LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

B.Tech.(II Semester) (R17) Regular & Supplementary Examinations, December 2020

A.Y. 2019-20

TIME TABLE

Regulations : R17

TIME :10.00 AM to 1.00 PM

DATE	ASE	CE	CSE	ECE	EEE	EIE	IT	ME
07-12-2020 (Monday)	17FE02 - Professional Communication-II	17FE02 - Professional Communication - II	17FE02 - Professional Communication-II	17FE02 - Professional Communication-II	17FE02 - Professional Communication - II	17FE02 - Professional Communication-II	17FE02 - Professional Communication - II	17FE02 - Professional Communication - II
09-12-2020 (Wednesday)	17FE06 - Transformation Techniques and Vector Calculus	17FE06 - Transformation Techniques and Vector Calculus	17FE06 - Transformation Techniques and Vector Calculus	17FE06 - Transformation Techniques and Vector Calculus	17FE06 - Transformation Techniques and Vector Calculus	17FE06 - Transformation Techniques and Vector Calculus	17FE06 - Transformation Techniques and Vector Calculus	17FE06 - Transformation Techniques and Vector Calculus
11-12-2020 (Friday)	17FE14 - Applied Chemistry	17FE14 - Applied Chemistry	17FE12 - Applied Physics	17FE12 - Applied Physics	17FE14 - Applied Chemistry	17FE12 - Applied Physics	17FE12 - Applied Physics	17FE14 - Applied Chemistry
14-12-2020 (Monday)	17EE50 - Basic Electrical and Electronics Engineering	17CE02 - Applied Mechanics	17EE52 - Basic Electrical Engineering	17EC03 - Analog Electronic Circuits	17ME51 - Thermal and Hydro Prime Movers	17EI01 - Material Science and Engineering	17EE52 - Basic Electrical Engineering	17EE52 - Basic Electrical Engineering
16-12-2020 (Wednesday)	17ME02 - Engineering Mechanics	17CE03 - Surveying	17CI02 - Digital Logic Design	17EC04 - Digital Electronic Circuits	17EE01 - Electronic Circuits and Devices	17EC02 - Electronic Devices and Circuits	17CI05 - Data Structures	17ME02 - Engineering Mechanics

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: 09-11-2020

CONTROLLER OF EXAMINATIONS

PRINCIPAL

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

H.T.No										

16 DEC 2020

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

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

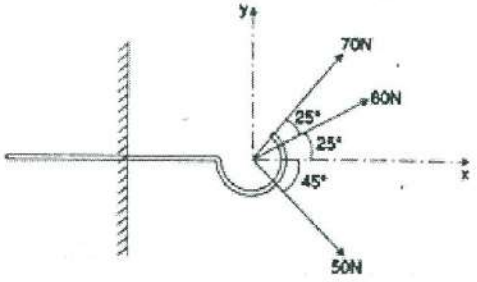
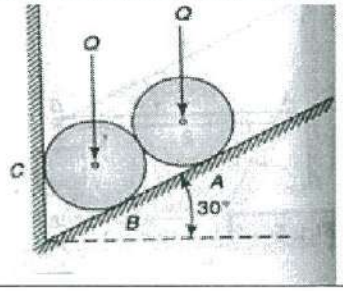
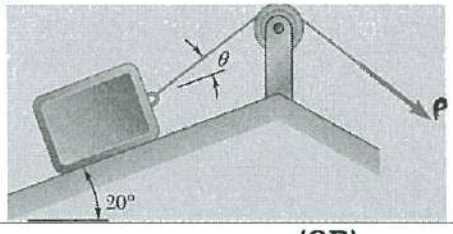
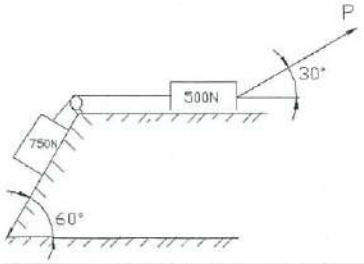
17ME02-ENGINEERING MECHANICS

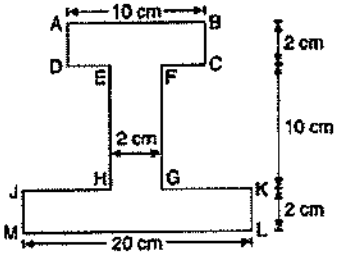
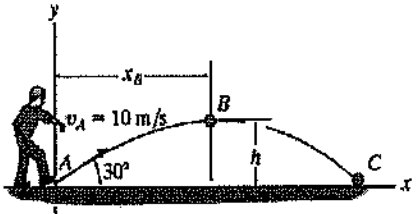
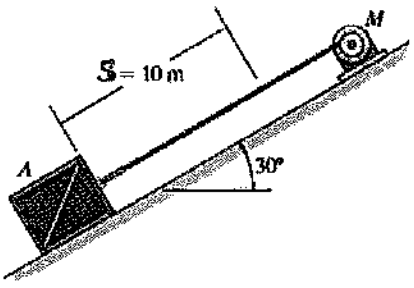
(ASE & ME)

Time : 3 hours Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	State and prove Varignon's theorem.	6M	CO1	L2
(b)	Determine the resultant of the three forces acting on a hook as shown in fig. 	6M	CO1	L3
	(OR)			
2(a)	Elucidate the term 'force' and list its characteristics with examples.	6M	CO1	L2
(b)	Two identical rollers, each of weight Q = 600 N, are supported by an inclined plane and a vertical wall as shown in Fig. Assuming smooth surfaces, Compute the reactions induced at the points of support A,B and C. 	6M	CO1	L3
3(a)	Define 'frictional force' and 'cone of friction'.	6M	CO2	L1
(b)	Calculate the magnitude and direction of the friction force when P = 80 N and θ = 20° and μ = 0.3, if the weight of the block is 200 N shown in figure is impending upwards. 	6M	CO2	L3
	(OR)			
4.	By recalling the concepts of equilibrium estimate the value of P in the system shown in the following figure, to cause the motion of 500 N block to the right side. Assume the pulley is smooth and the coefficient of friction between other contact surfaces is 0.20. 	12M	CO2	L3

5.	Determine the coordinates of the centroid of the plane area shown in fig. with respect to its base. Also compute the Area moment of inertia about its base. 	12M	CO3	L3
	(OR)			
6(a)	A right circular cone has the radius of base as 250 mm and height 1000 mm is resting on a right circular cylinder of base diameter 500 mm and height 1.5m. The mass density for both cylinder and cone is 85 kN/m^3. Locate the centre of gravity of the system.	6M	CO3	L3
(b)	Show that the moment of inertia of a thin circular ring of mass M and mean radius R with respect to its geometric axis is MR^2.	6M	CO3	L3
7(a)	A ball is thrown vertically upward with a speed of 15m/s. Estimate the time required to reach maximum height and to reach its original position.	6M	CO4	L3
(b)	The ball is kicked from point A with the initial velocity v_A=10m/s. Evaluate the maximum height 'h' it reaches, the range 'R' and the speed when the ball strikes the ground. 	6M	CO4	L3
	(OR)			
8(a)	A car starts from rest and with constant acceleration achieves a velocity of 15 m/s when it travels a distance of 200 m. Determine the acceleration of the car and the time required.	6M	CO4	L3
(b)	A body is projected at an angle such that its horizontal range is 3 times the maximum height. Compute the angle of projection.	6M	CO4	L3
9(a)	With respect to the plane motion of rigid bodies, explain: (i) Instantaneous centre of Rotation (ii) Centroid (iii) Absolute and relative velocity	6M	CO5	L2
(b)	A block of weight 1 kN on a rough horizontal plane is subjected to a load of 'P' inclined 30^0 to horizontal. Determine the force 'P' required to give the block an acceleration of 3 m/sec^2 to the right. The coefficient of friction between the block and plane is 0.25.	6M	CO5	L4
	(OR)			
10(a)	Define kinetic energy and potential energy of a particle with examples.	6M	CO5	L2
(b)	If the motor exerts a constant force of 300 N on the cable, determine the speed of the 20-kg crate when it travels s = 10m up the plane, starting from rest. The coefficient of kinetic friction between the crate and the plane is μ_k= 0.3. 	6M	CO5	L4

