

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**March/April-2022 (NEW COURSE)****Programming in C and Numerical Analysis -1(Core)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que-1 (A) **Answer any two out of three.** (10)
1. Explain if- else statement.
 2. Write a program to find the biggest number from given three numbers.
 3. Explain all types of constant in C.
- Que-1 (B) **Answer any one out of two.** (04)
1. Explain arithmetic instruction in C.
 2. Explain printf() and scanf() in C.
- Que-2 (A) **Answer any two out of three.** (10)
1. Explain while loop.
 2. Explain for loop.
 3. Explain all integer data type in C.
- Que-2 (B) **Answer any one out of two.** (04)
1. Explain continue and break statement.
 2. Explain goto statement.
- Que-3 (A) **Answer any two out of three.** (10)
1. Explain Macros without argument and explain its uses in programming.
 2. Write a program to find multiplication of two 3x3 matrices.
 3. Explain arrays in C.
- Que-3 (B) **Answer any one out of two.** (04)
1. Explain C pre processor.
 2. Explain Macros with argument.
- Que-4 (A) **Answer any two out of three.** (10)
1. Explain Gauss elimination method.
 2. Using principle of least squares obtain normal equations to fit a parabola $y=ax^2+bx+c$.
 3. Solve the following system of linear equations by Gauss-Jordan method.
 $x+4y+9z=34$; $2x+y+z=12$; $3x+2y+3z=24$
- Que-4 (B) **Answer any one out of two.** (04)
1. Fit a straight line $y=ax+b$ for the following data.
x: 1 2 3 4 5
y: 14 27 40 55 68
 2. Write names of indirect methods for solving a system of linear equations. Also explain which method is more rapid, why?
- Que-5 (A) **Answer any two out of three.** (10)
1. Derive Gregory Newton forward interpolation formula.
 2. Prove that n^{th} differences of a polynomial of degree n are constant.
 3. Evaluate $\Delta^3 f(x)$ for $f(x)=(3x+1)(3x+4)(3x+7)\dots\dots(3x+19)$.
- Que-5 (B) **Answer any one out of two.** (04)
1. Given $y_0=3$, $y_1=12$, $y_2=81$, $y_3=200$, $y_4=100$. Find $\Delta^4 y_0$ without forming the difference table.
 2. Express the polynomial $f(x)=x^3-2x^2+x-1$ in factorial notation.
