Code No: R17A0501 **R17**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, December 2019

Computer Programming with C

(EEE, ME, ECE, CSE, IT & AE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 a) Draw a flowchart to find the roots of quadratic equation. **[7M]**

b) State and explain various jumping statements in c. **[7M]**

OR

2 a) Explain about operator precedence and associativity. Write the precedence table for various operators in C. **[7M]**

b) Differentiate between entry control and exit control statements with examples. **[7M]**

SECTION-II

3 Define function? List out various categories of functions with examples. **[14M]**

OR

4 Describe about storage classes in c with examples. **[14M]**

SECTION-III

5 Explain about creation, storing and accessing of array elements in 2DA. Prepare a C program to find multiplication for the given two matrices. **[14M]**

OR

6 List and explain about string manipulation functions with examples. **[14M]**

SECTION-IV

7 Compare static memory allocation with dynamic memory allocation. List and explain dynamic memory allocation functions with example program. **[14M]**

OR

8 Distinguish between actual arguments and formal arguments. Explain about call by reference mechanism with an example. **[14M]**

SECTION-V

9 Define a structure.How do you create structure objects? Construct a c program which contains an employee structure ,assume the suitable fields and find out the average salary of 10 employees using array of structures. **[14M]**

OR

10 a) Write a C program to copy the content of one file to another file. **[7M]**

b) Define a file? List and explain about the various files input/output functions. **[7M]**

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R17

Code No: R17A0013

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, December 2019

Engineering Chemistry

(EEE, ECE, CSE & IT)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 a)Define electrode potential. Derive Nernst equation. **[7M]**
b)What is electrochemical series? Give its five applications. **[7M]**

OR

2 a)Define battery. Write the composition, discharging , recharging cell reaction of lead-acid battery. **[7M]**
b)What is an electrochemical cell? Explain the construction and working of Galvanic Cell with a neat diagram. **[7M]**

SECTION-II

3 Explain with neat diagram how corrosion can be minimized by cathodic protection, hot dipping, metal cladding and electro less plating. **[14M]**

OR

4 a)What is dry corrosion? State Pilling-Bedworth rule. **[7M]**
b)Explain Electro chemical corrosion. **[7M]**

SECTION-III

5 a)Write preparation, properties and engineering applications of Buna-s and Thiokol rubber. **[7M]**
b)What is vulcanization of rubber? Mention its uses. **[7M]**

OR

6 a)Give preparation, properties and applications of PVC & Bakelite. **[7M]**
b) What are the characteristics of a good refractory? How they are classified? **[7M]**

SECTION-IV

7 a)How water is softened by Ion exchange process? Write its advantages and disadvantages. **[7M]**
b) Explain EDTA method for estimation of hardness of water. **[7M]**

OR

8 a)Illustrate the process of disinfection of potable water by Ozone treatment and Reverse osmosis. **[7M]**
b)What are boiler troubles? Describe the causes, effects and preventive measures of scales and sludges **[7M]**

SECTION-V

9 **a)**What is petrol? How is it synthesized by Fischer – Tropsch's process? **[7M]**

b)Write the composition, calorific value and applications of LPG and CNG. **[7M]**

OR

10 a)How does carbon and hydrogen determine in the ultimate analysis of coal. **[7M]**

b)Describe the determination of calorific value of fuel by Junker‘s gas calorimeter. **[7M]**

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Code No: R17A0302 **R17**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, December 2019

Engineering Drawing

(EEE, ECE, CSE & IT)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 Construct a parabola, with distance of the focus from the directrix as 60 mm and also draw normal and tangent to the curve at a point 40 mm from the directrix. Also draw a tangent & normal to the curve at a point 55mm from the directrix.. **[14M]**

OR

2 Draw the locus of a point on the circumference of a circle of a radius 25 mm which rolls on a straight line for one revolution of the circle. Take the initial position of the point on the straight line. **[14M]**

SECTION-II

3 The projectors of the ends of a line AB are 60 mm apart. The end A is 30 mm above the H.P. and 40 mm in front of the V.P. The end B is 20 mm below the H.P. and 50 mm behind the V.P. determine the true length and its inclinations with two planes using trapezoidal method. **[14M]**

OR

4 A line PQ, 64 mm long has one of its end 20 mm in front VP and 35 mm above HP. The line is inclined at 40^0 to HP and 25^0 to VP. Draw its top and front views. **[14M]**

