R17

Code No: R17A0501

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, July/August 2021

Computer Programming with C

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

Roll No										

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

Answer Any **Five** Questions

All Questions carries equal marks.

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1	a)	Differentiate a variable and a constant. Discover the rules for framing a valid variable. Explain the types of constants supported by C language.	**[7M]**
	b)	What is central processing unit (CPU) in a computer? Explain about various components and their functions of CPU.	**[7M]**
2	a)	Write a C Program to find largest of three integers using Conditional Operator. Note: The program must find the largest of the three integers in a single C statement.	**[7M]**
	b)	Sketch out the syntax of switch statement and develop a C program to check whether an entered character is a vowel or not (using switch concept).	**[7M]**
3	a)	Discuss about formatted input/output functions in C	**[7M]**
	b)	Elucidate the actual arguments and formal argument in functions. Identify the rules to call a function in a main function.	**[7M]**
4	a)	Making use of recursion to: i. Find the factorial of a given number ii. Generate the Fibonacci numbers up to N.	**[7M]**
	b)	List out the various storage classes which can be used with functions and explain about it.	**[7M]**
5	a)	Develop a C program to find the transpose of a given matrix.	**[7M]**
	b)	Write a C program to sort the given array elements in Ascending order.	**[7M]**
6	a)	Explain with example (i) Character string (ii) String literal	**[7M]**
	b)	Write a C program to copy a string (combination of digits and alphabet) to another string (only alphabets)	**[7M]**
7	a)	Write a program using pointers to compute the sum of all elements stored in an array.	**[7M]**
	b)	Discuss the following with suitable examples: i. Array of Pointers ii. Pointer to pointer	**[7M]**
8	a)	Write a C program to copy one file into another file.	**[7M]**
	b)	List out the operations performed on files. Explain the different file opening modes.	**[7M]**

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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, July/August 2021

Engineering Physics-I

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

Roll No										

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

Answer Any **Five** Questions
All Questions carries equal marks.

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1 a). With a neat diagram discuss the interference in thin films (Reflected light). **[10M]**

b). Derive the condition for constructive and destructive interference in the case of reflected light. **[4M]**

2 a). What is the polarization of light? Explain the types of polarization of light. **[7M]**

b). Discuss the construction and working of Nicol Prism. **[7M]**

3 a). Describe the construction and working of He-Ne gas laser. **[10M]**

b). Write the applications of lasers? **[4M]**

4 a). Distinguish between step index and graded index fibre **[8M]**

b). Explain total internal reflection principle in fibers. **[6M]**

5 Show that for a quantum particle confined to an infinite potential box with finite length, the energy levels are quantised. **[14M]**

6 a). What are matter waves? Derive the expression for their wavelength. **[6M]**

b). Explain GP Thomson's experiment to prove the wave nature of particles **[8M]**

7 a). Derive an expression for the effective mass of an electron moving in energy bands of a solid. Show how it varies with the wave vector. **[8M]**

b). Distinguish between conductors, semi conductors and insulators. **[6M]**

8 a). State and explain Hall effect? Derive an expression for Hall coefficient. **[10M]**

b). Write Four applications of Hall effect. **[4M]**

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Code No: R17A0021

R17

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, July/August 2021

Mathematics-I

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

Roll No										

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

Answer Any **Five** Questions
All Questions carries equal marks.

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1 a) Find the rank of the matrix A = $\begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$ **[7M]**

b) Determine the values of a,b,c when $\begin{bmatrix} 0 & 2b & c \\ a & b & -c \\ a & -b & c \end{bmatrix}$ is orthogonal. **[7M]**

2 Using Cayley Hamilton theorem find the inverse of the matrix $\begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ **[14M]**

3 Find the maximum of $x^2+y^2+z^2$ such that 2x+3y+z=14 using Lagrange's multipliers method. **[14M]**

4a) Verify Rolle's theorem for the function $f(x) = \log\left[\frac{x^2+ab}{x(a+b)}\right]$ in [a, b] , a>0,b>0. **[7M]**

b) If $x = u(1-v); y = uv$ then prove that $\frac{\partial(u,v)}{\partial(x,y)} x \frac{\partial(x,y)}{\partial(u,v)} = 1$. **[7M]**

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

b) Solve $(x^3+3xy^2)dx + (3x^2y + y^3)dy = 0$. **[7M]**

6 If the air is maintained $30^{\circ}c$ and the temperature of the body cools from 80°c to $60^{\circ}c$ in 12 minutes, find the temperature of the body after 36 minutes **[14M]**

7 Apply the *method of variation of parameters, Solve* $\frac{d^2y}{dx^2} + 4y = sec2x$ **[14M]**

8 Apply divergence theorem to evaluate **[14M]**
$\iint (x+z)dydz + (y+z)dzdx + (x+y)dydx$ Where s is the surface of the sphere $x^2+y^2+z^2 = 4$.

