PARUL UNIVERSITY
FACULTY OF IT & COMPUTER SCIENCE
Parul Institute of Computer Application
BCA/IMCA 2018-19 mid Semester Examination

Semester: 3rd
Subject Code: (05191205)
Subject Name: (Computer Oriented Numerical and Statistical Methods)

Date: (10/9/2018)
Time: (2hr)

Total Marks: 40

Instructions:
1. Figures to the right indicate full marks.
2. Make suitable assumptions wherever necessary.

Q.1 Answer the following.

(a) Do as Directed:-

[3]

1 Define: Significant figures with one example.

2 Gauss - seidel method applicable only if it satisfies the Diagonally Dominant condition (True / False)

3 Rounding off the number 80.758 to one decimal gives 80.76. (T/F)

(b) Do as Directed:-

[7]

1 which of the following is not an error _____

a) absolute   b) percentage   c) truncation   d) flow

2 $\nabla \Delta =$ _____

3 $(1+\Delta)(1-\nabla) =$ _____

4 An example of an Algebraic equation is : _____

a) $\tan x = e^x$ (b) $x^3 - 5x + 3 = 0$ (c) $x = \log (x)$ (d) none of these

5 What is the value of 3.14159265 on rounding off up to 5 digits?

a) 3.14   (b) 3.142   (c) 3.1416   (d) none

6 $\Delta + \nabla =$ _____

7 The root lies between _____ and _____ for equation f(x): $x^3 - 4x - 9 = 0$ which satisfies f (a).f (b) < 0.

Q.2 Answer the following.

(a)

1 Prove that $E = 1 + \Delta$

2 Find the roots of the equation $x^3 - 2x - 5 = 0$ using False Position method correct up to 2nd Iteration.

(b) Answer the following.

1 Solve the following system of equations by Gauss - Jordan Elimination method:
$x + y + z = 5$; $2x+3y+5z = 8$; $4x+5z = 2$

2 Find $f(x)$ using Newton's Divided Difference formula from the following table:

x	1	2	7	8
f(x)	1	5	5	4

Q.3 Attempt any TWO.

1 Find the roots of the equation $x^3 - 4x - 9 = 0$ using Bisection method correct up to 4th iteration. [5]

2 Solve the following system of equations by using Gauss Jacobi method correct up to 2 decimal places: [5]
$5x-2y+3z = -1$; $-3x+9y+z =2$; $2x-y-7z = 3$

3 Solve the following system of equations using Partial pivoting by Gauss Elimination method: [5]
$2x-y+3z = 8$; $-x+2y+z = 4$; $3x+y-4z = 0$

Q.4 Answer the following. [10]

(a) Find the Lagrange Interpolating Polynomial from the following data:

x	0	1	4	5
y	1	3	24	39

(b) Solve the following system of equations by using Gauss- Seidel method correct up to 2 decimal places:
$20x+2y+z = 30$; $x-40y+3z = -75$; $2x-y+10z = 30$.

OR

(b) Using Newton's Forward Interpolation Formula, find the values of y when x = 160.

x	100	150	200	250	300	350	400
y	10.63	13.03	15.04	16.81	18.42	19.90	21.27