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16 DEC 2020

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

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

17CE03-SURVEYING

(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)	Write a short note on i) Chain surveying ii) Compass surveying iii) Plane table surveying.	6M	CO1	L1
(b)	(i) Convert the following from WCB to QB WCB of AB =35^0 30' ;WCB of BC =125^0 45' ; WCB of CD =242^0 15' (ii) Convert the following from QB to WCB QB of AB =N45^{0}30'E ;QB of BC =S56^{0}45'W ;QB of CD =S22^{0}15'E.	6M	CO1	L2
	(OR)			
2(a)	The following fore bearings and back bearings were observed in traversing with a compass Line FB BB PQ S 37°30' E N 37°30' W QR S 43°15' W N 44°15' E RS N 73°00' W S 72°15' E ST N 12°45' E S 13°15' W TP N 60°00' E S 59°00' W Calculate the interior angles and correct them for observational errors.	6M	CO1	L3
(b)	Write a short notes on i) Whole circle bearing system ii) Dip of Magnetic Needle iii) Magnetic Declination iv) Local attraction.	6M	CO1	L1
3(a)	What are the applications of contours?	6M	CO2	L1
(b)	Explain the plotting of contours by Grid method.	6M	CO2	L2
	(OR)			
4(a)	Discuss the permanent adjustments of leveling.	6M	CO2	L2
(b)	The following consecutive staff readings were taken with a level along a sloping ground line AB at a regular distance of 20 m by using 4 m leveling staff: 0.352 0.787 1.832 2.956 3.758 0.953 1.756 2.738 3.872 0.812 2.325 3.137 Rule out a page of level field book and enter the above readings RL of point A is 320.288. Calculate RL of all points by rise and fall system.	6M	CO2	L3

5(a)	State the Trapezoidal and Simpson's rule. What are the limitations of Simpsons rule?	6M	CO3	L2
(b)	The following perpendicular offsets were taken at 20 m intervals from a base line to an irregular boundary line: 5.90, 12.4, 16.5, 15.3, 18.4, 20.9, 24.2, 21.8 and 19.2 m Calculate the area enclosed between the base line, the irregular boundary line and the first and last offsets by i) Trapezoidal rule ii) Simpson's rule	6M	CO3	L3
	(OR)			
6(a)	A railway embankment of length 500 m width at formation level 9 m, and side slopes 2:1 is to be constructed. The round levels every 100 m along the centerline are Distance (m) : 0 100 200 300 400 500 Ground level(m):107.8 106.3 110.5 111.0 110.7 112.2 The embankment has a rising gradient of 1.2 m per 100 m and the formation level is 110.5 m at zero distance. Calculate the volume of earth work. Assuming the round to the level across the centre line.	6M	CO3	L3
(b)	How do you estimate the capacity of reservoir?	6M	CO3	L2
7(a)	Explain about the fundamental lines of the theodolite with neat sketch.	6M	CO4	L2
(b)	Describe the measurement of horizontal angle by reiteration method.	6M	CO4	L2
	(OR)			
8(a)	Discuss the temporary adjustments of transit theodolite and explain.	6M	CO4	L1
(b)	How do you determining the additive and multiplying constant of a Tachometer?	6M	CO4	L2
9(a)	The chainage of intersection of two straight line having deflection angle 55°is 1000 m. If the radius of the curve is 400 m. Calculate the following i) Tangent distance ii) length of curve iii) chainage at point T_1 and T_2 iv) Length of long chord v) Degree of curve vi) Apex distance vii) Mid-ordinate distance.	6M	CO5	L3
(b)	Define curve. Explain the classification of curves.	6M	CO5	L2
	(OR)			
10(a)	Write about i) Total station ii) Global Positioning system.	6M	CO5	L1
(b)	List and explain the elements of a simple circular curve with a sketch.	6M	CO5	L1

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B.Tech. (II Semester) Regular/Supplementary Examinations
17CI02-DIGITAL LOGIC DESIGN
(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)	Define gray code. Describe the four bit gray code for decimal numbers 0 to 15.	6M	CO1	L2
(b)	Draw the truth tables of NAND gate, NOR gate and Ex-NOR gate.	6M	CO1	L1
	(OR)			
2(a)	Solve the following. (i) 7's Complementof $(300)_8$ (ii) 9's Complement of $(325.74)_{10}$ (iii) 8's Complement of $(461)_8$.	6M	CO1	L3
(b)	Solve the following. (i) $(46)_{10}$-$(22)_{10}$ in BCD using 10's complement. (ii) $(24)_{10}$-$(56)_{10}$ in BCD using 9's complement.	6M	CO1	L3
3(a)	Discuss the following Boolean function with NAND-NAND logic F=(A,B,C)= Σ m(0,1,3,5).	6M	CO2	L2
(b)	Solve the Expression using K-Map $Y=A^1BC^1D^1+A^1BC^1D+ABC^1D^1+ABC^1D+AB^1C^1D+A^1B^1CD^1$	6M	CO2	L3
	(OR)			
4(a)	Calculate the reduced SOP form of the Boolean function F(A,B,C,D)= Σ m(1,3,7,11,15)+ Σ d(0,2,4).	6M	CO2	L3
(b)	List the rules for simplifying logic function using K-Map.	6M	CO2	L1
5(a)	Describe Boolean function using 4:1 multiplexer F(A,,B,C)= Σm(1,3,5,6).	6M	CO3	L2
(b)	Describe a full adder circuit using 3:8 decoder.	6M	CO3	L2
	(OR)			
6(a)	Discuss the working mechanism of carry look ahead generator.	6M	CO3	L2
(b)	Draw the block diagram of four bit parallel adder.	6M	CO3	L2
7(a)	Describe the master slave JK Flip Flop.	6M	CO4	L2
(b)	Differentiate combinational logic circuits and Sequential logic circuits.	6M	CO4	L2
	(OR)			
8(a)	Demonstrate Ripple Counter and draw the timing diagram.	6M	CO4	L2
(b)	Compare asynchronous counters and synchronous counters.	6M	CO4	L2
9(a)	Calculate the PLA program table for the four Boolean functions below.Minimize the number of product terms. A(x,y,z)= Σm(0,1,3,5) B(x,y,z)= Σm(2,6) C(x,y,z)= Σm(1,2,3,5,7) D(x,y,z)= Σm(0,1,6).	6M	CO5	L3
(b)	Demonstrate a BCD to Excess-3 code convertor using ROM.	6M	CO5	L3
	(OR)			
10(a)	Calculate the PAL programmable table for the four Boolean functions listed below. A(x,y,z)= Σm(1,2,4,6) B(x,y,z)= Σm(0,1,6,7) C(x,y,z)= Σm(2,6) D(x,y,z)= Σm(1,2,3,5,7).	6M	CO5	L3
(b)	Draw PLA circuit to implement the logic functions $A^1BC+AB^1C+AC^1$ and $A^1B^1C^1+BC$.	6M	CO5	L2

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16 DEC 2020 **R17**

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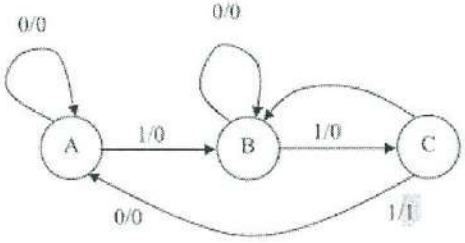
B.Tech. (II Semester) Regular/Supplementary Examinations