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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, July/August 2021

Engineering Chemistry

(EEE, ECE, CSE & IT)

Roll No										

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

Answer Any **Five** Questions
All Questions carries equal marks.

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1	a)	Write the construction and reactions involved in Galvanic cell with a neat labeled diagram.	**[8M]**
	b)	Define Specific and Equivalent conductance. Calculate the Equivalent and specific conductance of 0.02M KCl solution which offers a resistance of 200 ohms at 20^{o}C, the cell constant of the conductivity cell used is 0.90cm^{-1}	**[6M]**
2	a)	Write in detail construction and functioning of calomel electrode.	**[7M]**
	b)	Write the construction and working of Ni–Cd battery with neat diagram and chemical equations.	**[7M]**
3	a)	Write the mechanism of electrochemical theory of corrosion.	**[7M]**
	b)	Define Galvanization and explain the process with neat diagram.	**[7M]**
4	a)	Discuss the various types of cathodic protection methods to prevent the corrosion.	**[7M]**
	b)	Write the procedure involved in electroplating of Cu and write its advantages and applications.	**[7M]**
5		Explain the preparation, properties and engineering applications of PVC, Teflon and Bakelite.	**[14M]**
6	a)	Discuss various properties of good lubricant.	**[7M]**
	b)	Explain the fabrication method of nano materials by using Sol-Gel method.	**[7M]**
7	a)	Explain the experimental procedure for the determination of hardness of water by EDTA method.	**[10M]**
	b)	Write a note on Calgon and Phosphate conditioning of internal treatment of boiler feed water.	**[4M]**
8	a)	What are fuels? Write a note on Characteristics of good fuels.	**[7M]**
	b)	Explain Fischer-Tropsch's process of preparation of synthetic petrol in detail with neat diagram.	**[7M]**

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Code No: R17A0302

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

I B.Tech I Semester Supplementary Examinations, July/August 2021

Engineering Drawing

(EEE, ECE, CSE, IT)

Roll No										

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

Answer Any **Five** Questions
All Questions carries equal marks.

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1 The distance between fixed point and fixed line is 54 mm. Trace the path of a point moving in the same plane such that its distance between the fixed point and the fixed line is always equal. If the point moves up to 75 mm from the fixed point, plot the curve[use eccentricity method] **[14M]**

2 A coin is unwounded from a drum of 30 mm diameter. Draw the locus of the free end of the coin for unwounded through an angle of 360^0 . Draw also a normal and tangent at any point on the curve. **[14M]**

3 Draw the projections of the following points on a common reference line. **[14M]**

(i) 20 mm above HP and 30 mm behind VP
(ii) 25 mm below HP and 25 mm in front of VP
(iii)25 mm below HP and 30 mm behind VP
(iv)30 mm below HP and in VP

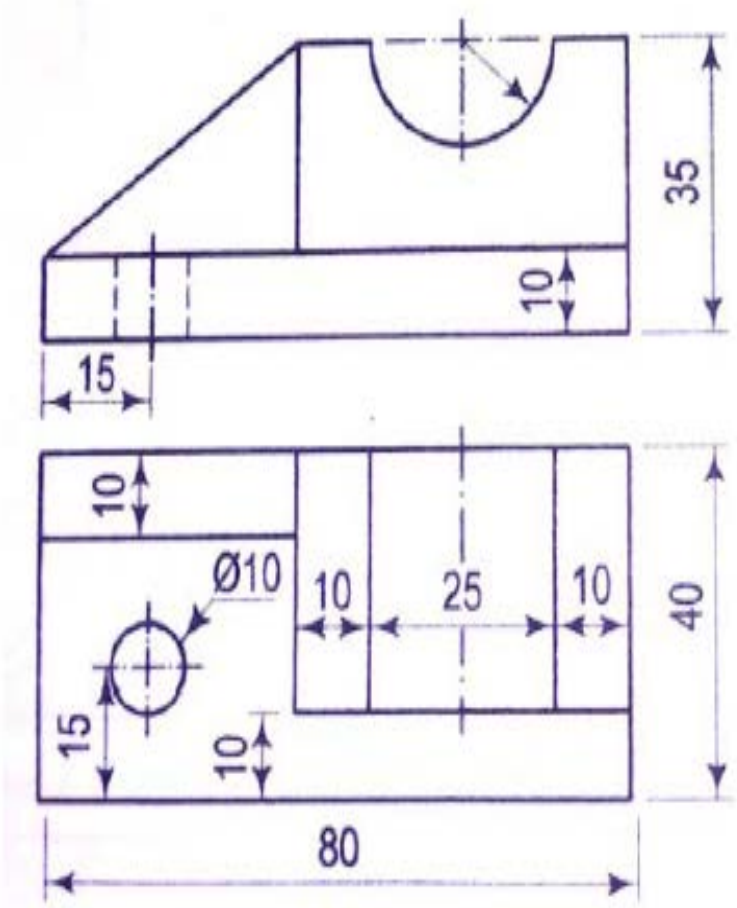
4 A line LM 70 mm long, has its end L 10 mm above HP and 15 mm in front of VP. Its top and front views measure 60 mm and 40 mm respectively. Draw the projections of the line. Find its inclinations with HP and VP. **[14M]**

