LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
B.Tech.(I Semester)(R14) Supplementary Examinations, November 2020

TIME TABLE

TIME : 02.00 PM to 05.00 PM

DATE	ASE	CE	CSE	ECE	EEE	EIE	IT	ME
09-11-2020 (Monday)	S239 - English-I	S239 - English-I	S239 - English-I	S239 - English-I	S239 - English-I	S239 - English-I	S239 - English-I	S239 - English-I
10-11-2020 (Tuesday)	S132 - Applied Mathematics-I	S132 - Applied Mathematics-I	S132 - Applied Mathematics-I	S298 - Mathematics-I	S132 - Applied Mathematics-I	S132 - Applied Mathematics-I	S132 - Applied Mathematics-I	S132 - Applied Mathematics-I
11-11-2020 (Wednesday)	S232 - Engineering Chemistry	S232 - Engineering Chemistry	S232 - Engineering Chemistry	S238 - Engineering Physics	S238 - Engineering Physics	S238 - Engineering Physics	S232 - Engineering Chemistry	S232 - Engineering Chemistry
12-11-2020 (Thursday)	S170 - Computer Programming	S170 - Computer Programming	S170 - Computer Programming	S170 - Computer Programming	S170 - Computer Programming	S170 - Computer Programming	S170 - Computer Programming	S170 - Computer Programming
13-11-2020 (Friday)	S235 - Engineering Graphics	S235 - Engineering Graphics	S143 - Basic Electrical Engineering	S211 - Electrical Circuits and Networks - I	S146 - Basic Engineering Mechanics	S156 - Circuit Theory	S143 - Basic Electrical Engineering	S235 - Engineering Graphics

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 : 12-10-2020

CONTROLLER OF EXAMINATIONS

PRINCIPAL

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

H.T.No [ ][ ][ ][ ][ ][ ][ ][ ][ ]

R14

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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

B.Tech. (I Semester) Supplementary Examinations

S132-APPLIED MATHEMATICS-I
(AE,CE,CSE,EEE,EIE,IT&ME)

Time : 3 hours

Max. Marks : 75

PART-A
(Compulsory question)

Q.No	Questions	Marks
1(a)	Write the standard form of Linear differential equation in y of first order.	1M
(b)	Write the particular integral for the differential equation $f(D)y=e^{ax}$	1M
(c)	Define the minimum value of a function f(x,y).	1M
(d)	Solve the system of equations x+2y = 13, 2x-3y = 5.	1M
(e)	What are the eigen values of a diagonal matrix?	1M
(f)	Check the equation y cos(x) dx + (2 sin(x) + 3y) dy = 0 is exact or not.	2M
(g)	Find the particular integral of $\frac{d^5 y}{dx^5}+y=e^{-x}$.	2M
(h)	Write the partial differential equation for the function $z=f(x^2-y^2)$	2M
(i)	When does the system AX= **O** has a non-trivial solution?	2M
(j)	Write the Characteristic equation of the matrix $\begin{bmatrix} 1 & 1 \\ 2 & 5 \end{bmatrix}$	2M

PART-B
(Answer any FOUR questions. All questions carry equal marks)

2(a)	Solve $y^2 dx + 2xy dy = 0$	7M
(b)	Evaluate the complete solution of the linear equation $\frac{dy}{dx}+y\cot x=5e^{\cos x}$	8M
3(a)	Find the general solution of (D²+1)y= $e^x \sinh x$.	7M
(b)	Using method of variation of parameters solve $(D^2+4)y=\tan 2x$.	8M
4(a)	Find the points on the surface $z^2=xy+1$ that are nearest to the origin.	7M
(b)	Generate the partial differential equation by eliminating the arbitrary function from $Z=y^2+2f\left(\frac{1}{x}+\log y\right)$	8M
5(a)	Reduce the matrix A = $\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$ to Echelon form and find its rank.	7M

(b)	Applying Gauss elimination method solve the following system of linear equations $2x + y + z = 10;\ 3x + 2y + 3z = 18;\ x + 4y + 9z = 16$	8M

