaster faces are 20°C and -20°C respectively. Estimate the temperature distribution in the wall. Assume the thermal conductivity of wood, glass fiber and plaster are 0.17, 0.035 and 0.5W/m k respectively and colder side heat transfer coefficient is 25 W/m^2 K.	6M	CO4	L3
(b)	Determine the surface temperature for the wall shown in figure. Convection heat transfer occurs on both surfaces. Assume surface area as unity. 	6M	CO4	L3
	(OR)			
8(a)	Consider a brick wall of thickness 0.3 m, k = 0.7 W/m K. The inner surface is at 28°C and the outer surface is exposed to cold air at -15°C. The heat transfer coefficient associated with the outside surface is 40 W/m^2 K. Determine the steady state temperature distribution within the wall.	6M	CO4	L3
(b)	Determine the temperature distribution in one dimensional rectangular cross-section as shown in figure. The fin has rectangular cross section and is 8cm long, 4cm wide and 1cm thick. Assume that convection heat loss occurs form the end of the fin. Take h=3W/cm°C, h=0.1 W/cm^2 °C and T_α=20°C. 	6M	CO4	L3

9.	For the stepped bar shown in the figure, develop the global stiffness and mass matrices and also determine the natural frequencies and mode shapes. Assume E = 200 GPa and mass density = 7850 kg/m^3, L1 = L2 = 0.3 m, A1 = 350 mm^2, A2 = 600 mm^2. 	12M	CO5	L4
	(OR)			
10(a)	Derive the elemental mass matrix for bar element.	6M	CO5	L3
(b)	Evaluate the nodal frequencies of the beam shown in figure use two element models. Take E=210 GPA, Density = 7250 kg/m^3, A=400mm^2 and I=5000mm^4. 	6M	CO5	L4

****

H.T.No.										

7 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17ME24-AUTOMOBILE ENGINEERING
(ME)

JC4

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)	With neat diagrams explain the construction of Crankshaft and Connecting-Rod.	6M	CO1	L1
(b)	Compare between Dry Liners and Wet Liners used in engines.	6M	CO1	L2
	(OR)			
2(a)	Discuss with neat sketch about four-wheel drive mechanism.	6M	CO1	L1
(b)	Sketch and explain the working of Turbocharger.	6M	CO1	L1
3(a)	Illustrate the working of any one type of Fuel filter.	6M	CO2	L2
(b)	Distinguish between modern carburetor and simple carburetor.	6M	CO2	L2
	(OR)			
4(a)	Describe the working of a mechanical fuel pump used in Petrol engine with neat sketch.	6M	CO2	L1
(b)	With neat sketches discuss types of petrol Injection systems.	6M	CO2	L1
5(a)	Describe with neat sketch working of battery ignition system.	6M	CO3	L1
(b)	Demonstrate the working of Electronic ignition system in a motor vehicle.	6M	CO3	L2
	(OR)			
6(a)	Give neat sketch of magneto ignition system for a 4-cylinder engine and describe how does it works.	6M	CO3	L1
(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 constant mesh gear box.	6M	CO4	L2
(b)	Illustrate the working of fluid flywheel with neat sketch.	6M	CO4	L2
	(OR)			
8(a)	Justify the need of Differential in an automobile.	6M	CO4	L2
(b)	List different types of wheels used in an automobile and explain.	6M	CO4	L1
9(a)	Enumerate different considerations for classifying the automotive brakes.	6M	CO5	L1
(b)	Describe with the help of neat sketch, the following i) Castor ii) Camber iii) King pin inclination.	6M	CO5	L1
	(OR)			
10(a)	Demonstrate Torsion bar with a neat sketch.	6M	CO5	L2
(b)	Justify the need of Suspension system in an automobile.	6M	CO5	L2

****

H.T.No										

9 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular Examinations

17MB82-LOGISTICS AND SUPPLY MANAGEMENT

(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)	Describe functions of supply chain.	6M	CO1	L2
(b)	Explain the role of aggregate planning in supply chain.	6M	CO1	L2
	(OR)			
2(a)	Describe the objectives of supply chain Management.	6M	CO1	L2
(b)	Disuss-"Wal Mart has achieved very good strategic fit between its competitive and supply chain strategies".	6M	CO1	L2
3(a)	Differentiate between logistics and supply chain.	6M	CO2	L2
(b)	Illustrate the service driven logistic system.	6M	CO2	L2
	(OR)			
4(a)	Explain the concept of Reverse logistics.	6M	CO2	L2
(b)	Summarize the important elements for setting customer service standards in supply chain Management.	6M	CO2	L2
5(a)	Define Benchmarking in supply chain relationship.	6M	CO3	L1
(b)	Explain the role of Revenue Management in supply chain.	6M	CO3	L2
	(OR)			
6(a)	Differentiate the types of benchmarking.	6M	CO3	L2
(b)	Describe the procurement process from shopping for goods and services to payments.	6M	CO3	L2
7(a)	List any six factors which effects the distribution of network design.	6M	CO4	L1
(b)	Explain various modes of transportation in supply chain.	6M	CO4	L2
	(OR)			
8(a)	Describe the Bullwhip effect in supply chain.	6M	CO4	L2
(b)	Discuss the obstacles to achieve coordination in supply chain.	6M	CO4	L2
9(a)	Explain the need for global supply chain.	6M	CO5	L2
(b)	Describe the significance of IT in supply chain.	6M	CO5	L2
	(OR)			
10(a)	Explain the challenges of global supply chain Management.	6M	CO5	L2
(b)	Explain the Macro processes in Supply chain.	6M	CO5	L2

****

H.T.No.										

