

(4)

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OR

(b) What are the different methods of interpolation for unequal interval ? Given

$$u_3 = 6, u_5 = 24, u_7 = 58, u_9 = 108,$$

$$u_{11} = 104, \text{ find } u_{100}. \quad 10 \text{ Marks (CO2)}$$

5. (a) What are significant figures ? What are the different methods to convert an approximate number to significant figures ?

Explain with examples. If $\pi = \frac{22}{7}$ is

approximated as 3.14, find the absolute, relative and percentage error.

10 Marks (CO1)

OR

(b) Solve the equations $27x + 6y - z = 85;$

$$x + y + 54z = 110; \quad 6x + 15y + 2z = 72;$$

by Gauss-Seidel method. 10 Marks (CO1)

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Roll No.

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B. TECH. (CSE) (FIFTH SEMESTER) MID SEMESTER EXAMINATION, 2022 COMPUTER BASED NUMERICAL AND STATISTICAL TECHNIQUES

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) Find the roots of the equation $x^2 + 4 \sin x = 0$ by Newton-Raphson method correct to four decimal places.

10 Marks (CO1)

OR

(b) Find the roots of the equation $x^2 - \log_e x - 12 = 0$ correct to 3 decimal places by Regula-Falsi method.

10 Marks (CO1)

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2. (a) Solve the system of linear equations using Gauss Elimination method :

10 Marks (CO1)

$$6x + 3y + 2z = 6$$

$$6x + 4y + 3z = 0$$

$$20x + 15y + 12z = 0.$$

OR

- (b) Solve the equations $x + y + 2z = 4$;

$$3x + y - 3z = -4; \quad 2x - 3y - 5z = -5;$$

by Gauss-Jordan method. 10 Marks (CO1)

3. (a) From the following table, estimate the number of students who obtain marks between 45 and 55 : 10 Marks (CO2)

Marks	No. of Students
30—40	31
40—50	42
50—60	51
60—70	35
70—80	31

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OR

- (b) Find the cubic polynomial which takes the following values. Hence find $f(2.75)$:

10 Marks (CO2)

X	$f(x)$
0	1
1	2
2	1
3	10

4. (a) The population of a certain town is given below. Find the population in 1955 using central difference formula :

10 Marks (CO2)

Year (X)	Population (Y) (in thousands)
1931	40.62
1941	60.80
1951	79.95
1961	103.56
1971	132.65

P. T. O.