Code No: **R231107** **R23** **SET - 1**

I B. Tech I Semester Supplementary Examinations, June/July-2024
INTRODUCTION TO PROGRAMMING

(Common to All Branches)

Time: 3 hours Max. Marks: 70

*Note: 1. Question paper consists of two parts (**Part-A** and **Part-B**)*
*2. All the questions in **Part-A** is Compulsory*
*3. Answer **ONE** Question from each Unit in **Part-B***

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PART –A (20 Marks)

1.	a)	Write an example type conversion statement.	[2M]
	b)	Define program counter.	[2M]
	c)	Explain the syntax of the do-while loop.	[2M]
	d)	Differentiate ***break*** from ***continue*** statement.	[2M]
	e)	Write the logic for finding the string length without a predefined function.	[2M]
	f)	Define an array. Write a simple program.	[2M]
	g)	List operations that cannot be performed on pointers.	[2M]
	h)	Define self-referential structure.	[2M]
	i)	Define formal and actual parameters.	[2M]
	j)	Write any two errors that may arise with functions.	[2M]

PART – B (50 MARKS)

UNIT-I

2.	a)	Demonstrate the time complexity of the algorithm with an example.	[5M]
	b)	Compare Bottom-up and Top-down approaches for problem solving.	[5M]

(OR)

3	a)	Explain the process of compilation and execution with a case study.	[5M]
	b)	Classify the programming languages based on the context of programming and execution.	[5M]

UNIT-II

4.	a)	Develop a program that displays the sum of even numbers from 1 to n using a ***for*** loop.	[5M]
	b)	Demonstrate the advantage of continue statement with an example program.	[5M]

(OR)

5.	a)	Develop a program that displays the equivalent month name for the given number. For example, (i) input: 1; output: January (ii) input:12; output: December	[5M]
	b)	List and explain conditional statements in C language.	[5M]

UNIT-III

6.	a)	Develop a program to perform the transpose of a given matrix.	[5M]
	b)	Demonstrate the read, initialize and display operations on a multi-dimensional array.	[5M]

(OR)

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7.	a)	Develop a program that performs string concatenation and string reverse without predefined functions.	[5M]
	b)	Discuss the advantages and disadvantages of arrays with examples.	[5M]

UNIT-IV

8.	a)	Develop a program that creates a union named customer to read and display customer attributes: cust_id(numeric), age(numeric), account_no(string), and address(string).	[5M]
	b)	Compare the features of the array with the structure data type in C language.	[5M]

(OR)

9.	a)	Create a structure that displays student details and explain.	[5M]
	b)	Develop a program using pointers to structure to find the aggregate marks student_marks where the structure consists of six subject marks.	[5M]

UNIT-V

10.	a)	What is a function give the structure and write a program to print Fibonacci series.	[5M]
	b)	Develop a function that performs a linear search after receiving the array from the caller.	[5M]

(OR)

11.	a)	Demonstrate the functions that pass arrays as arguments with an example.	[5M]
	b)	Develop the logic to find the prime numbers from one to given n and write them in a file.	[5M]

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Code No: **R201104** **R20** **SET - 1**

I B. Tech I Semester Supplementary Examinations, June/July- 2024

ENGINEERING DRAWING

(Common to CE, ME, ECE, EIE, Pet E, Food E)

Time: 3 hours Max. Marks: 70

Answer any FIVE Questions ONE Question from Each Unit
All Questions Carry Equal Marks

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UNIT-I

1 a) Inscribe a regular octagon in a square of side 80 mm. [5M]

b) A point P of the hyperbola is situated at a distance of 35 mm and 50 mm from the pair of asymptotes. The asymptotes are perpendicular to each other. Draw a hyperbola using orthogonal asymptotes method. [9M]

(OR)

2 a) Construct a scale of 1:5 to show decimeters and centimeters and long enough to measure up to 1 m. Show a distance of 6.3 dm on it. [7M]

b) Draw an epicycloid of a circle of diameter 50 mm, which rolls outside a circle of diameter 180 mm for one revolution. Also, draw a tangent and a normal to the epicycloid at a point 135 mm from the centre of the directing circle. [7M]

