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## C.U.SHAH UNIVERSITY

 Summer Examination-2016Subject Name : Computer Oriented Mathematical Reasoning
Subject Code : 4CS02IMR1
Branch: B. Sc. (I.T)
Semester : 2 Date : 06/05/2016
Time : 10:30 To 01:30
Marks : 70
Instructions:
(1) Use of Programmable calculator \& any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 Attempt the following questions
a) What is equation?
b) Enlist different methods to solve linear equations
c) Define the term: diagonal matrix
d) Enlist out various types of differences
e) What is numerical integration?
f) Define the term: Transportation
g) What do you mean by interpolation?

Attempt any four questions from Q-2 to Q-8
Q-2
Attempt all questions
1 Apply Gauss - Elimination method to solve the following equation
$x+y+z=6$
$2 \mathrm{x}-\mathrm{y}+\mathrm{z}=3$
$3 x+y+z=8$
2 Apply Gauss - Elimination method to solve the following equation
$x+y+z=9$
$2 x-3 y+4 z=13$
$3 x+4 y+5 z=40$
Q-3 Attempt all questions
1 Discuss forward difference table with suitable example
2 Estimate the number of students who obtained marks between 40 and 45 using
Newton forward difference formula

| Marks | $30-40$ | $40-50$ | $50-60$ | $60-70$ | $70-80$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No. of students | 31 | 42 | 51 | 35 | 31 |



## Q-8

Attempt all questions
1 Use Lagrange's interpolation formula to find the value of y when $\mathrm{x}=10$ using the following value of $x$ and $y$.

| x | 5 | 6 | 9 | 11 |
| :---: | :---: | :---: | :---: | :---: |
| y | 12 | 13 | 14 | 16 |

2 Find the root of the equation $x^{3}-2 x-2=0$ using the bisection method

## Attempt all questions

1 Find the roots of the equation $x^{3}-3 x-1=0$ using the false position method
2 Find the roots of the equation $x^{3}-2 x-2=0$ using the Newton-Raphson method

## Attempt all questions

1 Using the following data table, Interpolate (Newton's backward) the value of y when $x=9$

| x | 0 | 2 | 4 |
| :---: | :---: | :---: | :---: |
| y | 9 | 7 | 5 |

2 Evaluate ${ }_{o} f^{4} \mathrm{e}^{\mathrm{x}} \mathrm{dx}$ by using Simpson's $1 / 3^{\text {rd }}$ rule
Attempt all questions
1 Discuss 2 point Gauss Quadrature formula
2 Discuss backward difference table with suitable example
Attempt all questions
1 Discuss trapezoidal rule using suitable example
2 Discuss Simpson's rule using suitable example