6(a)	Evaluate the eigen values and the corresponding eigen vectors of $\begin{bmatrix} 2 & 2 & 0 \\ 2 & 5 & 0 \\ 0 & 0 & 3 \end{bmatrix}$	8M
(b)	If $\lambda_1, \lambda_2, \lambda_3, \dots \lambda_n$ are eigen values of a square matrix A of order 'n' then show that $\lambda_1^m, \lambda_2^m, \lambda_3^m \dots \lambda_n^m$ are the eigen values of the matrix A^m.	7M

7(a)	Solve $(D^2 + D + 1)y = x^3$.	7M
(b)	Find the general solution of $(D^2 + 5D + 6)y = e^{-2x}\sin 2x$	8M

8(a)	Solve the homogeneous system of equations x+y-2z+3w = 0, x-2y+z-w = 0, 4x+y-5z+8w = 0,5x-7y+2z-w = 0	7M
(b)	Find the rank of the matrix by reducing it to normal form $\begin{bmatrix} 1 & 2 & -2 & 3 \\ 2 & 5 & -4 & 6 \\ -1 & -3 & 2 & -2 \\ 2 & 4 & -1 & 6 \end{bmatrix}$	8M

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PART-A
(Compulsory question)

1(a)	Why hardness of water is expressed in CaCO3 equivalents?	[1M]
(b)	What is meant by ignition temperature?	[1M]
(c)	Why bolts and nuts made of same metal are preferred?	[1M]
(d)	Why PVC is generally plasticized?	[1M]
(e)	What is the eco friendly starting compound for the synthesis of adipic acid?	[1M]
(f)	What is meant by desalination of brackish water?	[2M]
(g)	What are the chemical changes that occur in the transformation of wood to coal?	[2M]
(h)	What is meant by passivity? Give an example.	[2M]
(i)	What are the monomers of Thiokol?	[2M]
(j)	What are nematic liquid crystals?	[2M]

PART-B
(Answer any FOUR questions. All questions carry equal marks)

2(a)	Explain different types of hardness of water.	[7M]
(b)	Discuss the disadvantageous of scale and sludge formation in boilers.	[8M]
3(a)	Classify fuels based on origin and physical state. Give examples.	[8M]
(b)	What is C.N.G? Justify the statement " Using CNG is advontageous over liquid fuels".	[7M]
4(a)	Explain how alloying metals controls corrosion with an example.	[7M]
(b)	What is meant by differential aeration corrosion? Explain with an example.	[8M]
5(a)	Explain the term copolymerization with an example.	[7M]
(b)	What is gutta percha rubber? How it is prepared?	[8M]
6(a)	Write a short note on lyotropic liquid crystals.	[8M]
(b)	Discuss the structural specification of molecules that can form liquid crystalline phase.	[7M]
7(a)	How water is softened by cold lime soda process?	[7M]
(b)	Discuss the disadvantageous of hard water in industrial applications.	[8M]
8(a)	How does inter granular corrosion occur? Explain with an example.	[7M]
(b)	How corrosion is controlled by using corrosion inhibitors?	[8M]

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B.Tech. (I Semester) Supplementary Examinations

S170-COMPUTER PROGRAMMING
(Common to All)

Time : 3 hours   Max. Marks : 75

PART-A
(Compulsory question)

Q.No	Questions	Marks
1(a)	What are the primitive data types?	1M
(b)	What data type is used for the array size declaration?	1M
(c)	What is the default return type of function?	1M
(d)	Give an example on usage of **enum** keyword.	1M
(e)	What is a stream?	1M
(f)	Differentiate between = and == operators.	2M
(g)	How is an array represented in memory?	2M
(h)	What do you understand by scope of variable?	2M
(i)	Illustrate the use of a pointer to a structure.	2M
(j)	What does the fclose()?	2M

PART-B
(Answer any FOUR questions. All questions carry equal marks)

