



BCG-003-1015002

Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

August – 2021

Mathematics : Paper - VI

(Programming in C & Numerical Analysis - I)
(New Course)

Faculty Code : 003

Subject Code : 1015002

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instruction:

(1) All the questions are compulsory.

(2) Answer any FIVE questions out of TEN.

(3) Numbers written in the right indicate marks of the questions.

1(A) Answer the following questions.

[04]

1. In which header file definition of sqrt() function is included?
2. What is the use of “\t” in printf() ?
3. Write a symbol of ampersand.
4. Who invented BCPL language? In which year it was invented?

(B) Answer the following question.

[02]

1. Write a C program to calculate area of a circle when radius is not given.

(C) Answer the following question.

[03]

1. Explain scanf function with an example.

(D) Answer the following question.

[05]

1. Explain if statement with example.

2(A) Answer the following questions.

[04]

1. scanf () belongs to _____ header file.
2. Who invented C language? In which year it was invented?
3. Write the output of printf(“\nI\n\tLOVE\n\t\tMY\n\t\t\tINDIA.”).
4. What is the numerical value of 10/3 in C – language?

(B) Answer the following question.

[02]

1. Write a hierarchy of operators in the table.

(C) Answer the following question.

[03]

1. Explain printf function with an example.

(D) Answer the following question. [05]
1. Write Program to input and output 10 X 2 matrix.

6(A) Answer the following questions. [04]

1. _____ is a special function used by C system to tell the computer where program starts.
2. C programs are converted into machine language with the help of _____
3. A header file is:
 - (a) a file that contains standard library functions.
 - (b) a file that contains definitions and macros.
 - (c) a file that contains user-defined functions.
 - (d) a file that is present in current working directory.

Choose correct option.

4. File extension of source code in C language is _____

(B) Answer the following question. [02]

1. What is the meaning of compile time initialization?

(C) Answer the following question. [03]

1. Explain macro with argument in C language with syntax and example.

(D) Answer the following question. [05]

1. Explain the methods to declare and initialize the Two Dimensional Array.

7(A) Answer the following questions. [04]

1. In which method matrix is transformed into upper triangular matrix?
2. Write name of any two iterative methods.
3. Find value of $(1 + \Delta)(1 - \nabla)$.
4. Gauss Jordan method is modification of _____

(B) Answer the following question. [02]

1. Explain how to fit the curve of the type $y = ax^b$.

(C) Answer the following question. [03]

1. Explain Jacobi's Method.

(D) Answer the following question. [05]

1. Explain Least squares principle and Obtain normal equations for a second degree curve.

8(A) Answer the following questions. [04]

1. Write name of any two direct methods.
2. Write linear law of the equation $y = ab^x$.
3. According to Factorisation Method, what is U?
4. If $y = 2x + 5$ is the best fit for 8 pairs of values (x, y) by method of least square and $\sum y = 120$ then find $\sum x$.

(B) Answer the following question. [02]

1. Explain Linear Law.

(C) Answer the following question. [03]

1. Solve the system

$$x + y + 5z = 7, 2x + 10y + z = 13, 10x + y + z = 12$$

By the modified form of Gauss Elimination Method.

(D) Answer the following question. [05]

1. Explain: Crout's Method.

9(A) Answer the following questions. [04]

1. Write relation between Δ & E .
2. Define: Interpolation
3. The n th difference of a polynomial of degree n is _____
4. $\delta =$ _____ in the form of E .

(B) Answer the following question. [02]

1. If the interval of differencing is unity then prove that $\Delta \frac{2^x}{x!} = \frac{2^x(1-x)}{(x+1)!}$

(C) Answer the following question. [03]

1. Find the missing values in the following table of values of x and y .

x	0	1	2	3	4	5	6
y	-4	-2	-	-	220	546	1148

(D) Answer the following question. [05]

1. Derive Gregory Newton Backward Interpolation Formula.

10(A) Answer the following questions. [04]

1. $\Delta \nabla$ equals to _____
2. Write relation between E and D .
3. $\Delta^6 x^{(5)} =$ _____
4. In usual notation $\mu =$ _____

(B) Answer the following question. [02]

1. In usual notation prove that $\Delta + \nabla = \frac{\Delta}{\nabla} - \frac{\nabla}{\Delta}$

(C) Answer the following question. [03]

1. Prove that $\mu^2 = 1 + \frac{\delta^2}{4}$

(D) Answer the following question. [05]

1. In the following table one value is incorrect and y is cubic polynomial in x :

x	0	1	2	3	4	5	6	7
y	25	21	18	18	27	45	76	123

Construct a difference table for y and use it to locate and correct the wrong value.