5 The end A of a line AB is 10 mm above HP and 15 mm in front of VP. The end B is 22.5 mm above HP and 27.5 mm in front of VP. The distance between the end projectors is 30 mm. Draw the projections of the line. Find its true length and true inclinations by auxiliary plane method **[14M]**

6 Draw the projections of a cone,base 30 mm diameter and axis 50 mm long, resting on HP on a point of its base circle with the axis making an angle of 45^0 with HP and parallel to VP **[14M]**

7 Draw the isometric projection of a hexagonal prism of side of base 25 mm and height 55 mm, resting on HP on the top of which is placed a cone of base diameter 50 mm and height 24 mm **[14M]**

8 Draw isometric view of a given below figure **[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, July/August 2021

Engineering Mechanics

(ME & AE)

Roll No										

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

Answer Any **Five** Questions
All Questions carries equal marks.
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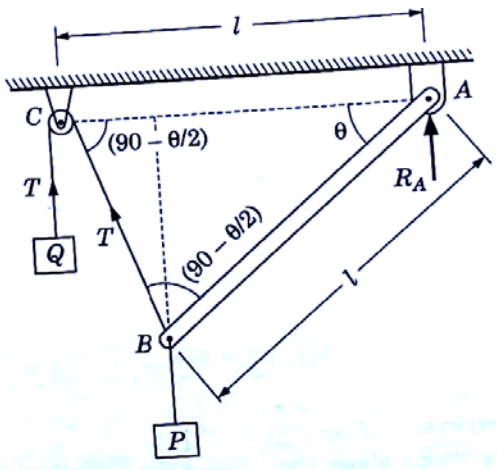
1 Define Parallelogram law of Forces and Find the angle between two equal forces F, when their resultant is **[14M]**
(i) equal to F, and (ii)equal F/2.

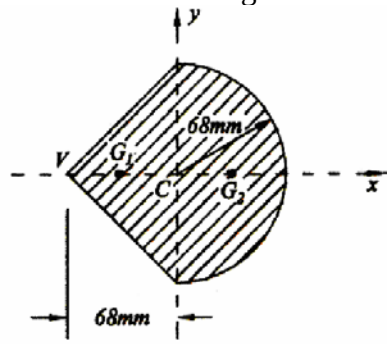
2 a) The folowing forces are acting on a particle. Find the magnitude and direction of resultant. **[12M]**
1) 10N inclined 30^0 to North of East
2) 15 N towards North
3) 30 N inclined 45^0 North of west
4) 50 N towards south.
b) Define couple and moment of couple. **[2M]**

3 A uniform rod AB of negligible weight is hinged at the end A and supported at the end B by string as shown. Find the value of angle θ corresponding to the position of equilibrium of the bar if Q=P/2 **[14M]**

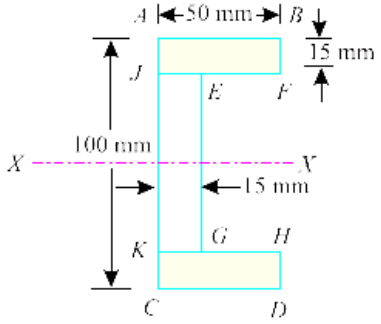


4 a)Explain the term limiting friction **[4M]**
b)Derive an expression for effort required to lift the load W. **[10M]**

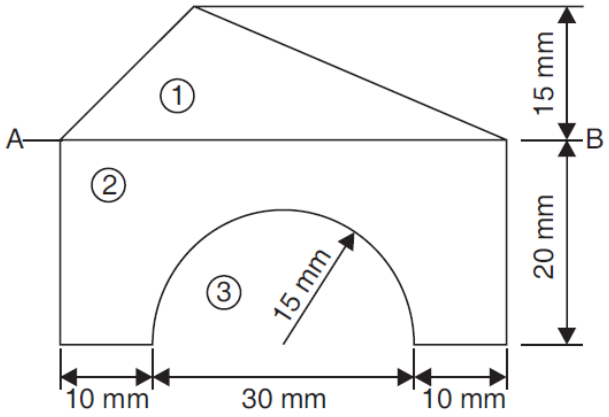
5 Locate centroid of shaded area as shown in figure. **[14M]**



6 Find the centroid of a channel section 100 mm × 50 mm × 15 mm. **[14M]**



7 Find the moment of inertia and radius of gyration of the area shown in figure about the axis AB **[14M]**



8 a)Motion of a particle is given by the equation x = t^3-$3t^2$-9t+12. Determine the time, position and acceleration of the particle when its velocity becomes zero. **[10M]**

b)A force of 250N acts on a body mass *m* = 100 kg. Find the acceleration of the body. **[4M]**

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