2(a)	Write a C program to determine whether the given character is vowel or consonant or digit.	7M
(b)	Design algorithm to find biggest and smallest number among three numbers.	8M
3(a)	Define Array. What are the advantages of arrays over individual elements?	7M
(b)	List out the disadvantages of arrays. Explain them with an example.	8M
4(a)	Differentiate malloc() and calloc() with example program segments.	8M
(b)	Compare and contrast call by value and call by reference techniques.	7M
5(a)	Why structure is called heterogeneous data type? What are the valid data types for the fields of a structure?	8M
(b)	How to compare structure variables? Give an example.	7M
6(a)	How do you use error handling functions in files? Illustrate with an example.	7M
(b)	Write a C program to append data to the existing text file.	8M
7(a)	In how many ways we can declare a constant? Explain it with suitable program.	7M
(b)	Write a C program to check the entered year is leap year or not.	8M
8(a)	Describe arithmetic operations on characters with suitable examples.	7M
(b)	Write a C program to find the sum of given 'n' numbers using arrays.	8M

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

S235-ENGINEERING GRAPHICS
(AE,CE&ME)

Time : 3 hours   Max. Marks : 75

PART-A
(Compulsory question)

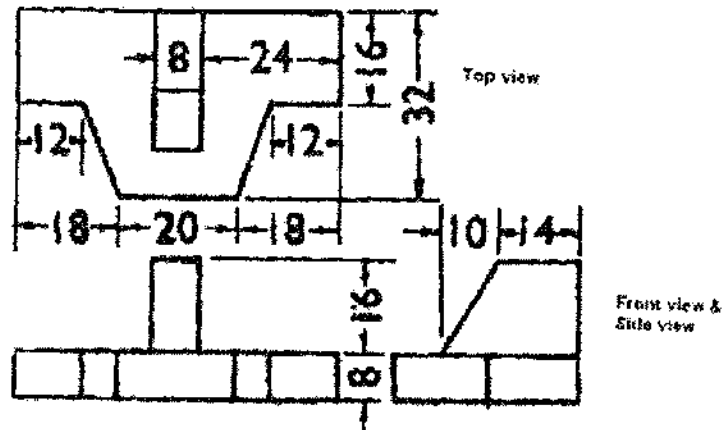|		
1(a)	Name any two methods to draw the ellipse.	[1M]
(b)	If the top view of a point lies above the reference line, state the possible quadrants in which the point may lie.	[1M]
(c)	If the front view of a plane lies in the reference line, will top view always be true shape.	[1M]
(d)	What is the shape of front view and top view of a sphere?	[1M]
(e)	A sphere is placed on a cube. What is the shape of the sphere in isometric view.	[1M]
(f)	Name any four drawing instruments and the purpose for which they may be used.	[2M]
(g)	When the front view and top view of a point B is located 20 mm below xy, state the position of the point with respect to plane of projections?	[2M]
(h)	A circular plane is parallel to and 30 mm above HP. Draw the projections of the plane.	[2M]
(i)	What is the difference between top view of a pentagonal prism and pentagonal pyramid when both the solids rest on its base?	[2M]
(j)	What is the advantage of isometric view?	[2M]

PART-B
(Answer any FOUR questions. All questions carry equal Marks)

2. A vertex of a hyperbola is 65mm from its focus. Draw the curve if the eccentricity is 5/2. Draw a tangent and a normal to the curve at any point on the curve.   [15M]

3. The top view of a 75 mm long line AB measures 65 mm, while the length of its front view is 50 mm. Its one end A is in the H.P and 12 mm in front of the VP. Draw the projections of AB and determine its inclinations with the H.P and the V.P.   [15M]

4. A thin rectangular plate of sides, 60 mm × 30 mm has its shorter edge in V.P and that shorter edge is inclined at 30⁰to H.P. Project its top view if its front view is a square of 30 mm long.   [15M]