17EC04-DIGITAL ELECTRONIC CIRCUITS

(ECE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Translate the data 1110 in to Hamming code using Even parity.	6M	CO1	L2
(b)	Obtain minimal SOP expression for the logic function using using K-Map F=∑m(0,1,2,3,4,5,10,11,14,20,21,24,25,26,27,28).	6M	CO3	L2
	(OR)			
2(a)	Examine the following for the given unsigned binary numbers by taking the 2's complement of the subtrahend 110110 – 10000	6M	CO1	L3
(b)	Interpret the Boolean expression to minimum literals i) $F=\overline{(\overline{X}\cdot\overline{Y}+Z)}+Z+XY+WZ$ ii) $F=\overline{A}\cdot\overline{C}+ABC+A\cdot\overline{C}+A\cdot\overline{B}$	6M	CO1	L2
3(a)	Implement the function F=∑m (0,1,2,3,4,7,8,9)+ d(12,13,14,15) using k-map and NAND logic.	6M	CO3	L2
(b)	Realize Ex-NOR gate using NAND gates.	6M	CO2	L1
	(OR)			
4(a)	Obtain minimal SOP expression for the logic function F=∑m(0,1,2,4,5,6) using K-map and realize using NOR gates.	6M	CO3	L2
(b)	Construct OR, NOR logic gates operations using Diode, Resistor and transistor.	6M	CO2	L2
5(a)	Design a combinational logic circuit for full-adder.	6M	CO3	L3
(b)	Implement the function $F(A,B,C,D)=\overline{A}\cdot\overline{D}+ACD+\overline{B}CD+\overline{A}\cdot\overline{C}\cdot D$ using 8x1 multiplexer.	6M	CO3	L2
	(OR)			
6.	Construct a 4 bit binary-to-Gray code converter.	12M	CO3	L3
7(a)	Design a 3-bit synchronous counter.	6M	CO3	L3
(b)	Model a Mod-8 ripple down-counter using J-K flip flops.	6M	CO4	L3
	(OR)			
8(a)	Compare (i) Synchronous and Asynchronous circuits (ii) Combinational and sequential circuits.	6M	CO3	L1
(b)	Develop asynchronous BCD counter using J-K flip flops.	6M	CO3	L2
9(a)	Derive the state table and ASM chart for the given state diagram. 	6M	CO4	L2
(b)	Illustrate with an example about Moore Machine.	6M	CO4	L2
	(OR)			
10(a)	Obtain the state equation and state diagram for the state table. PS | NS,Z: X=0 | X=1 A | F,0 | B,1 B | G,0 | A,1 C | B,0 | C,1 D | C,0 | B,1 E | D,0 | A,1 F | E,1 | F,1 G | E,1 | G,1	6M	CO3	L2
(b)	Analyze the ASM charts for the following state transitions: If X=1, control goes from T_1 to T_2 and then to T_3. If X=0 control goes from T_1 to T_3.	6M	CO3	L4

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

17EE01-ELECTRONIC CIRCUITS AND DEVICES

(EEE)

Time : 3 hours Max. Marks : 60

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

Q.No	Questions	Marks	CO	BL
1(a)	Define Fermi level in a semiconductor. Explain the position of Fermi level in Intrinsic and Extrinsic semiconductors.	6M	CO1	L2
(b)	The reverse saturation current of a germanium diode is 100 μA. at room temperature of 27°C. Calculate the current in forward biased condition, if forward bias voltage is 0.2V at room temperature.	6M	CO1	L3
	(OR)			
2(a)	Draw and explain V-I Characteristics of Tunnel Diode with energy band diagrams.	6M	CO1	L2
(b)	Explain how the process of avalanche breakdown occurs in a p-n junction diode. How is it different from zener break down?	6M	CO1	L2
3(a)	For a Half Wave Recitifier , Solve expressions for (i) Ripple Factor (ii) Peak Inverse Voltage (iii) Efficiency for Rectification.	6M	CO2	L3
(b)	A voltage V=300 Cost (100t) is applied to a half wave rectifier with R_L=5KΩ. The rectifier may be represented by ideal diode in series with 1KΩ. Calculate (i) I_m (ii) D.C. Power (iii) A.C. Power (iv) Rectifier Efficiency (v)Ripple factor	6M	CO2	L3
	(OR)			
4(a)	Draw a circuit diagram of a full wave rectifier with L-Section Filter and find the expression for ripple factor for full wave rectifier using L-Section filter.	6M	CO2	L2
(b)	Calculate the value of inductance to use in the inductor filter connected to a full wave rectifier operating at 60 Hz to provide a DC output with 5 % ripple for a 100 Ω load.	6M	CO2	L3
5(a)	Explain the working of NPN and PNP Transistors with neat sketches.	6M	CO2	L2
(b)	Derive the Relationship between current amplification factors of common base , common emitter and common collector configurations.	6M	CO2	L3
	(OR)			

6(a)	Why JFET is called voltage controlled device? Draw the structure and output characteristics of N Channel JFET. Indicate different regions in the characteristics and explain its significance.	6M	CO2	L2
(b)	A JFET has V_P = -4.5V , I_{DSS} = 9mA and I_D = 3mA. Determine its (i) V_{GS} (ii) Transconductance (g_m).	6M	CO2	L3
7(a)	Draw and explain voltage divider bias circuit with diagrams and derive expression for stability factor 'S'.	6M	CO3	L2
(b)	Explain with the help of circuit diagram how 'V_{BE}' can be compensated using a diode due to changes in temperature.	6M	CO3	L2
	(OR)			
8(a)	With a neat sketch, explain voltage divider bias circuit of N-Channel JFET.	6M	CO3	L2
(b)	In an n-channel JFET biased by voltage divider method, Determine the value of R_S to get operating point I_D = 4mA and V_{ds} = 8V. Given that V_{dd} =25V, R_{G1}=1. R_{G2}=0.6mΩ, JFET parameters are I_{DSS} = 12mA and V_P = -4V.	6M	CO3	L3
9(a)	What are the advantages of hybrid parameters? Draw the generalized h-parameter model of a transistor amplifier and explain the significance of each parameter.	6M	CO3	L2
(b)	Compare CE, CB, CC Models in terms of Voltage gain, current gain, input impedance and output impedance.	6M	CO3	L2
	(OR)			
10(a)	Draw the basic structure and circuit symbol of an SCR and explain its operation.	6M	CO2	L2
(b)	The base one of an UJT has resistance of 4.7kΩ and the value of intrinsic stand off ratio of the device is 0.58. if an inter base resistance of 10V is applied across the two bases, calculate the value of I_B.	6M	CO2	L3

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B.Tech. (II Semester) Regular/Supplementary Examinations
17EC02-ELECTRONIC DEVICES AND CIRCUITS
(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)	Find the concentration of electrons and holes in an n-type Silicon semiconductor if the conductivity is 0.1/ohm-cm at 300K.	6M	CO1	L2
(b)	Define mobility, conductivity and diffusion. What is Einstein's relation?	6M	CO1	L1
	(OR)			
2(a)	How do you determine whether a given semiconductor is p-type or n-type with neat sketches?	6M	CO1	L2
(b)	Derive an expression for current density in an n-type semiconductor in terms of drift velocity.	6M	CO1	L3
3.	Illustrate an open circuited PN- junction. Explain about (i) Contact potential (ii) Depletion region and (iii) Electric field.	12M	CO2	L2
	(OR)			
4(a)	Explain the temperature dependency of V-I characteristics of pn junction diode.	6M	CO2	L2
(b)	Discuss about varactor diode and PIN diode.	6M	CO2	L2
5(a)	A 230V, 60HZ voltage is applied to the primary of a 5:1 step-down, center tap transformer used in a full wave rectifier having a load of 900Ω. If the diode resistance and secondary coil resistance together has a resistance of 100Ω, determine (i) PIV across each diode (ii) Ripple factor and (iii) o/p frequency.	6M	CO3	L3
(b)	Derive the relation for ripple factor of a full wave rectifier with capacitor filter.	6M	CO3	L2
	(OR)			
6(a)	Explain with neat sketches the working of full wave bridge rectifier.	6M	CO3	L2
(b)	State the need of a filter circuit. List various types of filters with their basic principle of operation.	6M	CO3	L1
7(a)	Demonstrate the mechanism of current flow in a PNP and NPN transistors with neat sketches.	6M	CO2	L2
(b)	Explain the construction, working of N channel JFET and Plot the Drain and Transfer characteristics of it.	6M	CO2	L2
	(OR)			
8(a)	With neat sketches describe the performance of MOSFET.	6M	CO2	L2
(b)	In a Ge transistor collector current is 51mA, when base current is 0.4mA. If β_{dc} = 125, Calculate I_{CEO}.	6M	CO2	L3
9(a)	Define thermal runaway, state how it can be avoided and mention the condition to avoid Thermal runaway.	6M	CO5	L2
(b)	What is the need for biasing? Explain the criteria for fixing Q-point.	6M	CO5	L2
	(OR)			
10(a)	Draw the circuit diagram of a self-bias and derive the expression for '**S**'.	6M	CO5	L3
(b)	Explain how thermistor provides compensation against variation of temperature.	6M	CO5	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