UNIT-II

3 a) A point is 30 mm from the H.P. and 50 mm from the V.P. Draw its projections keeping it in all possible positions. [6M]

b) A 100 mm long line PQ is inclined at 30° to the H.P. and 45° to the V.P. Its mid-point is 35 above the H.P. and 50 mm in front of the V.P. Draw its projections. [8M]

(OR)

4 a) An 80 mm long line MN has its end M 15 mm in front of the V.P. The distance between the ends projector is 50 mm. The front view is parallel to and 20 mm above reference line. Draw the projections of the line and determine its inclination with the V.P. Also, locate the traces. [7M]

b) An 70 mm long line AB is inclined at 30° to the H.P. and 45° to the V.P. The end A is 20 mm above the H.P. and lying in the V.P. Draw the projections of the line [7M]

UNIT-III

5 a) A rectangular plane of sides 40 mm and 60 mm has a corner on the H.P. and 20 mm in front of the V.P. The surface of the plane is parallel to the V.P. and all the sides are equally inclined to the H.P. Draw its projections and locate the traces. [7M]

b) A circular plane of diameter 50 mm is resting on a point of the circumference on the V.P. The plane is inclined at 30° to the V.P. and the centre is 35 mm above the H.P. Draw its projections. [7M]

(OR)

6 The diagonals of a rhombus measure 100 mm and 40 mm. The longer diagonal is inclined at 30° to H.P. with an end in H.P. and the smaller diagonal is parallel to both the principal planes. Draw its projections. [14M]
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Code No: **R201104** **R20** **SET - 1**

UNIT-IV

7 a) A pentagonal prism of base side 30 mm and axis 60 mm has one of its bases in the V.P. Draw its projections when a rectangular face is parallel to and 15 mm above the H.P. [7M]

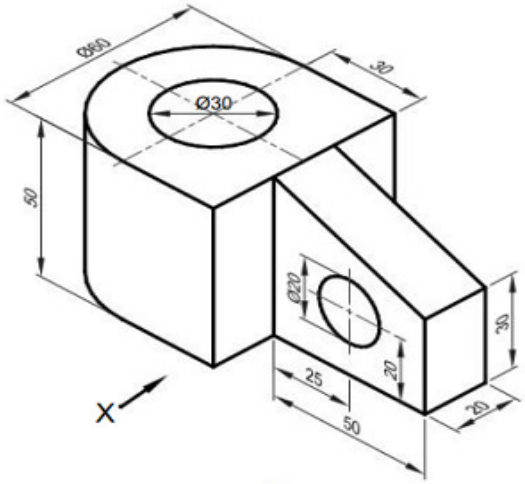
b) A cone of base diameter 50 mm and axis 60 mm has a generator in the V.P. and the axis parallel to the H.P. Draw its projections. [7M]

(OR)

8 A square pyramid of base side 40 mm and axis 55 mm is resting on one of its triangular faces on the H.P. A vertical plane containing the axis is inclined at 45° to the V.P. Draw its projections. [14M]

UNIT-V

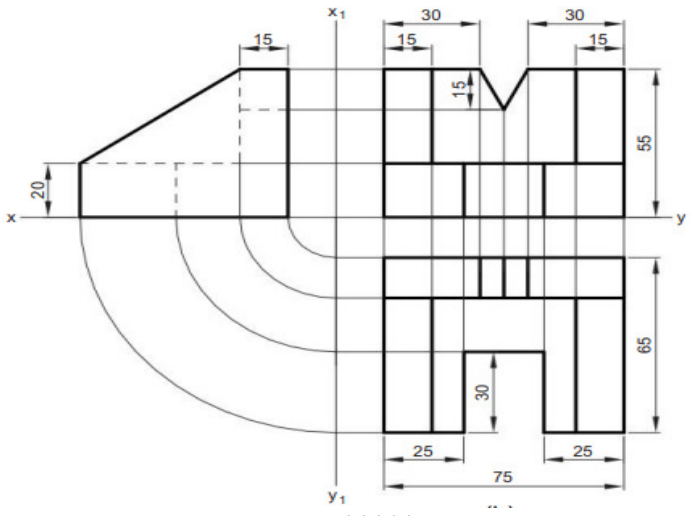
9 Pictorial view of an object is shown in Fig.(a). Using first angle projection, draw its (a) front view, (b) top view and (c) right-hand side view. All Dimensions are in MM. [14M]



