

Roll No.

Total Pages : 03

753205

May 2026

**M. Sc. (Maths) (Second Semester)
Programming in C++ (MTP-110-V)**

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.

1. (a) What is use of new operator ? **1.5**
- (b) What is difference between structure of C and C++ program ? **1.5**
- (c) What is a Copy Constructor ? When is it called automatically ? **1.5**
- (d) Is there any difference between abstract class and virtual class ? Justify. **1.5**
- (e) What are identifiers ? **1.5**
- (f) What are different types of polymorphism ? **1.5**

- (g) What is difference between function hiding, function overloading and function overriding ? **1.5**
- (h) What are the situations where inline function does not work ? **1.5**
- (i) What are rules of defining default arguments ? **1.5**
- (j) Discuss the difference between ifstream, ofstream and fstream. **1.5**

Part B

- 2. (a) Write the program to multiply two matrix objects using class. **10**
- (b) Explain the role of destructors in memory management. **5**
- 3. (a) Differentiate between Friend Function and Virtual Function. **5**
- (b) What is Inheritance ? Write the program to illustrate use of pointers to derived class. **10**
- 4. Write a C++ program to overload the binary operator (+) over two distance objects. Distance measured in km and meters. **15**

- 5. (a) What are different types of errors ? How these are handled ? **5**
- (b) What is difference between class and object ? Create array of employee objects, read and display its data using for loop. **10**
- 6. (a) Write a C++ program to read and write data of a student (name, roll number, marks) into a binary file using File Streams. **10**
- (b) Write the change in syntax when constructors are used inside base and child class with suitable programming example. **5**
- 7. (a) How the memory management of static members are achieved in C++ ? **10**
- (b) How encapsulation and abstraction support data hiding concept ? Discuss. **5**