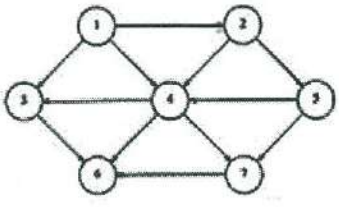
B.Tech. (II Semester) Regular/Supplementary Examinations

17CI05-DATA STRUCTURES

(IT)

Time : 3 hours Max. Marks : 60

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

Q.No	Questions	Marks	CO	BL
1(a)	Develop ADT for Addition of two Polynomials with function definition.	6M	CO1	L3
(b)	Explain running time analysis for binary search.	6M	CO1	L2
	(OR)			
2(a)	Construct ADT for double linked list. (No need to write any function definition).	6M	CO1	L3
(b)	Demonstrate delete and display operations for double linked list.	6M	CO1	L2
3(a)	Illustrate algorithms for push and pop operations.	6M	CO2	L2
(b)	Illustrate conversion of infix expression to postfix expression.	6M	CO2	L2
	(OR)			
4(a)	Illustrate basic operations on queue.	6M	CO2	L2
(b)	Explain evaluation of postfix expression with suitable example.	6M	CO2	L2
5(a)	Construct an algorithm to find an element from the list using Binary Search.	6M	CO3	L2
(b)	Apply Quick Sort for the following numbers and display the data for all possible passes. 5, 34, 12, 46, 27, 56, 11, 87, 6, 33, 28	6M	CO3	L3
	(OR)			
6(a)	Construct an algorithm to find an element from the list using Fibonacci search.	6M	CO3	L3
(b)	Explain Merge sort algorithm with example.	6M	CO3	L2
7(a)	Build a binary search tree for the following data 50, 11, 32, 79, 38, 47, 84, 9, 59, 17	6M	CO4	L3
(b)	Explain LL,LR,RR, RL rotations with suitable examples.	6M	CO4	L2
	(OR)			
8(a)	Summarize the general trees and binary trees with examples.	6M	CO4	L2
(b)	Construct analgorithm to insert an element into a Binary Search Tree.	6M	CO4	L3
9(a)	Construct an algorithm to traverse the graph using Breadth First Search with a suitable example.	6M	CO5	L3
(b)	Discuss Krushkal'sminimum spanning tree algorithm with an example.	6M	CO5	L2
	(OR)			
10(a)	Compare BFS and DFS graph traversing technique.	6M	CO5	L2
(b)	Construct the Adjacency Matrix of the following graph. Also give adjacency list representation for the same 	6M	CO5	L3

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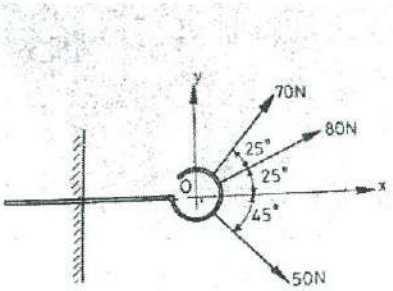
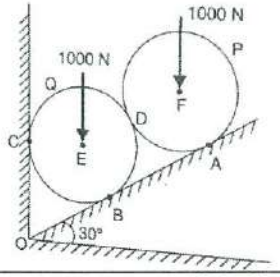
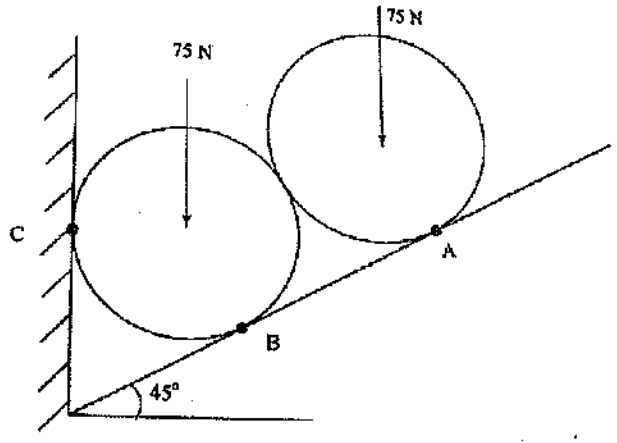
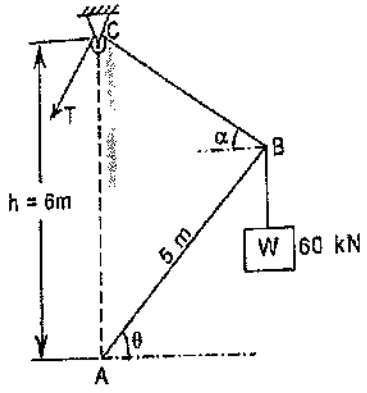
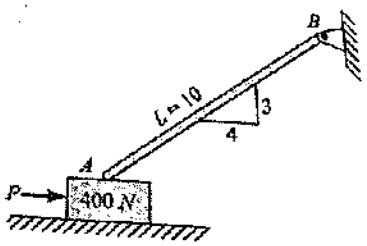
B.Tech. (II Semester) Regular/Supplementary Examinations

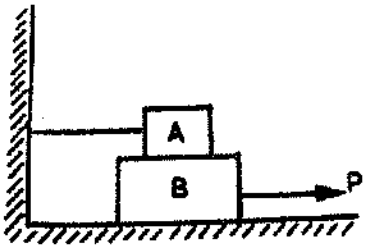
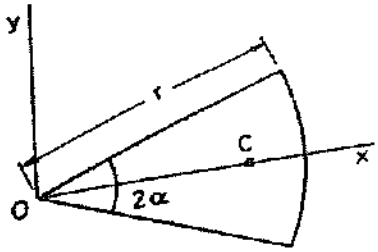
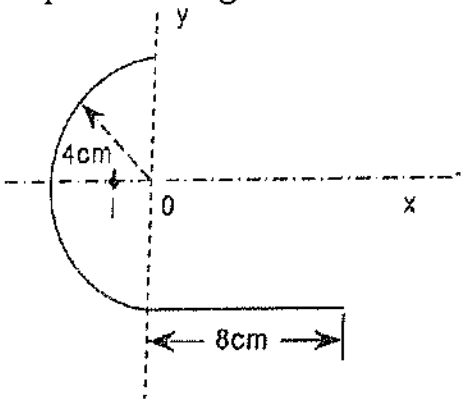
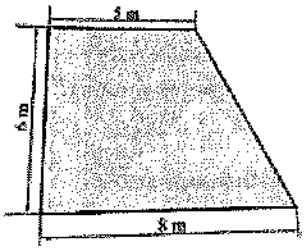
17CE02-APPLIED MECHANICS
(CE)

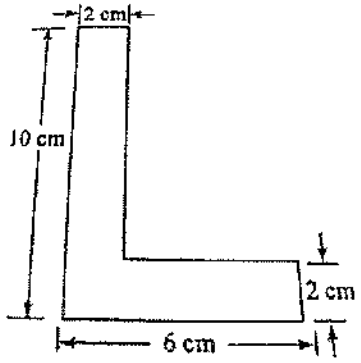
Time : 3 hours Max. Marks : 60

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

Q.No	Questions	Marks	CO	BL
1(a)	The resultant of two forces, one of which is double the other is 260N. If the direction of the larger force is reversed and the other remains unaltered, the resultant reduces to 180N. Determine the magnitude of the forces and the angle between the forces.	6M	CO1	L3
(b)	Determine the resultant of the three forces acting on a hook as shown if fig. 	6M	CO1	L3
	(OR)			
2(a)	Define the term force and explain its characteristics with examples.	6M	CO1	L2
(b)	The magnitude of the resultant of two given forces of magnitude P and Q is R. If P is doubled, then R is doubled. If Q is doubled and reversed, then also R is doubled. Show that P:Q:R=√6:√2:√5.	6M	CO1	L3
3(a)	List out different possible situations of equilibrium associated with coplanar force systems and describe any one of them.	6M	CO2	L2
(b)	Two identical rollers, each of weight W=1000N are supported by an inclined plane and a vertical wall as shown in fig. Evaluate the reactions at the points of supports A, B and C. Assume all the surfaces to be smooth. 	6M	CO2	L3
	(OR)			