SECTION-III

5 A hexagonal plate of side 40mm is resting on a corner in VP with its surface making an angle of 30^0 with the VP. The front view of the diagonal passing through that corner is inclined at 45^0 to the line HP. Draw the projections of the plate. **[14M]**

OR

6 A hexagonal prism, having a base with a 30mm side and an 80mm long axis ,rests on one of its base edges in the H.P such that the axis is inclined at 30^0 to the H.P and 45^0 to the V.P Draw its projections? **[14M]**

SECTION-IV

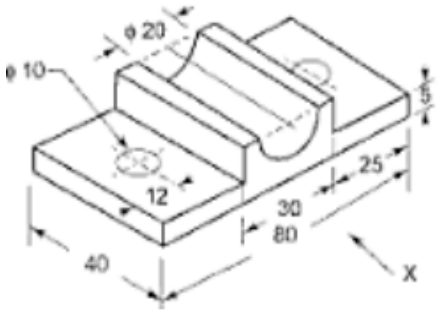
7 Draw an isometric view of a pentagonal pyramid having a base , with a 40 mm side and 70mm long axis (a) when the its axis is vertical (b) when the its axis is horizontal? **[14M]**

OR

8 Draw an isometric view of Cone with a 60 mm base diameter, and 60mm long axis, resting on its base on the HP? **[14M]**

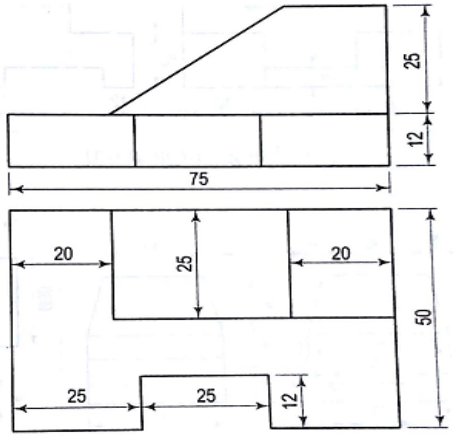
SECTION-V

9 Draw Front View, top view and side view for the part shown in figures. All dimensions are in mm. **[14M]**



OR

10 Draw the isometric view of the given orthographic projections of the object. **[14M]**



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Code No: R17A0301 **R17**

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, December 2019

Engineering Mechanics

(ME & AE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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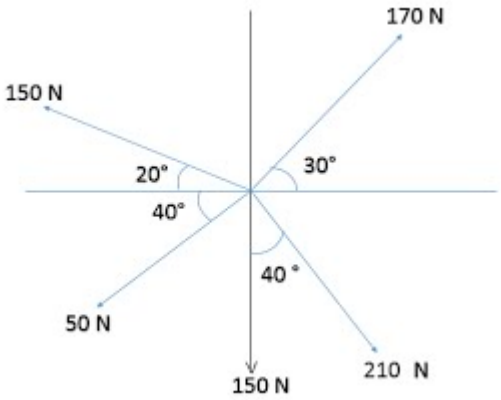
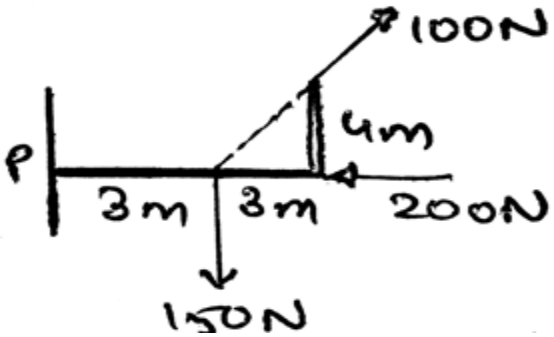
SECTION-I