5. A cone of 40 mm diameter and axis 65 mm long is resting on a point on the circumference of the base circle in V.P so that the axis makes an angle of 40⁰with V.P and the front view of the axis makes an angle of 30⁰with H.P. Draw the projections.   [15M]

6. Draw the isometric view of the object whose orthographic projections are given in Figure. All dimensions are in mm.

Top view

Front view &
Side view

[15M]

7. A pentagonal plane with a 25 mm side rests on the H.P., on one of its corners with its surface perpendicular to the V.P. and inclined at 30^0 to the H.P. Draw its projections when the side opposite to the corner on which it is resting is parallel to the H.P. [15M]

8. Line PQ has 72 mm length in the front view and 66 mm length in the top view. The end P is 48 mm below HP and 40 mm behind VP, while the end Q is 12 mm below HP. Draw the projection of the line, locate the traces and determine the true length and inclinations of the line with the reference planes. [15M]

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B.Tech. (I Semester) Supplementary Examinations
S143-BASIC ELECTRICAL ENGINEERING
(CSE&IT)

Time : 3 hours

Max. Marks : 75

PART-A
(Compulsory question)

Q.No	Questions	Marks
1(a)	Compare the series and parallel circuits.	1M
(b)	Sketch the load characteristics of D.C shunt motor.	1M
(c)	What do you mean by transformation ratio?	1M
(d)	On which principle induction motor works.	1M
(e)	Write the technique to provide controlling torque for a MI type of Instruments.	1M
(f)	What is current division rule?	2M
(g)	Sketch the D.C shunt generator.	2M
(h)	Calculate the average value of the sinusoidal current whose peak value is 100A.	2M
(i)	What is the principle of an alternator?	2M
(j)	List out the merits and demerits of MI instruments.	2M

PART-B
(Answer any FOUR questions. All questions carry equal marks)

2(a)	Two capacitors 5µF &15µF are connected in series. Calculate the resultant capacitance of the combination and also derive the expressions used.	8M
(b)	Transform the delta shown in below figure to the Y(star) network. Here R1=2KΩ, R2 =4KΩ, R3 = 6KΩ.	7M
3(a)	Draw the long shunt and short shunt D.C Compound generators and write the necessary equations.	8M
(b)	A 8 pole lap wound DC shunt generator has an 960 conductors has flux per pole of 0.04wb per pole. Is driven at 400rpm. Find generated EMF.	7M
4(a)	Derive an E.M.F equation of a single phase transformer.	7M
(b)	The maximum flux density in the core of 250/300V, 50HZ single phase transformer is 1.2 Tesla. Determine primary and secondary turns and area of core.	8M
5(a)	Explain the working principle of a 1-Phase transformer.	8M
(b)	Define (i) peak value (ii)frequency (iii) time period (iv) power factor of an AC quantity.	7M
6(a)	Differentiate between salient and non salient pole rotors of an alternator.	8M
(b)	Draw the torque slip characteristics of induction motor.	7M
7(a)	Explain Kirchhoff's voltage law with example.	8M
(b)	Two Resistances R1, R2 when connected in series its total resistance is 20 Ω. When the same resistances are connected in parallel total resistance is found to be 5 Ω. What are the values of resistances R1 andR2?	7M
8(a)	Describe how we are producing damping torque by using eddy current damping.	8M
(b)	Describe how we are producing controlling torque by using spring control.	7M

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B.Tech. (I Semester) Supplementary Examinations

S238-ENGINEERING PHYSICS
(ECE, EEE & EIE)

Time : 3 hours   Max. Marks : 75

PART-A
(Compulsory question)

Q.No	Questions	Marks
1(a)	What is the essential condition for Fraunhofer's Diffraction?	1M
(b)	Can you write the Schrodinger's time dependent equation in terms of Hamilton operator.	1M
(c)	What is the basic principle of optical fiber?	1M
(d)	Mention the magnetic material for which Susceptibility (χ) is negative.	1M
(e)	What is a value of critical temperature for mercury?	1M
(f)	What is the phenomenon which proves transverse nature of light?	2M
(g)	Estimate the de-Broglie wavelength of a proton whose Kinetic energy is 1Mev.	2M
(h)	How would you explain Numerical aperture?	2M
(i)	Sketch ferromagnetic domains.	2M
(j)	Write any one application of Josephson effect.	2M