4(a)	Two rollers each of weight 75N are supported by an inclined plane and a vertical wall as shown in fig. Evaluate the reactions at the points of support A, B and C. Assume all the surfaces to be smooth. 	6M	CO2	L3
(b)	The boom of crane is shown in Fig below. If the weight of the boom is negligible compared with the rod, Evaluate the axial force in the boom, and also the limiting value of tension when the boom approaches the vertical position. 	6M	CO2	L3
5(a)	A body resting on a rough horizontal plane and required a pull of 180N inclined at 30^0 to the plane just to move it. It was found that a push a 220N inclined at 30^0 to the plane just moved the body. Determine the weight of the body and the coefficient of friction.	6M	CO3	L3
(b)	A uniform bar AB, 10m long and weighing 280N,is hinged at B and rests upon a 400N block at A as shown in fig.If the coefficient of friction is 0.40 at all contact surfaces, Determine the horizontal force P required to start moving the 400N block. 	6M	CO3	L3
	(OR)			

6(a)	Explain the laws of static and dynamic friction.	6M	CO3	L2
(b)	Block A weighing 1200N rests on block B and is tied with horizontal string to the wall as shown in fig, Block B weighs 2400N. If the coefficient of friction between A and B is 0.25 and between B and surface is 0.35, Determine out the horizontal force P is necessary to move block B. 	6M	CO3	L3
7(a)	Calculate the coordinates of the centroid C of a circular area sector of central angle 2α and radius r, by the method of integration. As shown in fig. 	6M	CO4	L3
(b)	A slender homogeneous wire of uniform cross section is bent into the form shown in fig. Determine the position of centroid of the wire with respect to the given axes. 	6M	CO4	L3
	(OR)			
8(a)	Determine the centroid of the shaded area as shown in fig. 	6M	CO4	L3

(b)	Calculate the moment of inertia of the L-section as shown in fig about the horizontal and vertical passing through the center of gravity.  	6M	CO4	L3
9(a)	A stone dropped from the top of a cliff 120m high. After one second, another stone is thrown down and strikes the first stone when it has just reached the foot of the cliff. Determine the velocity with which the second stone was thrown.	6M	CO5	L3
(b)	The equation of motion of a particle moving in a straight line is given by $s=18t+3t^2-2t^3$, where s is in meters and t is in seconds. Calculate (i) Velocity and acceleration at start (ii) Time, when the particle reaches its maximum velocity, and (iii) Maximum velocity of the particle.	6M	CO5	L3
	(OR)			
10(a)	A shot is fired horizontally from the top of a tower with a velocity of 100m/s. If the shot hits the ground after 2 seconds, Determine the height of the tower and the distance from the foot of the tower, where the shot strikes the ground.	6M	CO5	L3
(b)	A projectile is aimed at a target which lies in the horizontal plane through the point of projection. It falls 'a' meters short of the target when the angle of projection is α and goes 'b' meters too far off when the angle of projection is β. Justify that the $(a+b)\sin 2\theta = (a\sin 2\beta + b\sin 2\alpha)$, where θ is the angle of projection.	6M	CO5	L3

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

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

17EI01-MATERIAL SCIENCE AND ENGINEERING
(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)	Prove that Braggs law of X-ray diffraction on a set of parallel planes of Crystal as $n\lambda = 2d \sin\Theta$.	6M	CO3	L2
(b)	Distinguish between ionic and covalent bonding in solids.	6M	CO3	L2
	(OR)			
2(a)	Define the terms (i) Unit cell (ii) Space lattice (ii) Miller indices.	6M	CO3	L1
(b)	What are the secondary bonds? Explain them with suitable examples.	6M	CO3	L2
3(a)	Distinguish between ferro and anti-ferro magnetic materials. Give examples.	6M	CO1	L2
(b)	State the criteria for ferromagnetism according to Heisenberg's theory.	6M	CO2	L2
	(OR)			
4(a)	Explain the spontaneous magnetization possessed by ferro magnetic substances below curie point.	6M	CO2	L2
(b)	Mention the essential differences between hard and soft magnetic materials.	6M	CO2	L2
5(a)	Explain the occurrence of superconductivity by BCS theory.	6M	CO1	L2
(b)	Write a note on (i) Meissner effect (ii) Magnetic levitation.	6M	CO2	L1
	(OR)			
6(a)	Discuss the general properties of superconductors.	6M	CO1	L2
(b)	Summarize the preparation of high temperature ceramic super conductors.	6M	CO2	L2
7(a)	Describe optical absorption in metals.	6M	CO1	L2
(b)	Discuss any one type of optical fibers and outline their properties.	6M	CO4	L2
	(OR)			
8(a)	Discuss the optical absorption in insulators.	6M	CO1	L2
(b)	Summarize the phenomenon of Phosphorensence in optical materials.	6M	CO4	L2
9(a)	Explain the properties and applications of ceramics.	6M	CO5	L2
(b)	Describe the process of attaining desirable properties from high temperature materials.	6M	CO5	L2
	(OR)			
10(a)	Describe the principle of thermocouple. How do you find the figure of merit of thermocouple, which develops more voltage?	6M	CO5	L3
(b)	How do you recognize the materials as smart materials? Mention the applications of shape memory alloys.	6M	CO5	L2

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

17EC03-ANALOG ELECTRONIC CIRCUITS

(ECE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Analyze all the parameters of CC amplifier using h-parameter approximation model.	6M	CO2	L3
(b)	A common collector amplifier has R1=27kΩ , R2= 27kΩ, Re= 5.6kΩ, RL= 47kΩ,Rs= 600Ω. The transistor parameters are hie= 1kΩ, hfe= 85 , hoe= 2 μA/V. Calculate current gain. Input impedance, Voltage gain and output impedance.	6M	CO2	L3
	(OR)			
2(a)	Analyze all the parameters of CE amplifier using h-parameter approximation model.	6M	CO2	L3
(b)	Compare the CE, CB and CC amplifiers in terms of voltage gain, current gain, input impedance, output impedance and phase angle.	6M	CO1	L2
3.	Analyze the two stage Cascade amplifier in terms of gain and Frequency response.	12M	CO2	L2
	(OR)			
4(a)	Derive base spreading resistance and feedback conductance in terms of known h-parameters.	6M	CO1	L3
(b)	Obtain an expression for current gain with resistive load of CE amplifier at high frequencies.	6M	CO1	L3
5(a)	How to overcome cross over distortion in class B power amplifier?	6M	CO2	L2
(b)	Discuss the complimentary symmetry Class AB power amplifier.	6M	CO2	L2
	(OR)			
6(a)	Compare the power amplifiers.	6M	CO2	L2
(b)	Discuss the transformer coupled class A power amplifiers.	6M	CO2	L2
7.	Illustrate the concept of feedback and different types of feedback amplifiers with neat block diagram.	12M	CO4	L2
	(OR)			
8(a)	Write the advantages of the negative feedback amplifier.	6M	CO4	L1
(b)	Justify how an amplifier with negative feedback is more stable.	6M	CO4	L2
9.	With neat circuit diagram explain and calculate the frequency of oscillations and condition for oscillations of RC phase shift oscillator using transistor.	12M	CO3	L3
	(OR)			
10(a)	In a Colpitts oscillator, the values of the inductors and capacitors in the tank circuit are L = 40 mH, C1= 100 pF and C2= 500pF. Find the frequency of oscillations.	6M	CO3	L2
(b)	How an Oscillator will sustain Oscillations and illustrate the conditions to be satisfied?	6M	CO3	L2