1 Compute the resultant force for the system shown figure. **[14M]**



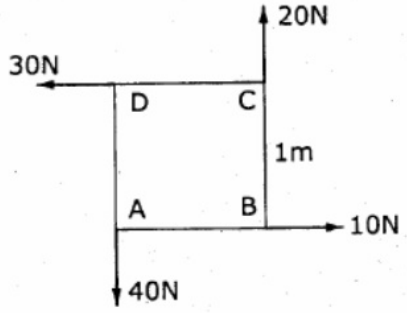
OR

2 Determine the couple of three forces about Point P for the force system shown below: **[14M]**



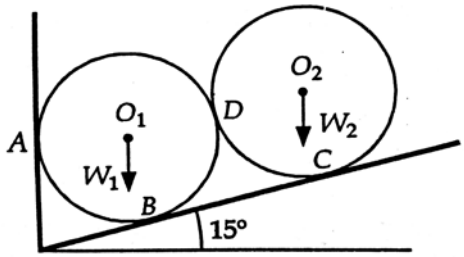
SECTION-II

3 Determine the resultant of the system of concurrent forces shown below: **[14M]**



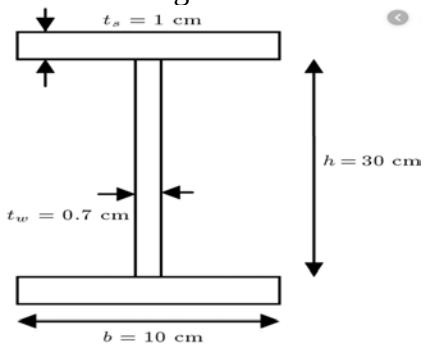
OR

4 Two rollers of the same diameter are supported by an inclined plane and a vertical wall as shown in figure. The upper and the lower rollers are respectively 200N and 250N in weight. Assuming smooth surfaces, find the reactions induced at the points of supports A, B, C and D. **[14M]**



SECTION-III

5 Locate the centroid of the I section given below: **[14M]**



OR

6 Derive the expression to locate Centroid of the semi circle geometry from the centre taking diagnol as reference plane. R is the radius of semi circle. **[14M]**

SECTION-IV

7 Draw an hallow rectangular section with width 100mm ,height 150mm and thickness 10mm. Calculate the moment of inertia with respect to horizontal and vertical axis.Also calculate product of inertia. **[14M]**

OR

8 Determine the mass moment of inertia of right angled triangle about base and centre of gravity. Its base dimension b and height h. **[14M]**

SECTION-V

9 The rectilinear motion of a particle is defined by the displacement –time eaquation $x=x_0(2e^{kt} - e^{-2kt})$. Find maximum velocity of the particle.x_0 and k are constants. **[14M]**

OR

10 A shaft of radius r rotates with constant speed w in bearings for which the coefficient of friction is μ. Through what angle Θ will it rotate after driving torque is removed? **[14M]**

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R17

Code No: R17A0011

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, December 2019

Engineering Physics-I

(EEE, ME, ECE, CSE, IT & AE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	a) With a ray diagram discuss the interference in thin films by reflected light	**[10M]**
	b) Write the difference between Interference and diffraction.	**[4M]**
	OR	
2	a) What is the polarization of light? Explain the types of polarization of light	**[4M]**
	b) Explain the principles, construction and working of a Nicol prism with a neat diagram	**[10M]**

SECTION-II

3	a) What are Einstein's coefficients? Derive relation between them.	**[10M]**
	b) Write few applications of lasers.	**[4M]**
	OR	
4	a) Draw the block diagram of an optical fiber communication system and explain the function of each block.	**[8M]**
	b) Describe the graded index optical fiber and explain the transmission of signal through it.	**[6M]**

SECTION-III

5	a) What are matter waves? Derive an expression for de – Broglie wavelength	**[10M]**
	b) Calculate the velocity and kinetic energy of an electron of wave length 1.66 A^0	**[4M]**
	OR	
6	a) Describe Davisson and Germer's experiment to verify the wave nature of electrons.	**[10M]** **[4M]**
	b) State and explain Heisenberg's uncertainity principle.	

SECTION-IV

7	Explain the Kronig penny model in detail.	**[14M]**
	OR	
8	a) On the basis of band theory how the crystalline solids are classified into metals, semiconductors and insulators.	**[4M]**
	b) Derive an expression for density of states.	**[10M]**

SECTION-V

9	a) Distinguish between intrinsic and extrinsic semiconductors	**[4M]**
	b) Derive an expression for the carrier concentration of electrons in N – type semiconductors.	**[10M]**
	OR	
10	a) Explain the construction and working of a Solar cell.	**[10M]**
	b) Distinguish between direct and indirect band gap semiconductors.	**[4M]**

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R17

Code No: R17A0014

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, December 2019

Environmental Studies

(ME & AE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 Differentiate food chain and food web and explain any two biogeochemical cycles with neat sketch? **[14M]**

