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**SECOND SEMESTER**

**B.E.(ENE)**

**MID SEM EXAMINATION**

**March 2007**

**ENE-111 COMPUTER PROGRAMMING &  
COMPUTER GRAPHICS**

**Time: 1 Hour 30 Minutes**

**Max. Marks : 20**

**Note : Answer ALL questions.  
Assume suitable missing data, if any.**

- 1 Define the following terms :
  - a. Program
  - b. Operating system
  - c. Assembler
  - d. Compiler
  - e. Variables
  - f. Data type
  - g. Array
  - h. Pointer
  - i. Keyword
  - j. Identifier

5
- 2 Draw a flow chart to find the number of Saturdays in the year 2007.

3
- 3 The radii of five circles are presented by following array.  
 $\text{Radii}[4] = \{ 1.8, 3.3, 4.5, 2.9, 3.5 \}$   
Write a program in 'C' that uses a function 'area( )' to calculate the area of circles having these radii.

4
- 4 What do you mean by call-by-value and call-by-reference? Explain in brief.

2
- 5 Explain the difference between 'While-Do' and 'Do-while' loop with example.

2
- 6 Do all pointer types (pointer to int, char etc) have the same size in particular compiler.

1
- 7 Write a program in 'C' to accept a string and print the address of its beginning location.

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**SECOND SEMESTER**

**B.E.(ENE)**

**MID SEM EXAMINATION**

**March 2007**

**ENE-112 NUMERICAL TECHNIQUES AND  
STATISTICS**

**Time: 1 Hour 30 Minutes**

**Max. Marks : 20**

**Note :** Answer **ALL** questions by selecting **TWO** parts from each question.  
Assume suitable missing data, if any.

1[a] Find a root of  $x^4 - x = 10$  between 1 and 2 by using Newton Raphson Method.

[b] Solve the equations :

$$10x_1 - 2x_2 - x_3 - x_4 = 3$$

$$-2x_1 + 10x_2 - x_3 - x_4 = 15$$

$$-x_1 - x_2 + 10x_3 - 2x_4 = 27$$

$$-x_1 - x_2 - 2x_3 + 10x_4 = -9$$

by Gauss Seidel method.

[c] Compute  $y(9)$  and  $y(17)$  from the following data;

X :	8	10	12	14	16	18
Y :	10	19	32.5	54	89.5	15.4

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2[a] Find  $y(-1)$  from the following data :

x:	-1	0	2	3
y:	-8	3	1	2

[b] Prove that  $\nabla^6 y_8 = \Delta^6 y_2$

[c] Given that  $y = \log x$  and

x:	4.0	4.2	4.4	4.6	4.8	5.0	5.2
y:	1.3863	1.4351	1.4816	1.5261	1.5686	1.6094	1.6487

Evaluate  $I = \int_4^{5.2} y dx$  by Simpson's  $3/8^{\text{th}}$  rule and compare it with the exact value.

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3[a] Compute  $f'(x)$  from the following data :

x:	15	17	19	21	23	25
$f(x) = \sqrt{x}$	3.873	4.123	4.359	4.583	4.796	5.8

and compare with the exact value.

[b] Using Milne's predictor corrector method find solution of  $\frac{dy}{dx} - 4y = 0$  at  $x = 0.4$  given that  $y(0) = 1$ ,  $y(0.1) = 1.492$ ,  $y(0.2) = 2.226$ ,  $y(0.3) = 3.320$

[c] Using Runge Kutta method of  $4^{\text{th}}$  order, solve  $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$  with  $y(0) = 1$  at  $x = 0.2, 0.4$ .

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**SECOND SEMESTER**

**B.E.(ENE)**

**MID SEM EXAMINATION**

**March**

**2007**

**ENE-113 FLUID MECHANICS**

*Time: 1 Hour 30 Minutes*

*Max. Marks : 20*

**Note :** Answer **ALL** questions.

Assume suitable missing data, if any.