PART-B
(Answer any FOUR questions. All questions carry equal marks)

2(a)	Distinguish between Fresnel and Fraunhofer diffraction.	7M
(b)	Explain Fraunhofer diffraction due to double slit and draw intensity distribution curves.	8M
3(a)	Derive the equation for de Broglie wavelength of electrons in terms of Kinetic and Potential energies.	8M
(b)	State and explain uncertainty principle.	7M
4(a)	Explain the terms life time, meta stable state and population inversion.	7M
(b)	Explain the working principle of a Laser.	8M
5(a)	Can you distinguish between antiferro and ferri magnetic materials.	8M
(b)	Explain the characteristics of soft and hard magnetic materials with examples.	7M
6(a)	Explain superconductivity and write a short note on Type 1 Super Conductors.	8M
(b)	Explain Meissner effect and show that the superconductors behaves as perfect dia magnetic materials.	7M
7(a)	Derive time independent Schrodinger wave equation for a free particle.	8M
(b)	Find the energy of the electron moving in a one dimensional infinitely deep potential box of 0.1nm width.	7M
8(a)	What is penetration depth? Explain and write the expression for penetration depth.	8M
(b)	Write a short notes on flux quantization.	7M

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LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)

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B.Tech. I Semester Regular/Supplementary Examinations
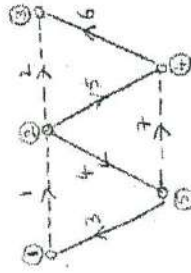
S211-ELECTRICAL CIRCUITS AND NETWORKS-I

(ECE)

Time : 3 hours | Max.Marks : 75

PART-A

(Answer all questions)

(2M x 5 + 1M x 5 = 15M)

1(a) Define active and passive elements [2M]

(b) Define fundamental tie-set and fundamental cutest. [2M]

(c) What is the average value of a sine wave over full cycle? [2M]

(d) State Reciprocity theorem in DC circuits. [2M]

(e) A resistance R and 5μF capacitor are connected in series across a 100V DC supply. Calculate the value of R such that the voltage across the capacitor becomes 50V in 5sec after the circuit is switched on. [2M]

(f) Define KCL and KVL. [1M]

(g) Define coefficient of coupling. [1M]

(h) Determine the power factor of a series RL circuit with R=5Ω, X_L=8Ω. [1M]

(i) A current source, having an internal resistance of 50KΩ feeds a tank circuit. If this tank circuit consists of R=50Ω, L=250mH, C=500nF. Find the frequency of resonance and Q-factor. [1M]

(j) What is complementary function? [1M]

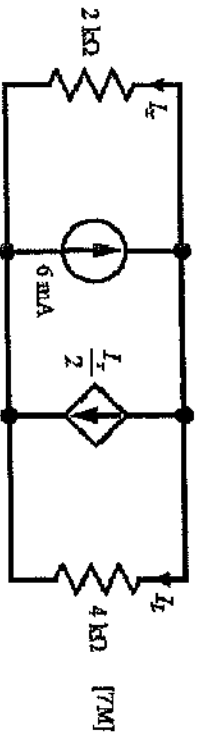**S211-ELECTRICAL CIRCUITS AND NETWORKS-I**

R14

7(a) For the graph shown in figure, find the tie-set matrix and obtain KCL and KVL equations. [8M]

(b) A series RL circuit has R=25Ω and X_L=32Ω. It is connected in parallel to a capacitor of 100μF and the combination is connected across a 200V, 50Hz supply. Find the current in each branch. Draw the vector diagram showing the total current. [7M]

8(a) Find V_0 in the circuit using source transformation? [8M]

(b) Explain briefly the transient response of series RLC circuit having DC excitation. [7M]

