**St. Joseph’s College (Autonomous), Bangalore**

**1-06-2017**

**SPECIAL SUPPLEMENTARY EXAMINATION: MAY 2017**

**B C A II Semester**

**CA 2415 : Computer Oriented Numerical Analysis**

**Time 2.5 Hrs Max Marks 70**

ATTACH THE QUESTION PAPER WITH THE ANSWER SCRIPT

**This paper contains 2 printed pages and 3 parts**

**PART-A**

**Answer all TEN questions 2 x10 = 20**

1. What do you mean by Numerical Analysis?

2. Explain the basic arithmetic operations of normalized floating point representation of numbers.

3. Explain the steps for Bisection Method.

4. Briefly explain the consequences of normalized floating point representation of numbers.

5. Calculate the value of the determinant.

6. What is the condition of diagonally dominant in Gauss Seidal Iterative method?

7. Define interpolation.

8. Write down LaGrange’s interpolation formula for unequal intervals

9. Derive trapezoidal rule.

10. Evaluate using Simpson’s (3/8) th rule. The following table gives the value of a function y=f(x) for different values of x

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Y | 0.146 | 0.161 | 0.176 | 0.190 | 0.204 | 0.217 | 0.230 |

**PART-B**

**Answer any FIVE questions 6 x5 = 30**

11. a) Explain the floating point representation of numbers with suitable example (4)

b) Perform the following (2)

(i) .4546E3 + .5433E7 (ii) .1111E10 X .1234E15

12. Solve the equation x3 - 9x+1=0 for the root lying between 2 and 3 by using regula

falsi method. [Perform upto 3 iterations].

13 Solve the following system of equations using Cramer’s Rule.

2x+3y+z=-3

3x+2z=7

x+2y+z=0

13. Solve the equations using Gauss's elimination pivotal method

x - 3y - z = -30

5x -y -2z = 142

x - y - 3z = 5

Perform upto two iterations

14. Find out (dy/dx) at x=2.2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 |
| Y | 2.72 | 3.32 | 4.06 | 4.96 | 6.05 | 7.39 | 9.02 |

15. Using Newton’s divided difference formula find out the values of f(5) and f(11)

using the following table of values

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | -1 | 1 | 2 | 3 |
| F(x) | -21 | 15 | 12 | 3 |

16. By using Simpson’s (1/3)rd rule evaluate 2) dividing the interval[0,1]

into 6 equal parts.

17. Use Euler's method solve (dy/dx) =x+y for x=0 (0.2) 1 given y=1 when x=0.

**PART-C**

**Answer any TWO questions 10 x2 = 20**

18. Use Gauss seidel iteration method to solve the following system of equations

10x + y + z = 12

2x + 10y + z =13

2x + 2y + 10z = 14

19 Find the approximate value of correct to 2 decimal places, using bisection method

20. Evaluate 4 dx by using

(i) Trapezoidal rule (ii) Simpson's (3/8)rule