- 1 A cylindrical shaft of 90 mm diameter rotates about a vertical axis inside a fixed cylindrical tube length 50 cm and 95 mm internal diameter. If the space between the tube and the shaft is filled by a lubricant of dynamic viscosity 2.0 poise, determine the power required to overcome viscous resistance when the shaft is rotated at a speed of 240 rpm. 3
- 2 Calculate the capillary rise in a glass tube of 3.0 mm diameter when immersed vertically in (i) water and (ii) mercury. Take surface tensions for mercury and water as 0.0725 N/m and 0.52 N/m respectively in contact with air. Specific gravity for mercury is given as 13.6. 3
- 3 A U-tube differential manometer connects two pressure pipes A and B. Pipe A contains carbon tetrachloride having a specific gravity 1.594 under a pressure of 11.772 N/cm<sup>2</sup> and pipe B contains oil of specific gravity 0.8 under a pressure of 11.772 N/cm<sup>2</sup>. The pipe A lies 2.5 m above pipe B. Find the difference of pressure measured by mercury as fluid filling U-tube. 4
- 4 A cubical tank has sides of 1.5 m. It contains water in the lower 0.6 m depth. The upper remaining part is filled with oil of relative density 0.9. Calculate for one vertical side of the tank (i) the pressure force and (ii) position of the centre of pressure. 4
- 5 Explain the phenomenon of capillarity. Obtain an expression for capillary rise of liquid. 3
- 6 State and prove the Pascal's law. 3

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B.E.(ENE)

MID SEM EXAMINATION

March 2007

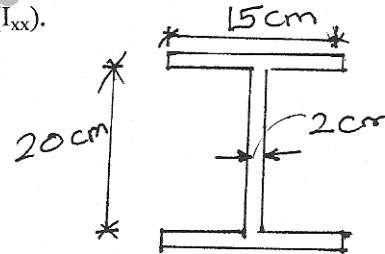
ENE-114 ENGINEERING MECHANICS

Time: 1 Hour 30 Minutes

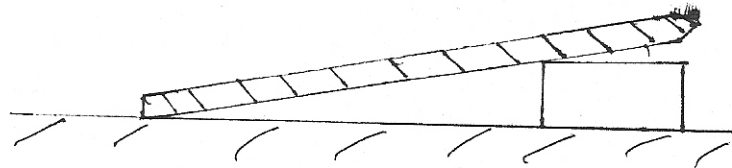
Max. Marks : 20

Note : Answer any **FOUR** questions.  
Draw diagram wherever necessary.  
Assume suitable missing data, if any.

- 1 Analytically and graphically represent a moment. Signify the importance of centroids and moments of an area. 5
- 2 Briefly describe how any force system can be reduced to a single resultant and single resultant couple. 5
- 3 Determine the moments of inertia w.r.t. the centroidal axes of the flange beam section in Fig.(1) ( $I_{xx}$ ). 5



- 4 Derive the moment of inertia for a circular section of radius 'r'. 5
- 5 Draw the free body diagram shown in Fig.(2). (System and subsystem). 5



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**SECOND SEMESTER**

**B.E.(ENE)**

**MID SEM EXAMINATION**

**March**

**2007**

**ENE-115 ENVIRONMENTAL SCIENCES**

**Time: 1 Hour 30 Minutes**

**Max. Marks : 20**

**Note :** Question No. **ONE** is compulsory.  
Answer any **TWO** questions from the remaining.  
Assume suitable missing data, if any.

- 1 Explain  
[a] Plant and animal cell  
[b] ATP cycle  
[c] Lipids and Amino acids  
[d] RNA and DNA  
8
- 2 Explain Biogeochemical cycles? Explain the anthropogenic stress on 'c' cycles? 6
- 3 Explain how water attains its chemistry under normal environmental conditions. Add a note on water pollution with reference to NCT, Delhi? 6
- 4 Give your view on land use pattern change impact on urban water resource and its whole pristine environment? 6