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S211-ELECTRICAL CIRCUITS AND NETWORKS-I

PART-B

[Answer any FOUR questions]

(4M x 15M = 60M)
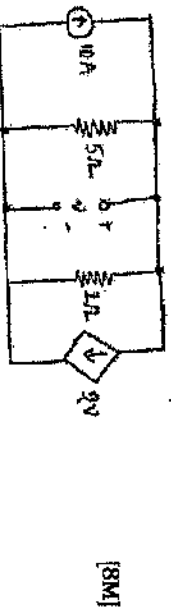
2(a) Determine I_L in the circuit shown?

[7M]

(b) Obtain the numerical value of the voltage dependent current source in the following network.

[8M]

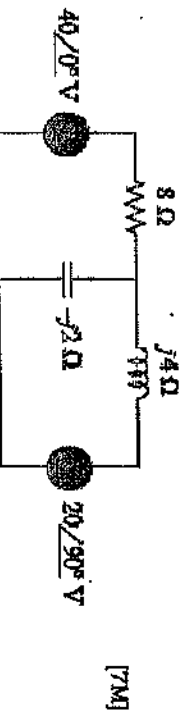3(a) Define the following with respect to network topology
(i) Node (ii) Loop (iii) Tree (iv) Chord (v) Cut-set (vi) Tie-set (vii) Oriented Graph [7M]

(b) Explain Self and Mutual inductances and derive the equation for coefficient of coupling. [8M]

4(a) Calculate the average power absorbed by each of the five elements in the circuit shown in below figure. [7M]
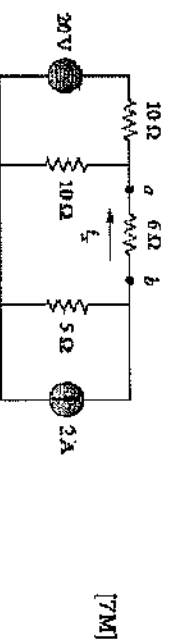

S211-ELECTRICAL CIRCUITS AND NETWORKS-I

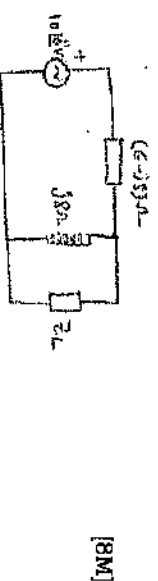(b) Find the power supplied and the average power absorbed by each element. [8M]

5(a) Find the current through 6Ω resistor, using thevinen's theorem, in the following circuit shown in figure. [7M]

(b) For the network shown in figure find the load impedance such that maximum power flows to the load. Find the amount of maximum power. [8M]

6(a) Explain briefly the transient response of series RLC circuit having Sinusoidal excitation. [7M]

(b) In the figure given Vs=10V, R1=10Ω, R2=5Ω, R3=1Ω, L=0.5H, find the current through inductor at t=0+ as well as the voltage after closing switch 'S' at t=0. [8M]

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B.Tech.(I Semester)   Supplementary Examinations

S146-BASIC ENGINEERING MECHANICS Jc4
(EEE)

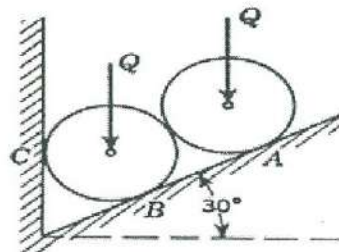Time : 3 hours   Max. Marks : 75

PART-A
(Compulsory question)