11 NOV 2020

R17

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

B.Tech. (VI Semester) Regular Examinations

17ME91-DESIGN OF EXPERIMENTS
(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)	Define the term "factor" and classify.	6M	CO1	L2
(b)	Discuss the application of experimental design in characterizing a process with a suitable example.	6M	CO1	L2
	(OR)			
2(a)	Define experiment. Discuss the objectives of an experiment.	6M	CO1	L2
(b)	Describe the one factor at a time experimentation strategy with an example.	6M	CO1	L2
3(a)	The diameters of steel shafts produced by a certain manufacturing process should have a mean diameter of 0.255 inches. The diameter is known to have a standard deviation of σ = 0.0001 inch. A random sample of 10 shafts has an average diameter of 0.2545 inches. (i) Set up the appropriate hypotheses on the mean μ. (ii) Test these hypotheses using α = 0.05. What are your conclusions? (iii) Construct a 95 percent confidence interval on the mean shaft diameter.	6M	CO2	L3
(b)	A 100 watt bulb has an average brightness of 1640 lumns with a standard deviation of 62 lumens. What is the probability that the bulb will have a brightness (i) Less than 1800 lumens (ii) More than 1800 lumens.	6M	CO2	L3
	(OR)			
4(a)	A normally distributed random variable has an unknown mean μ and a known variance $\sigma 2$ = 9. Find the sample size required to construct a 95 percent confidence interval on the mean, that has total length of 1.0.	6M	CO2	L3
(b)	A production engineer claims the life a product has a mean of 60 months and standard deviation of 5 months. A consumer group purchases a sample of 100 of those products and tests them. They find an average life of 54 months, what should they conclude?	6M	CO2	L3
5(a)	An article in *Environment International* (Vol. 18, No. 4, 1992) describes an experiment in which the amount of radon released in showers was investigated. Radon enriched water was used in the experiment and six different orifice diameters were tested in shower heads. The data from the experiment are shown in the following table.	6M	CO3	L4

Orifice Dia.	Radon Released (%)			
0.37	80	83	83	85
0.51	75	75	79	79
0.71	74	73	76	77
1.02	67	72	74	74

Does the size of the orifice affect the mean percentage of radon released? Use α = 0.05.

(b)	Three brands of batteries are under study. It is suspected that the lives (in weeks) of the three brands are different. Five batteries of each brand are tested with the following results:	6M	CO3	L4

Brand 1	Brand 2	Brand 3
100	76	108
96	80	100
92	75	96
96	84	98
92	82	100

Are the lives of these brands of batteries different?

(OR)

6.	Four chemists are asked to determine the percentage of methyl alcohol in a certain chemical compound. Each chemist makes three determinations, and the results are the following: Chemist | Percentage of Methyl Alcohol 1 | 84.99 | 84.04 | 84.38 2 | 85.15 | 85.13 | 84.88 3 | 84.72 | 84.48 | 85.16 4 | 84.20 | 84.10 | 84.55 Do chemists differ significantly? Use $\alpha = 0.05$	12M	CO3	L4
7.	The effect of three different lubricating oils on fuel economy is diesel truck engines is being studied. Fuel economy is measured using brake-specific fuel consumption after the engine has been running for 15 minutes. Five different truck engines are available for the study, and the experimenters conduct the following randomized complete block design. Analyze the data from this experiment and Draw appropriate conclusions. Oil | Truck: 1 | 2 | 3 | 4 | 5 1 | 0.500 | 0.634 | 0.487 | 0.329 | 0.512 2 | 0.535 | 0.675 | 0.520 | 0.435 | 0.540 3 | 0.513 | 0.595 | 0.488 | 0.400 | 0.510	12M	CO4	L4
	(OR)			
8.	An industrial engineer is investigating the effect of four assembly methods (*A, B, C, D*) on the assembly time for a color television component. Four operators are selected for the study. Furthermore, the engineer knows that each assembly method produces such fatigue that the time required for the last assembly may be greater than the time required for the first, regardless of the method. That is, a trend develops in the required assembly time. To account for this source of variability, the engineer uses the Latin square design shown below. Analyze the data from this experiment ($\alpha = 0.05$) draw appropriate conclusions. Order of Assembly | Operator: 1 | 2 | 3 | 4 1 | *C*=10 | *D*=14 | *A*=7 | *B*=8 2 | *B*=7 | *C*=18 | *D*=11 | *A*=8 3 | *A*=5 | *B*=10 | *C*=11 | *D*=9 4 | *D*=10 | *A*=10 | *B*=12 | *C*=14	12M	CO4	L4
9(a)	What do you understand from process control? Explain.	6M	CO5	L2
(b)	Differentiate between control charts for attributes and control charts for variables.	6M	CO5	L2
	(OR)			
10(a)	Define the control chart and discuss the objectives of $\bar{X}$ and R charts.	6M	CO5	L2
(b)	The following represents the number of defects per 1000 feet in rubber-covered wire: 1, 1, 3, 7, 8, 10, 5, 13, 0, 19, 24, 6, 9, 11, 15, 8, 3, 6, 7, 4, 9, 20, 11, 7, 18, 10, 6, 4, 0, 9, 7, 3, 1, 8, 12. Do the data come from a controlled process?	6M	CO5	L3

