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Roll No. :

328451(28)

B. E. (Fourth Semester) Examination, April-May 2021

(New Scheme)

(Et & T Branch)

NUMERICAL ANALYSIS Using C

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) of each question is compulsory and carries 2 marks. Attempt any two from (b), (c) and (d) which carry 7 marks each.

Unit-I

1. (a) Define keywords in C language.

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- (b) (i) Write a C program to find out greatest among three numbers.
- (ii) Write a C program to check whether entered number is even or odd.
- (c) Write the importance of C language. Also explain else-if ladder with proper example.
- (d) Define operators. Explain any four operators of C language.

Unit-II

2. (a) What is the purpose of Break statement?
- (b) Differentiate between call by value and call by reference with suitable example.

- (c) Write a C program to print following pattern :

```
* * * * *
* * * *
* * *
* *
*
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- (d) How two dimensional array is initialized? Write a program to multiply 3×3 matrices.

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Unit-III

3. (a) What are pointers?
- (b) Write a program to find the length of the string.
- (c) Define structure. Write the difference between Structure and Array.
- (d) What is Recursion? Write a program to find out the factorial of a given number using recursion.

Unit-IV

4. (a) Define Transcendental equation.
- (b) Find a real root of the equation $x \log_{10} x = 1.2$ by regula-falsi method correct to four decimal places.
- (c) Using Newton-Raphson method find a root of the equation $x^2 + 4 \sin x = 0$, correct upto 5 decimal places.
- (d) Solve by Relaxation method, the equations
- $$9x - 2y + z = 50$$
- $$x + 5y - 3z = 18$$
- $$-2x + 2y + 7z = 19$$

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Or

Solve by Jacobi's method, the equations

$$20x + y - 2z = 17$$

$$3x + 20y - z = -18$$

$$2x - 3y + 20z = 25$$

Unit-V

5. (a) Write Newton Cote's quadrature formula.
- (b) Solve the following by modified Euler's method, the equation $\frac{dy}{dx} = \log_e(x+y)$, $y(0) = 2$ at $x = 1.2$ and $1.4, 1.6$ with $h = 0.2$.

- (c) Apply Runge-Kutta method of fourth order to solve :

$$10 \frac{dy}{dx} = x^2 + y^2, y(0) = 1 \text{ for } x = 0.1, 0.2$$

- (d) Evaluate :

$$\int_0^6 \frac{dx}{1+x^2}$$

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by using :

- (i) Trapezoidal rule
- (ii) Simpson's 1/3 rule
- (iii) Simpson's 3/8 rule
- (iv) Weddle's rule and compare results with its actual value