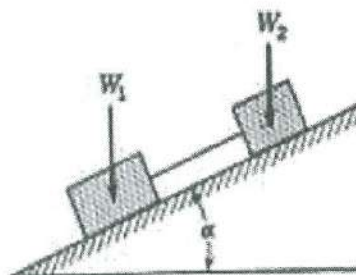|		
1(a)	What is the principle of transmissibility?	[1M]
(b)	Define Cone of friction.	[1M]
(c)	State Pappus Theorem-I.	[1M]
(d)	Write the transfer formula for mass moments of inertia.	[1M]
(e)	What is a Projectile?	[1M]
(f)	State and explain the parallelogram law of forces.	[2M]
(g)	Differentiate between static friction and kinetic friction.	[2M]
(h)	What is centroid of a rectangle and triangle with respect to base?	[2M]
(i)	Express the mass moment of inertia of a thin plate in terms of its area moment of inertia.	[2M]
(j)	List the equations for motion of a body with uniform acceleration.	[2M]

PART-B
(Answer any FOUR questions. All questions carry equal marks)

2(a) Three forces of magnitude 200 N, 500 N and 400 N are acting at the origin O(0,0,0) and are directed from the points A(2,1,6), B(4,-2,-5) and C(-6,-4,-4) respectively to the origin. Determine the magnitude of the resultant. [7M]

(b) Two identical rollers, each of weight 100 N, are supported by an inclined plane and a vertical wall as shown in the figure. Assuming smooth surfaces, find the reactions induced at the points of support A, B and C.

[8M]

3 Two blocks of weight W1 and W2 rest on a rough inclined plane and are connected by a short piece of string as shown in figure. If the coefficients of friction are μ_1 = 0.2 and μ_2= 0.3, respectively, Find the angle of inclination of the plane for which sliding will impend.
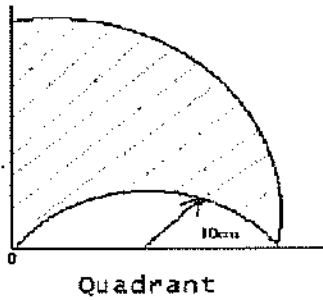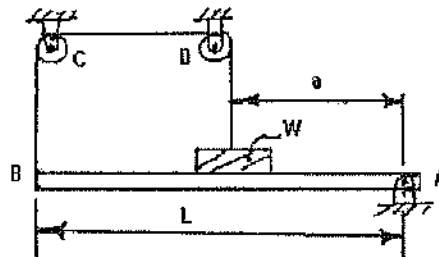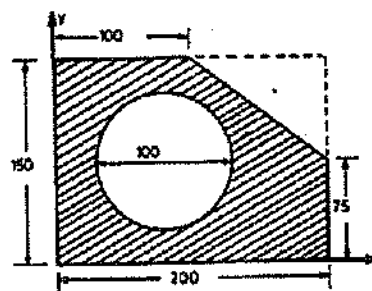Assume $W_1 = W_2 = 50$ N.

[15M]

4(a) State and Prove the parallel axis theorem, to determine the moment of inertia of areas with the help of a neat sketch. [7M]

(b) Locate the centroid of the shaded area shown in figure.

Quadrant [8M]

5(a) Derive the expression for mass moment of inertia of a cone of height 'H' and base radius 'R' and mass 'M' with respect to its geometric axis. [7M]

(b) A brass cone with base diameter of 400mm and height of 225mm is placed on a vertical aluminum cylinder of height 300mm and diameter 400mm. Density of brass = 85kN/m^3 and density of aluminium =25.6kN/m^3. Determine the mass moment of inertia of the composite body about the vertical geometrical axis. [8M]

6(a) The motion of a particle in rectilinear motion is defined by the relation **s = 2t^3 - 9t^2 + 12t - 10** where s is expressed in metres and t in seconds. Find the acceleration of the particle when the velocity is zero, the position and the total distance travelled when the acceleration is zero. [7M]

(b) A bomber flies along a horizontal line at an altitude of 1500m with a velocity of 400 km per hour. Find at what horizontal distance before passing over a target on the ground, a bomb should be dropped so as to hit the target on the ground and Calculate the magnitude and direction of the velocity with which the bomb will hit the target. Take g =9.81 m/sec^2. [8M]

7(a) State coulomb's laws of dry friction. [7M]

(b) A rod AB is supported in a horizontal position by a hinge A and a cable which runs from B over small pulleys at C and D is connected to a weight W rests on rod AB. Calculate the reaction at A.

