**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE -27**

Register Number:

Date: 21-04-2018 (9AM)

**B.C.A II SEMESTER**

**SEMESTER EXAMINATION: APRIL 2018**

**CA 2415 – Computer Oriented Numerical Analysis**

**Time – 2.5 hours Max Marks -70**

This question paper has 2 printed pages

**I Answer the following 2\*10= 20**

1. Multiply 0.5543E12 \* 0.4111E-15
2. Write down the steps involved in Netwon Raphson Method.
3. Give an Algorithm of a Secant Method.
4. Write down the steps involved Gauss- Seidal Iterative Method.
5. Using Cramer’s Rule, find the value of |A|

3x+y+Z=3

2x+2y+5Z=-1

x- 3y- 4z=2

1. Write the formulae for Approximation value of derivate using middle value (Backward Interpolation).
2. Find out y (2) from the following table using Lagrange’s Interpolation.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | 0 | 1 | 3 | 4 |
| Y | 5 | 6 | 50 | 105 |

1. Evaluate using Simpson’s 3/8 Rule
2. Mention the procedure followed by Step Deviation Method.
3. What is Regression Analysis? Mention two Normal Equations that are used for straight line.

II. **Answer any 5 of the following. 5\*6= 30**

1. Write detail about consequence of Normalised Floating Point representation of a number and pit falls in computing.
2. Solve for the root lying between 0.5 and 1 by the method of False Poistion.

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1. Solve using Cramer’s Rule.

X+ 2y+ 3z= -5

3x + y- 3z= 4

-3x + 4y+ 7z= -7

14. From the table find out F I (30.5) , F II (30.5) , F I (35) and F II (35)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
| Y | 85.90 | 86.85 | 87.73 | 88.64 | 89.52 | 90.37 | 91.1 |

1. Fit a Quadrature Curve by Least Square Method for the following data.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | 0 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 |
| Y |  | 1.5 | 3.0 | 4.5 | 6.0 | 7.5 |

1. Evaluate by using Simpson’s Rule with h= 0.25.
2. Derive Simpson’s (1/3)rd Rule.

**III Answer any two of the following. 2\*10=20**

18. a) Find out the root of the equations lying in the interval (1,2) of the equation

Correct to 3 decimal places. (8)

b) What is Bi-Section Method? (2)

19. a) Solve using Gauss Elimination Method (6)

b) Using Newton Divided difference methods find the value of F (0.3) (4)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 0 | 1 | 3 | 4 | 7 |
| F(x) | 1 | 3 | 49 | 129 | 813 |

20. a) find y(1.0)accurate up to four decimal places using Modified Euler’s Method by solving with the step length h= 0.2 (7)

b) By taking 8 sub intervals correct to 4 decimal place by Trapezoidal Rule.

(3)

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