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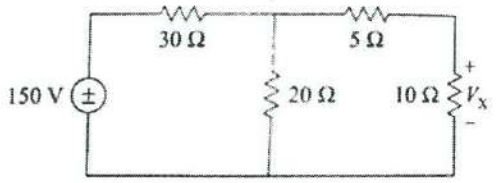
B.Tech. (II Semester) Regular/Supplementary Examinations

17EE50-BASIC ELECTRICAL AND ELECTRONICS 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)	State and explain Kirchhoff's laws.	6M	CO1	L1
(b)	Two resistors connected in parallel across 200V supply take 10A from the mains. If the power dissipated in one resistor is 800W, find the value of the other resistor.	6M	CO1	L2
	(OR)			
2(a)	Explain the Source transformation technique.	6M	CO1	L1
(b)	Calculate V_x in the circuit shown in figure using the method of source transformation. 	6M	CO1	L3
3(a)	Define (i) Instantaneous value (ii) Time period (iii) frequency (iv) cycle (v) amplitude.	6M	CO1	L1
(b)	Find the amplitude, phase, period and frequency of the sinusoidal v(t)= 15 sin (50t + 20°).	6M	CO1	L2
	(OR)			
4(a)	Explain the concept of Impedance for Pure Inductor and pure capacitor.	6M	CO1	L2
(b)	The voltage v(t)= 10 sin (50t + 30°) V is applied to a 0.2 H inductor. Find the current through the inductor.	6M	CO1	L2
5(a)	Describe the generation of emf voltage in DC generator.	6M	CO2	L2
(b)	Derive the expression for Torque produced by DC Motor.	6M	CO2	L2
	(OR)			
6.	Discuss the concept of Rotating Magnetic Field.	12M	CO2	L2
7(a)	Describe the principle and operation of a transformer.	6M	CO2	L2
(b)	A single phase 6600/415 V transformer has an equivalent resistance of 0.015 pu. and an equivalent reactance of 0.045 pu. Calculate the full-load voltage regulation at 0.8 pf lag if the primary voltage is 6600V.	6M	CO2	L3
	(OR)			
8.	Discuss the working of a MI instrument and mention their advantages and disadvantages.	12M	CO4	L2
9.	Analyze the functioning of Full-wave rectifier. Define (i) DC current I_{dc} (ii) DC voltage V_{dc} (iii) AC current I_{rms} (iv) PIV (v) Ripple Factor (vi) regulation for a Full wave rectifier.	12M	CO3	L2
	(OR)			
10(a)	Convert the following decimal numbers in to their equivalent binary numbers. (i) 105 (ii)112.67 (iii) 12.6875.	6M	CO3	L2
(b)	Describe the SR Flipflop with Truth table and circuit diagram.	6M	CO3	L2

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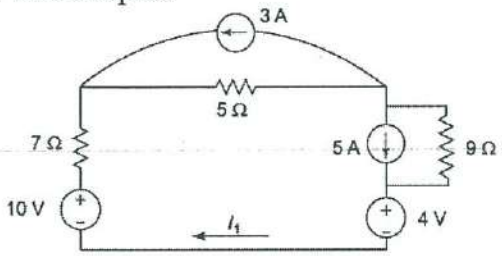
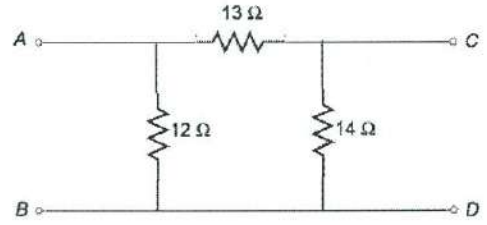
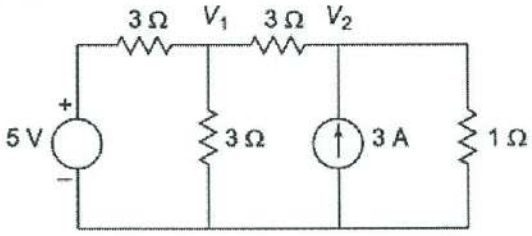
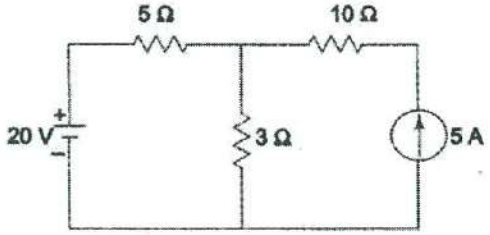
B.Tech. (II Semester) Regular/Supplementary Examinations

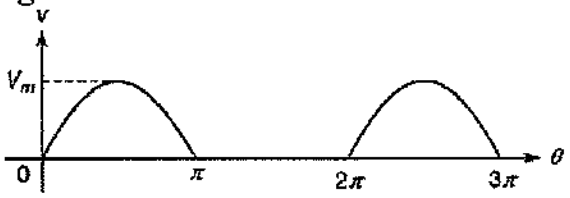
17EE52 – BASIC ELECTRICAL ENGINEERING

(CSE,IT&ME)

Time : 3 hours | Max. Marks : 60

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

Q.No	Questions	Marks	CO	BL
1(a)	Define (i) Charge (ii) Current (iii) Voltage.	6M	CO1	L1
(b)	Determine the value of I_1 in the circuit using source transformation technique. 	6M	CO1	L3
	(OR)			
2(a)	How an equivalent resistance can be determined in series and parallel circuits for three resistances?	6M	CO1	L2
(b)	Obtain the star connected equivalent for the delta connected circuit shown in the fig 	6M	CO1	L3
3(a)	Using nodal analysis, determine the node voltages in the following network 	6M	CO1	L3
(b)	Discuss the steps to determine the Thevenin's equivalent circuit.	6M	CO1	L2
	(OR)			
4(a)	Find the current through 3Ω resistor using superposition theorem in the circuit 	6M	CO1	L3

(b)	Discuss the steps to determine the Norton's equivalent circuit.	6M	CO1	L2
5(a)	Determine the average value and rms value of the waveform shown in the fig. 	6M	CO1	L3
(b)	An inductive coil having negligible resistance and 0.1H inductance is connected across an AC supply of 220V, 50Hz. Calculate (i) Inductive reactance (ii) RMS value of Current (iii) Power factor (v) Write down the equations for voltage and current.	6M	CO1	L3
	(OR)			
6(a)	An alternating current is given by **i=14.14 sin(377 t).** Find (i) rms value of the current (ii) Frequency (iii) Instantaneous value of the current at t=3 ms.	6M	CO1	L2
(b)	Define resonant frequency and derive the equation of resonant frequency of parallel RLC circuit.	6M	CO1	L2
7(a)	Describe the principle and operation of a Generator.	6M	CO2	L2
(b)	A rectangular coil of sides 12cm and 8cm is rotated in magnetic field of flux density 1.4T, the longer side of the coil actually cutting this flux. The coil is made up of 80 turns and rotates at 1200 rev/min. (i) Calculate the maximum generated emf. (ii) If the coil generates maximum voltage of 90V, at what speed will the coil rotate.	6M	CO2	L3
	(OR)			
8(a)	Discuss the production of torque in a DC Machine.	6M	CO2	L2
(b)	State Fleming's Right hand rule. A straight wire 0.10 m long carrying a current of 2.0 A is at right angles to a magnetic field. The force on the wire is 0.04 N. What is the strength of the magnetic field?	6M	CO2	L3
9(a)	Distinguish between core and shell type Transformers.	6M	CO3	L2
(b)	Describe about short circuit test on single phase transformer.	6M	CO3	L2
	(OR)			
10(a)	Illustrate the slip-torque characteristics of 3-phase induction motor.	6M	CO3	L2
(b)	Explain the working of PMMC instruments.	6M	CO4	L2

