

Roll No.

Total Pages : 03

753209

May 2026

M.Sc. (Maths) (Second Semester)

PROGRAMMING IN C++ (MATH21-755)

Time : 3 Hours]

[Maximum Marks : 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

Part A

1. (a) Differentiate between base class and derived class. 1.5
- (b) What is a function prototype ? 1.5
- (c) Differentiate between constants and variables. 1.5
- (d) What is a parameterized constructor ? 1.5
- (e) What is multiple inheritance ? 1.5
- (f) What is a pointer in C++ ? 1.5

- (g) Write the output of : 1.5
`int x = 10;`
`cout << x++ << " " << ++x;`
- (h) What are advantages of file handling in C++ ? 1.5
- (i) What is a null pointer ? 1.5
- (j) Write the output of the following code : 1.5
`int x = 2 + 3 * 4;`
`cout << x;`

Part B

2. (a) What is function overloading ? Explain it with the help of a suitable example. 10
 (b) Write a program to check whether a number is even or odd. 5
3. (a) Explain the basic concepts of Object-Oriented Programming. 5
 (b) What is constructor overloading ? Explain the difference between constructor and destructor. 10
4. Explain the concept of inheritance. Design a class Employee with basic details and derive a class Manager with additional attributes. Display all details. 15

5. (a) Write a program to demonstrate friend function. 7
 (b) Explain operator precedence with an example. 8
6. (a) Write a program using pointer to a derived class and demonstrate the concept of function overriding using virtual functions. 10
 (b) Explain how to open and close a file in C++. 5
7. Write short notes on any *three* of the following :
 (i) Type Conversion
 (ii) Inline Functions
 (iii) Copy Constructors
 (iv) Sequential Files. 15