OR

2 Define biomagnification and bioaccumulation with examples and describe multidisciplinary nature of environmental studies? **[14M]**

SECTION-II

3 a. Classify aquifers and write the impacts related to ground water depletion? **[7M]**

b. What are the causes and consequences of deforestation? **[7M]**

OR

4 a. Explain the upstream and downstream impacts by big dams? **[7M]**

b. Write a note on renewable energy sources. **[7M]**

SECTION-III

5 a. Define endemic and endangered species and list out any four species to each category? **[7M]**

b. How can we conserve biodiversity? **[7M]**

OR

6 Briefly explain the values of biodiversity and threats to biodiversity? **[14M]**

SECTION-IV

7 Write about the classification, sources, effects and control measures of air pollution? **[14M]**

OR

8 Explain solid waste management and e-waste management? **[14M]**

SECTION-V

9 Explain the concept, threats and strategies of sustainable development? **[14M]**

OR

10 Explain EIA methodology and EMP planning strategies. **[14M]**

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R17

Code No: R17A0021

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, December 2019

Mathematics-I

(EEE, ME, ECE, CSE, IT & AE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1 a) Reduce the matrix to echelon form and hence find its rank **[7M]**

$$\begin{bmatrix} 1 & 2 & 3 & 0 \\ 2 & 4 & 3 & 2 \\ 3 & 2 & 1 & 3 \\ 6 & 8 & 7 & 5 \end{bmatrix}$$

b) Test for consistency and solve **[7M]**

$2x-3y+7z=5,\ 3x+y-3z=13,\ 2x+19y-47z=32.$

OR

2 a) Verify Cayley-Hamilton theorem for the following matrix and find its inverse **[7M]**

$$\begin{bmatrix} 7 & 2 & -2 \\ -6 & -1 & 2 \\ 6 & 2 & -1 \end{bmatrix}$$

b) Find the eigen values and the eigen vectors of the matrix **[7M]**

$$\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$$

SECTION-II

3 a) Verify Lagrange's mean value theorem for $f(x)=(x-1)(x-2)(x-3)$ in $(0,4)$ **[7M]**

b) Using Taylor's series, expand e^x up to the term containing x^5. **[7M]**

OR

4 a) Find 'c' of the Cauchy's mean value theorem on $[a,b]$ for $f(x)=e^x$ and $g(x)=e^{-x}$; $(a,b>0)$ **[10M]**

b) Show that the rectangular solid of maximum volume that can be inscribed in a sphere is a cube. **[4M]**

SECTION-III

5 a) Define linear differential equation and solve $\frac{dy}{dx}=\frac{y}{x}+\sin\frac{y}{x}$ **[7M]**

b) Solve $\left(1+e^{\frac{x}{y}}\right)dx+e^{\frac{x}{y}}\left(1-\frac{x}{y}\right)dy=0$ **[7M]**

OR

6 a) The temperature of the body drops from 100^0C to 75^0C in 10 minutes when the surrounding air is at 20^0C .What will be the temperature after half an hour. When will be the temperature be 25^0C. **[7M]**

b) Find the orthogonal trajectories of the family of cardioids $r=a(1+\cos\theta)$. **[7M]**

SECTION-IV

7 a) Solve $\left(D^2+D+1\right)y=x$ **[7M]**

b) Solve $\frac{d^2y}{dx^2}-2\frac{dy}{dx}+y=xe^x\sin x$ **[7M]**

OR

8 Solve $\frac{d^2y}{dx^2}+y=\text{Tan}\,x$ by the method of variation of parameters **[14M]**

SECTION-V

9 a) Find the directional derivative of $f=x^2yz+4xz^2$ at the point (1,-2,1) in the direction of the vector $2\boldsymbol{i}-\boldsymbol{j}-2\boldsymbol{k}$ **[7M]**

b) If r= xi+yj+zk then find div r, curl r **[7M]**

OR

10 a) By using Green's theorem evaluate $\int_C\left[\left(xy+y^2\right)dx+x^2dy\right]$, where C is bounded by $y=x$ and $y=x^2$ **[7M]**

b) Evaluate by Stoke's theorem $\int_C\left[ydx+zdy+xdz\right]$, where C is the curve of intersection of $x^2+y^2+z^2=a^2$ and $x+z=a$ **[7M]**

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