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

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

17ME51-THERMAL AND HYDRO PRIME MOVERS

(EEE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Compare heat engine, refrigerator and heat pump.	6M	CO1	L2
(b)	A reversible heat engine operates between two reservoirs at 600°C and 40°C. The engine drives a reversible refrigerator which operates between the same 40°C reservoir and reservoir at -18°C. The heat transfer to the heat engine is 2100kJ for the combined plant. Evaluate net power developed by the combined system.	6M	CO1	L3
	(OR)			
2(a)	List the similarities, dissimilarities between heat and work transfer.	6M	CO1	L2
(b)	A domestic food freezer maintains a temperature of -15°C the ambient air temperature is 30°C. If heat leaks into the freezer at continuous rate of 1.75kJ/sec. Estimate the least power necessary to pump this heat to ambient continuously.	6M	CO1	L3
3(a)	Illustrate the ideal and actual valve timing diagrams.	6M	CO3	L2
(b)	An I.C Engine uses 6kg of fuel having calorific value 44000kJ/kg in one hour. The I.P developed is 18kW. The temperature of 11.5kg of cooling water was found to rise through 25°C per minute. The temperature of 4.2kg of exhaust gas with specific heat 1kJ/kg was found to rise through 220°C. Draw the heat balance sheet for the engine.	6M	CO3	L3
	(OR)			
4(a)	List the advantages and disadvantages of gas turbines over steam turbines.	6M	CO2	L1
(b)	In an air standard gas turbine engine air at a temperature of 15°C and pressure of 1.01bar enters a compressor, where it is compresses through a pressure ratio of 5. Air enters the turbine at a temperature of 815°C and expands to original pressure of 1.01bar. Evaluate the ratio of turbine work to the compressor work and thermal efficiency when the engine operates on Brayton cycle.	6M	CO2	L3
5(a)	Explain the construction of velocity triangle for a single stage impulse turbine.	6M	CO2	L2

(b)	In a single stage impulse turbine steam issues from the nozzle with a velocity of 850m/sec. The nozzle angle is 20^0. Mean blade velocity is 350m/sec and the blades are equiangular. The mass flow rate is 1000kg/min. The friction factor is 0.8. Determine (i) Power developed in kW (ii) Blade angles (iii) Axial thrust on the bearings.	6M	CO2	L3
	(OR)			
6(a)	Distinguish pressure compounding and velocity compounding.	6M	CO2	L2
(b)	A single row impulse turbine develops 132.4 KW at a blade speed of 175m/sec using 2kg of steam per second. Steam leaves the nozzle at 400 m/sec. Velocity coefficient of the blade is 0.9. Steam leaves the turbine blade axially. Evaluate nozzle angle, blade efficiency and exit angle.	6M	CO2	L3
7(a)	Describe different types of fluid flows.	6M	CO1	L2
(b)	The right limb of a simple U-tube manometer containing mercury is open to the atmosphere while the lift limb is connected to a pipe in which a fluid of sp.gr. 0.9 is flowing. The center of the pipe is 12cm below the level of mercury in the right limb. Evaluate the pressure of fluid in the pipe if difference of mercury level in the two limbs is 20cm.	6M	CO4	L3
	(OR)			
8(a)	Derive an expression for rate of flow through venturimeter.	6M	CO4	L2
(b)	30cm diameter pipe carrying water, branches into two pipes of diameters 20cm and 15cm respectively. If the average velocity in the 30cm diameter pipe is 2.5m/s. Evaluate the discharge in the pipe and velocity in 15cm pipe if the average velocity in 20cm pipe is 2m/s.	6M	CO4	L3
9(a)	Discuss different heads in pelton wheel turbine.	6M	CO5	L2
(b)	A Kaplan turbine runner is to be designed to develop 9000kW. The net available head is 4 m. If the speed ratio 1.95 flow ratio of 0.65 and overall efficiency 89%. Estimate blade velocity and discharge through the turbine.	6M	CO5	L3
	(OR)			
10(a)	Distinguish between Pelton wheel and Kaplan turbine.	6M	CO5	L2
(b)	A Kaplan turbine develops 24647.6kW power at an average head of 39m. Assuming a speed ratio 2 and flow ratio of 0.6, diameter of the boss equal to 0.35 times the diameter of the runner and an overall efficiency is 90%. Estimate: Diameter and speed of the turbine	6M	CO5	L3

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11 DEC 2020

R17

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

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

17FE14-APPLIED CHEMISTRY
(AE,CE,EEE & ME)

Time : 3 hours Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Identify reasons for caustic embrittlement problem in boilers and suggest suitable remedies to avoid it.	6M	CO1	L2
(b)	Outline how Reverse Osmosis process can desaline the saline water with neat sketch.	6M	CO1	L2
	(OR)			
2.	What is hardness? Describe Ion exchange process of softening of water with neat sketch and give any two limitations of the process.	12M	CO1	L2
3(a)	Explain how coal can be analysed by proximate analysis and give significance.	6M	CO2	L1
(b)	Differentiate between nuclear fission and nuclear fusion.	6M	CO2	L2
	(OR)			
4(a)	What is synthetic petrol? How it can be prepared by Fisher Tropsch's process?	6M	CO2	L2
(b)	Discuss the production of bio fuel from rape seed oil.	6M	CO2	L1
5(a)	What is an electrochemical series and give its significance.	6M	CO3	L1
(b)	Define standard electrode potential. Explain the working and construction of Ni-Cad cell.	6M	CO3	L2
	(OR)			
6(a)	Write a note on Hydrogen - Oxygen fuel cells.	6M	CO3	L2
(b)	Analyze the disadvantages of dry cells.	6M	CO3	L2
7.	Illustrate how nature of environment and nature of the metal will influence the corrosion of a metal.	12M	CO4	L2
	(OR)			
8(a)	Suggest the way how best the underground pipes can be protected from corrosion.	6M	CO4	L2
(b)	Explain the mechanism of wet corrosion.	6M	CO4	L2
9(a)	Summarize the properties of the lubricants with its significance.	6M	CO5	L1
(b)	Brief out the preparation and properties of bakelite.	6M	CO5	L1
	(OR)			
10(a)	Distinguish thermo plasts from thermo setting resins.	6M	CO5	L2
(b)	List out the preparation and properties and engineering applications of thiokol rubber.	6M	CO5	L1

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

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

17FE12-APPLIED PHYSICS

(CSE,ECE, EIE & IT)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1	Illustrate Fraunhoffer single slit diffraction, intensity distribution curves and show the conditions for principle maxima, secondary maxima and minima. The first diffraction minima due to a single slit diffraction is at $\theta=30^0$ for a light of wavelength $5000A^0$. Find the width of the slit.	12M	CO1	L3
	(OR)			
2	Narrate the formation of Newton's rings in reflected system with a neat sketch. Obtain an expression for radius of curvature of the Plano convex lens. In Newton's rings experiment, the diameter of the 12th ring changes from 1.45cm to 1.25cm when a liquid is introduced between the lens and the glass plate. Estimate the refractive index of the liquid.	12M	CO1	L2
3(a)	Design the quarter wave and half wave plates to find the thickness of the plate.	6M	CO2	L3
(b)	Describe the working principle of a Laurent's half shade Polarimeter.	6M	CO2	L2
	(OR)			
4(a)	Develop the expression for energy density of radiation in terms of Einstein's coefficients.	6M	CO2	L2
(b)	Explain the construction and working of Nd – YAG Laser	6M	CO2	L2
5(a)	Derive time independent Schrodinger wave equation for a free particle.	6M	CO3	L3
(b)	Solve the Schrodinger wave equation for the allowed energy values in the case of particle in a box.	6M	CO3	L3
	(OR)			
6(a)	Express the Fermi Dirac distribution function and how the Fermi function varies with temperature.	6M	CO3	L1
(b)	What are the disadvantages of classical free electron theory? The relaxation time of conduction electrons in metal is $3x10^{-14}$ seconds. If the density of electrons is $5.8x10^{28}$ per m^3, calculate the resistivity of the material and mobility of the electron.	6M	CO3	L3
7(a)	Derive the equations for drift current and diffusion currents in a semiconductor.	6M	CO4	L3
(b)	Deduce the Einstein equation in terms of mobilities of electrons and holes.	6M	CO4	L3
	(OR)			
8(a)	Write a note on Photo detectors.	6M	CO4	L1
(b)	Describe a Solar Cell and write the V- I characteristics of a solar cell.	6M	CO4	L2
9(a)	Interpret a note on Dielectric loss and Dielectric break down.	6M	CO5	L1
(b)	Derive an expression for Claussius -Mosotti equation.	6M	CO5	L3
	(OR)			
10.	State Polarization in a dielectric material. Explain different types of polarization mechanisms involved in a dielectric material.	12M	CO5	L2