(a)

(OR)

10 Draw the Isometric View from the following figure. All Dimensions are in MM. [14M]



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Code No: **R161109** **R16** **SET - 1**

I B. Tech I Semester Supplementary Examinations, June/July-2024
MATHEMATICS-II (Mathematical Methods)

(Common to CSE, IT, Agri E)

Time: 3 hours Max. Marks: 70

*Note: 1. Question paper consists of two parts (**Part-A** and **Part-B**)*
*2. Answering the question in **Part-A** is Compulsory*
*3. Answer any **FOUR** Questions from **Part-B***

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PART –A (14 Marks)

1. a) Define root of the equation f(x)=0. [2M]
   b) Write the relation between E and Δ. [2M]
   c) Prove that $\Delta \log f(x) = \log\left[1+\frac{\Delta f(x)}{f(x)}\right]$ [2M]
   d) Write the merits of Euler's method. [2M]
   e) Write the Half range sine series for f(x) on [0, L]. [2M]
   f) Write the complex Fourier transform. [2M]
   g) Write is one-dimensional wave equation. [2M]

PART –B (56 Marks)

2. a) Find the real root of 3x = 1+cosx using iteration method. [7M]
   b) Find the Real root of $xe^x = 2$ using Newton- Raphson method. [7M]
3. a) Evaluate $\left(\frac{\Delta^2}{E}\right)x^3$ [7M]
   b) Use Lagrange's formula to calculate f (3) from the following table. [7M]

X	0	1	2	4	5	6
Y	1	4	5	7	8	9

4. a) By Taylor's series method find y(0.1),y(0.2) given that $\frac{dy}{dx} = 3x + y^2, y(0) = 1$ [7M]
   b) Evaluate $\int_0^1 \frac{dx}{1+x^2}$ using (i) Trapezoidal Rule (ii) Simpson's 1/3rd rule. [7M]
5. a) Expand the function f(x) = x^2 as a Fourier series in [-π,π]. [7M]
   b) Find the Half range cosine series of f(x) = 4x in [0, 2]. [7M]
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6. a) If F(p), is the complex Fourier transform of f(x), then prove that the complex Fourier transform of f(x – a) is e^{ipa} F(p). [7M]

   b) Find the Fourier cosine transform of $f(x)=\begin{cases}\cos x \ if \ \ |x|<a \\ 0 \ if \ \ |x|>a\end{cases}$ [7M]

7. a) Solve the PDE $\frac{\partial u}{\partial x}+4\frac{\partial u}{\partial y}=0$ and $u(0,y)=8e^{-3y}$ using variable separable method. [7M]

   b) Find the temperature u(x, t) in a homogenous bar of heat conducting method of length 'l' whose ends are kept at 0^0c and whose initial temperature is $\frac{ax}{l^2}(l-x)$ [7M]

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Code No: **R161111** **R16** **SET - 1**

I B. Tech I Semester Supplementary Examinations, June/July-2024
ENGINEERING MECHANICS

(Common to Aero E, Auto E, Bio-Tech, Chem E, CE, EEE, ME, Metal E, Min E, P Chem E, PE)

Time: 3 hours Max. Marks: 70

*Note: 1. Question paper consists of two parts (**Part-A** and **Part-B**)*
*2. All the questions in **Part-A** is Compulsory*
*3. Answer any **FOUR** Questions from **Part-B***