[8M]

8(a) A stone is dropped into a well while splash is heard after 4.5 s. Another stone is dropped with an initial velocity v and the splash is heard after 4 s. If the velocity of a sound is 336m/s, determine the initial velocity of second stone. [7M]

(b) Determine the coordinates Xc and Yc of the centre of a 100 mm diameter circular hole cut in a thin plate so that this point will be the centroid of the remaining shaded area shown in Figure (All dimensions are in mm).

[8M]

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B.Tech. (I Semester) Supplementary Examinations

S156-CIRCUIT THEORY
(EIE)

Time : 3 hours   Max. Marks : 75
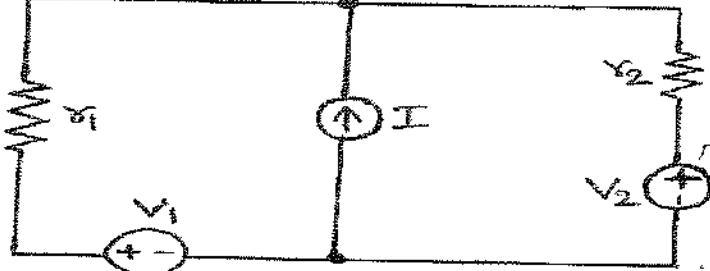
PART-A
(Compulsory question)

Q.No	Questions	Marks
1(a)	What is the unit of charge?	1M
(b)	Specify the Dual element of current source.	1M
(c)	What is DOT convention?	1M
(d)	Define Power factor.	1M
(e)	Which theorem is based on law of conservation of energy?	1M
(f)	If 10 equal value resistors each of 10Ω are connected in parallel, what is the equivalent resistance.	2M
(g)	Define the term Path in a graph.	2M
(h)	State Faraday's second Law.	2M
(i)	Define Quality factor.	2M
(j)	State Thevenin's theorem.	2M

PART-B
(Answer any FOUR questions. All questions carry equal marks)

2(a)	Determine the value of voltage source V in Figure below, if $V_1= 20V$.	8M
(b)	Describe the voltage division rule with an example.	7M
3(a)	List the properties of incidence matrix.	7M
(b)	Define the following and Explain them with an example. (i) Branch (ii) Node (iii) Path (iv) Sub graph (v) Tree (vi) Degree of a Node	8M
4(a)	Distinguish the Statically Induced emf and Dynamically Induced emf. And describe the Faraday's Two laws of electromagnetic induction.	8M
(b)	Derive the relation between self-inductance, mutual inductance and co-efficient of coupling.	7M
5(a)	In a series RL circuit, $R=20\Omega$, $L= 60mH$. If the current lags the voltage by $60°$, determine the value of ω in rad/sec.	7M
(b)	Describe the sinusoidal response of parallel RC circuit and derive necessary expressions.	8M

6(a)	State and explain the Superposition theorem. . .	7M
(b)	Three impedances Z1= (10+J10) Ω, Z2= -J6Ω and Z3 = 8Ω are connected in series to an unknown voltage source V. Find the unknown voltage V and current I, If the voltage drop across Z3 is 21.08 $\llcorner$ 18.430 V.	8M

7(a)	State and explain Thevinin's theorem.	7M
(b)	Determine the current through r_1 resistor using Super Position Theorem. If V_1=12V, r_1=4Ω, I=3A, r_2=2Ω and V_2=24V.	8M

8(a)	Describe the sinusoidal response of series RL circuit and derive necessary expressions.	7M
(b)	A 50 Hz sinusoidal voltage V=310 sin ωt is applied to an RL series circuit. If the magnitude of resistance is 5Ω and that of inductance is 0.2H. (i) Calculate the RMS value of current and its phase angle. (ii) Obtain the expression for the instantaneous current. (iii) Compute the effective magnitude and phase of Voltage drop across resistor and inductor.	8M

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