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

17FE06-TRANSFORMATION TECHNIQUES AND VECTOR CALCULUS
(Common to all)

Time : 3 hours | Max. Marks : 60

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

Q.No	Questions	Marks	CO	BL
1(a)	Define Laplace Transformation and hence evaluate $\int_0^\infty t e^{-t} \sin t \, dt$.	6M	CO1	L2
(b)	Find $L^{-1}\left[\frac{4s+5}{(s-1)^2(s+2)}\right]$.	6M	CO1	L3
	(OR)			
2(a)	Apply Laplace transformation techniques, solve $\frac{d^2y}{dt^2}+7\frac{dy}{dt}+10y=4e^{-3t}$, at the initial conditions $y(0)=0, y'(0)=1$.	6M	CO1	L3
(b)	Find $L[(t(\cosh at+\sinh at)]$.	6M	CO1	L3
3(a)	Find i) $z\left[\cos\left(\frac{n\pi}{2}+\frac{\pi}{4}\right)\right]$. ii) $z\left[\frac{1}{2}(n-1)(n+2)\right]$.	6M	CO2	L3
(b)	Find $z\left[\frac{1}{n!}\right]$ and hence deduce the values of $z\left[\frac{1}{(n+1)!}\right]$ and $z\left[\frac{1}{(n+2)!}\right]$.	6M	CO2	L2
	(OR)			
4(a)	Apply convolution theorem to evaluate $Z^{-1}\left[\frac{z^2}{(z-4)(z-5)}\right]$.	6M	CO2	L2
(b)	Apply Z – Transform to solve the difference equation $y_{n+2}+4y_{n+1}+3y_n=3^n$, $y_0=y_1=0$.	6M	CO2	L3

5(a)	Evaluate $\int_0^{\pi}\int_0^{a\sin\theta} r\,dr\,d\theta.$	6M	CO3	L3
(b)	Change the order of integration and then evaluate the integral $\int_0^{4a}\int_{x^2/4a}^{2\sqrt{ax}} dy\,dx.$	6M	CO3	L2
	(OR)			
6(a)	Evaluate $\iint_R xydxdy$ where R is the region bounded by the X-axis, the line $y=2x$ and the parabola $x^2=4ay$	6M	CO3	L2
(b)	Evaluate $\int_{-1}^{1}\int_0^z\int_{x-z}^{x+z}(x+y+z)\,dx\,dy\,dz.$	6M	CO3	L3
7(a)	If $\bar{F}=xy^2\bar{i}+2x^2yz\,\bar{j}-3yz^2\,\bar{k}$ then find divergent and curl at the point $(1,-1,1)$.	6M	CO1	L3
(b)	Find the directional derivative of the scalar point function $x^2yz+4xz^2$ at the point $(1,2,-1)$ in the direction of the vector $2\bar{i}-\bar{j}-2\bar{k}.$	6M	CO1	L3
	(OR)			
8(a)	Show that $div(r^n.\bar{r})=(n+3)r^n \ where \bar{r}=\bar{x}i+\bar{y}j+z\bar{k}.$	6M	CO4	L2
(b)	Show that $\vec{F}=(x^2-yz)\vec{i}+(y^2-zx)\vec{j}+(z^2-xy)\vec{k}$ is irrotational and hence find its scalar potential function.	6M	CO4	L2
9.	Verify Gauss Divergence theorem for $\bar{F}=x^2\bar{i}+y^2\bar{j}+z^2\bar{k}$, over the cube formed by the planes $x=0, x=a, y=0, y=a, z=0$ *and* $z=a.$	12M	CO5	L3
	(OR)			
10(a)	Evaluate $\int \bar{F}.\bar{n}\,ds$ where $\bar{F}=z\bar{i}+x\bar{j}-3y^2z\bar{k}$ and S is the surface $x^2+y^2=16$ included in the first octant between $z=0$ and $z=5$.	6M	CO5	L4
(b)	Find the work done in moving a particle in the force field $\bar{F}=3x^2\bar{i}+(2xz-y)\,\bar{j}+z\bar{k}$ along the straight line $(0,0,0)\,to\,(2,1,3).$	6M	CO5	L3

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7 DEC 2020

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

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

17FE02-PROFESSIONAL COMMUNICATION-II
(Common to all)

Time : 3 hours Max. Marks : 60

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

Q.No	Questions	Marks	CO	BL
1(a)	What precautions does J C Hill convey while being in the company of others in his essay 'Good Manners'?	6M	CO1	L1
(b)	Find appropriate one word substitutes for the following sentences. (i) Name the person who does not believe in God. (ii) Name the person who walks in sleep. (iii) Name the person who hates women. (iv) Name the person who is optimistic. (v) Name the person who hates mankind. (vi) Name the medicine that cures any illness.	6M	CO1	L1
	(OR)			
2(a)	What is the gist of the essay 'Good Manners' written by J C Hill?	6M	CO1	L1
(b)	Find suitable idioms for the following sentences. (i) Name a situation that is comfortable or easy. (ii) Name a day that is noteworthy. (iii) Name a person's weak point. (iv) Name a person who is born rich. (v) Name something that is discussed without coming to the point. (vi) Name a speech that is spoken for the first time.	6M	CO1	L1
3(a)	What do you understand from Somerset Maugham's Verger? Define it in your short essay.	6M	CO2	L1
(b)	Justify the title of the story 'White Washing the Fence'.	6M	CO2	L2
	(OR)			
4(a)	Compare closely the two characters in the short story 'Verger' in your words.	6M	CO2	L2
(b)	Why do engineers need teamwork and define the significance of teamwork from the story 'White Washing the Fence'?	6M	CO2	L2
5(a)	What is the outlook of grandparents towards the world in the story 'Oh Father, Dear Father'? Show the writer's perspective in your short essay.	6M	CO3	L1
(b)	Construct a short essay on the 'types of reports' and your definition of a report in the beginning of the essay.	6M	CO3	L3
	(OR)			

6(a)	Compose your short essay on what you understand from the story 'Oh Father, Dear Father'.	6M	CO3	L2
(b)	Create sentences as specified in the brackets. (i) You are as intelligent as your brother. (Comparative) (ii) Delhi is hotter than Simla. (Positive) (iii) You are not active,--------? (Question Tag) (iv) I am alright,-------? (Question Tag) (v) Very few girls are as talkative as those boys.(Superlative) (vi) No other person is as humble as that gentleman. (Comparative)	6M	CO3	L2
7(a)	Construct a short essay on the significant role of organizational communication.	6M	CO4	L2
(b)	Find a suitable 'Passive/Active Verb' for each of the following sentences. (i) English is spoken everywhere. (ii) Raghu submitted a report to his boss. (iii) The meeting was called off. (iv) Village people have been attacked by a mad dog recently. (v) The glass was broken unexpectedly. (vi) You must finish the work in two days.	6M	CO4	L2
	(OR)			
8(a)	How are adaptability skills crucial at workplace and in real life? Choose your thoughts to justify this point.	6M	CO4	L1
(b)	What does W E Barrett want to say in his lesson 'Señor Payroll'? Construct a short essay on it.	6M	CO4	L1
9(a)	Construct a short essay on the point of view of the writer of 'A Real Good Smile'.	6M	CO5	L1
(b)	Compose a short essay on the role of articulation and gestures in non-verbal communication.	6M	CO5	L2
	(OR)			
10(a)	Justify in your short essay on how non-verbal communication skills can be improved with the aid of stories.	6M	CO5	L2
(b)	Identify errors from the following sentences. (i) The books consists 300 pages. (ii) This course is preferable than that one. (iii) I am having English class now. (iv) Either you or she are attending the party. (v) He is discussing about it. (vi) She one of the best student in the class.	6M	CO5	L2

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