****

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

13 NOV 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (VI Semester) Regular 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.	Derive general heat conduction equation in Cartesian coordinates.	12M	CO1	L3
	(OR)			
2(a)	An exterior wall of a house may be approximated by a 0.1m layer of common brick (k = 0.7W/m°C) followed by a 0.04m layer of gypsum plaster (k = 0.48W/m°C). What thickness of loosely packed rock wool insulation (k = 0.065W/m°C) should be added to reduce the heat loss or (gain) through the wall by 80%?	6M	CO1	L3
(b)	Calculate the critical radius of insulation for asbestos (k = 0.172W/m K)surrounding a pipe and exposed to room air at 300 K with h = 2.8 W/m K. Calculate the heat loss from a 475 K, 60 mm diameter pipe when covered with the critical radius of insulation and without insulation.	6M	CO1	L3
3(a)	An electric motor drives a centrifugal pump which circulates a hot liquid metal at 480°C. The motor is coupled to the pump impeller by a horizontal steel shaft (k = 32W/m°C) 25 mm in diameter. If the ambient air temperature is 20°C, the temperature of the motor is limited to a maximum value of 55°C and the heat transfer coefficient between the steel shaft and the ambient air is 14.8 W/m^2°C, what length of shaft should be specified between the motor and the pump?	6M	CO2	L3
(b)	What are Fourier and Biot numbers? What is the physical significance of these numbers?	6M	CO2	L2
	(OR)			
4(a)	Derive an expression for temperature distribution and heat dissipation in a straight fin of rectangular profile for the infinitely long fin.	6M	CO2	L3
(b)	An average convective heat transfer coefficient for flow of 90°C air over a flat plate is measured by observing the temperature time history of a 40 mm thick copper slab [ρ = 9000 kg/m^3, c_p = 0.38 kJ/kg °C, k = 370 W/m °C] exposed to 90°C air. In one test run, the initial temperature of the plate was 200°C, and in 4.5 minutes the temperature decreased by 35°C. Find the heat transfer coefficient for this case. Neglect internal thermal resistance.	6M	CO2	L3

5(a)	Find the expression for the drag force on smooth sphere of diameter D, moving with a uniform velocity V in a fluid having density ρ and dynamic viscosity μ.	6M	CO3	L3
(b)	Find the convective heat loss from a radiator 0.5 m wide and 1 m high maintained at a temperature of 84°C in a room at 20°C. Consider the radiator as a vertical plate.	6M	CO3	L3
	(OR)			
6(a)	Distinguish between natural and forced convection heat transfer.	6M	CO3	L1
(b)	Consider a thin square plate of 0.6x0.6m in a room at 30°C, one side of plate is maintained at temperature of 90°C when other side is insulated. Determine heat transfer from the plate by natural convection if the plate is in vertical position.	6M	CO3	L3
7(a)	A wire of 1 mm diameter and 150 mm length is submerged horizontally in water at 7 bar. The wire carries a current of 131.5A with an applied voltage of 2.15 V. If the surface of the wire is maintained at 180°C, calculate (i) The heat flux (ii) The boiling heat transfer coefficient.	6M	CO4	L3
(b)	State and prove Kirchhoff's law of radiation.	6M	CO4	L2
	(OR)			
8(a)	Explain briefly the physical mechanism of boiling.	6M	CO4	L2
(b)	The effective temperature of a body having an area of 0.12 m^2 is 527°C. Calculate the following: (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
9(a)	Derive an expression for effectiveness by NTU method for the parallel flow heat exchangers.	6M	CO5	L3
(b)	Water (c_{pc} = 4200 J/kg °C) enters counter-flow double pipe heat exchanger at 38°C flowing at 0.076 kg/s. It is heated by oil (c_p = 1880 J/kg °C) flowing at the rate of 0.512 kg/s from an inlet temperature of 116°C. For an area of 1 m^2 and U = 340 W/m^2 °C, determine the total heat transfer rate.	6M	CO5	L3
	(OR)			
10(a)	Derive an expression for logarithmic mean temperature difference in the case of counter-flow heat exchangers.	6M	CO5	L3
(b)	The flow rates of hot and cold water streams running through a parallel flow heat exchanger are 0.2 kg/s and 0.5 kg/s respectively. The inlet temperatures on the hot and cold sides are 75°C and 20°C respectively. The exit temperature of hot water is 45°C. If the individual heat transfer coefficients on both sides are 650 W/m^2 °C, calculate the area of the heat exchanger.	6M	CO5	L3

****