GIET UNIVERSITY, GUNUPUR – 765022

RD19MCA006

Roll No: | | | | | | |

Total Number of Pages : 1 AR-19 MCA

MCA 1ST SEMESTER REGULAR EXAMINATIONS, NOV/DEC 2019-20

MCA103-Computer Oriented Numerical Methods

Time: 3 Hours Max Marks: 70

The figures in the right hand margin indicate marks.

PART- A

Q.1 Answer all of the following: **[10 X2 =20]**

a) What is error? Write common ways to express an error
b) Why does the Newton iteration often work better than the secant method for nonlinear functions like f(x,y)?
c) Define trapezoidal rule
d) How do you tie the iteration into the DO loop?
e) Write an algorithm for trapezoidal method.
f) Solve Cos x = x e^x correct to two significant figures by Secant method correct up to 2 decimal places.
g) What is the formula for Newton backward interpolation?
h) What form of numerical integration do you think is the most reliable?
i) Write the formula for system of linear equation.
j) What are the statements applies to the bisection method used for finding roots of functions?

PART-B

[Answer any five out of seven question][10 X 5=50]

2 a.Find the Newton backward interpolation polynomial of the following data and also find f(42)

X	20	25	30	35	40	45
Y	354	332	291	260	231	204

b.Evaluate the integral $\int_1^3 \frac{1}{x} dx$ by using simpson's 1/3 rule.

3 a.Find the cubic polynomial which takes following value also find f(4)

X	0	1	2	3
Y	1	2	1	10

b. Write a program for and algorithm interpolation sorting problem

4 a..Find the Langrangian interpolation polynomial of the following data

X	5	7	11	13	17
F(x)	150	392	1452	2366	5202

b. Write a flowchart and algorithm to find the numerical integration by Simpson method.

5 a.Write a program for find the root of an quadratic equation and draw the flowchart.

b.Solve the system of linear equation by using Gauss sedial method

83x+11y-4z=95
7x+52y+13z=104
3x+8y+29z=71

6 a Solve the system of linear equation by using Gauss Jacobi method

10x-5y-2z=3
4x-10y+3z=3
X+6y+10z=-3

b. Find the positive root of the equation X^3-5x+1=0 by using bisection method.

7 a. Write an algorithm and C program for Newton Raphson's method

b. Find the cubic polynomial which takes following value also find f(4)

X	0	1	2	3
Y	1	2	1	10

8 Write short notes.

a. LU -decomposition
b. Gauss quadrature method