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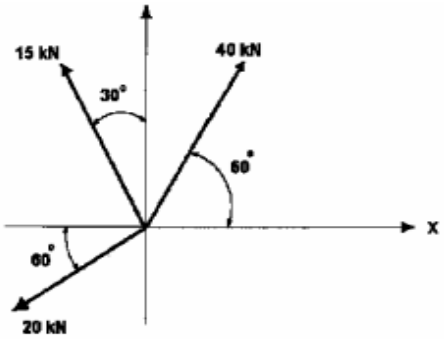
PART –A (14 Marks)

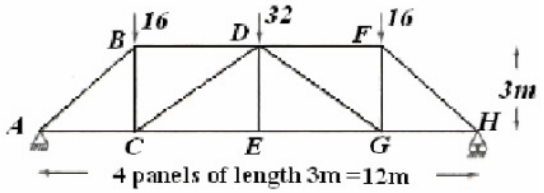
1. a) State coulomb's laws of dry friction. [2M]
   b) List the equations of equilibrium of coplanar systems. [2M]
   c) Define centre of gravity. [2M]
   d) What is polar moment of inertia? [2M]
   e) Outline the importance of curve linear motion. [2M]
   f) Label work-energy method. [2M]
   g) Define the systems of forces and components in space. [2M]

PART –B (56 Marks)

2. a) Analyze the moment of force and its application? [5M]
   b) Three forces of magnitude 40 kN, 15 kN and 20 kN are acting at a point O as shown in figure. The angles made by 40 kN, 15 kN and 20 kN forces with X-axis are 60^0, 120^0 and 240^0 respectively. Determine the magnitude and direction of the resultant force. [9M]



3. Find the forces in all the members of the truss shown in the figure. (All forces are in kN) [14M]



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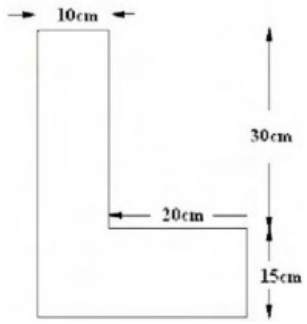
Code No: **R161111** **R16** **SET - 1**

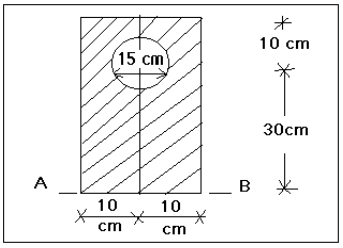
4. a) Analyze Pappus theorems in detail? [6M]

   b) Find the centroid of the plane lamina shown in figure. [8M]



5. a) Derive the expression for the moment of inertia of a homogeneous sphere of radius 'r' and mass density 'w' with reference to its diameter. [6M]

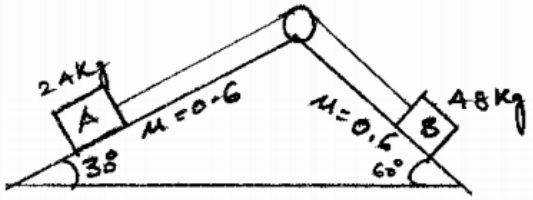
   b) Find the moment of inertia about the horizontal centroidal axis and about the base AB as shown in figure.? [8M]



6. a) A particle under a constant deceleration is moving in a straight line and covers a distance of 20m in first two seconds and 40m in the next 5 seconds. Calculate the distance it covers in the subsequent 3 seconds and the total distance covered, before it comes to rest. [6M]

   b) The acceleration of a particle in rectilinear motion is defined by the relation $a = 25 - 4s^2$ where 'a' is expressed in m/sec^2 and 's' is position coordinate in metres. The particle starts with no initial velocity at the position s = 0. Determine [8M]
   i) the velocity when s = 3 metres
   ii) the position where the velocity is again zero
   iii) the position where the velocity is maximum.

7. By using impulse – momentum method, determine the velocity of blocks shown in figure, after 10 seconds if the blocks are starting from rest. [14M]



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