# M.Sc. DEGREE EXAMINATION,APRIL 2020
## I Year II Semester
## Computational Methods and C Programming

**Time : 3 Hours** **Max.marks :75**

**Section A** $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define zero polynomials?
2. What is transcendental equation?
3. Solve 5x+y – 9; 3x-y = 9?
4. Write equation to find matrix inversion?
5. What are the steps in Newton interpolation method?
6. What is the difference between interpolation method and curve fitting?
7. Define Trapezoidal rule ?
8. Define Simpson's rule
9. Write a C-program for addition integers?
10. Write a C-Program for addition floating points?
11. Write is the order of error in Simpson's role?
12. State the normal equations i fitting a straight line.

**Section B** $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Find the zeros of $\mathbf{f}(\mathbf{x}) = \mathbf{4x^3 + 3x - 1}$
14. Solve by Gars - Elimination method

    $3x + 4y + 5z = 18$ $2x - y + 8z = 13$ $5x - 2y + 7z = 20.$
15. In the table

| Year | 1891 | 1901 | 1911 | 1921 | 1931 |
|---|---|---|---|---|---|
| Population In thousands | 46 | 66 | 81 | 93 | 101 |

    find the population in the year of 1925 by Newton interpolation method?
16. Evaluate $\int_0^{0.6} e^{-x^2} dx$ *correct to three decimal places by step size of* $0.1$ using Simpsons one-third method with example?
17. Derive Newton-Raphson formula.
18. Write the steps of Simpsons method in C-Program?
19. Write the C-program for bisection method?

## **Section C** $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Find root of $xlog_{10}x - 1.2 = 0$ using Newton Raphson method.
21. Find the eigenvalues and eigenvectors of matrix A= $\begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix}$
22. Using Lagrange's interpolation formula, find y(10) from the following table.

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

23. Explain the steps in Euler and Rungekutta method?
24. Write a C-program for Euler Method or Lagrange interpolation method?

# M.Sc. DEGREE EXAMINATION,APRIL 2020
## I Year II Semester
## Computational Methods and C Programming

**Time : 3 Hours** **Max.marks :75**

**Section A** $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define zero polynomials?
2. What is transcendental equation?
3. Solve 5x+y – 9; 3x-y = 9?
4. Write equation to find matrix inversion?
5. What are the steps in Newton interpolation method?
6. What is the difference between interpolation method and curve fitting?
7. Define Trapezoidal rule ?
8. Define Simpson's rule
9. Write a C-program for addition integers?
10. Write a C-Program for addition floating points?
11. Write is the order of error in Simpson's role?
12. State the normal equations i fitting a straight line.

**Section B** $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Find the zeros of $\mathbf{f}(\mathbf{x}) = \mathbf{4x^3 + 3x - 1}$
14. Solve by Gars - Elimination method

    $3x + 4y + 5z = 18$ $2x - y + 8z = 13$ $5x - 2y + 7z = 20.$
15. In the table

| Year | 1891 | 1901 | 1911 | 1921 | 1931 |
|---|---|---|---|---|---|
| Population In thousands | 46 | 66 | 81 | 93 | 101 |

    find the population in the year of 1925 by Newton interpolation method?
16. Evaluate $\int_0^{0.6} e^{-x^2} dx$ *correct to three decimal places by step size of* $0.1$ using Simpsons one-third method with example?
17. Derive Newton-Raphson formula.
18. Write the steps of Simpsons method in C-Program?
19. Write the C-program for bisection method?

## **Section C** $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Find root of $xlog_{10}x - 1.2 = 0$ using Newton Raphson method.
21. Find the eigenvalues and eigenvectors of matrix A= $\begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix}$
22. Using Lagrange's interpolation formula, find y(10) from the following table.

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

23. Explain the steps in Euler and Rungekutta method?
24. Write a C-program for Euler Method or Lagrange interpolation method?