

# CBCS SCHEME

18MCA11

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## First Semester MCA Degree Examination, Dec.2019/Jan.2020 Object Oriented Programming with C++

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Explain the salient features of object – oriented programming languages. (07 Marks)
- b. Differentiate between procedure-oriented programming and object-oriented programming. (07 Marks)
- c. What are inline functions? Discuss the advantages of inline functions with example. (06 Marks)

OR

- 2 a. Write a C++ program to calculate the volume of different geometric shapes with the concept of function overloading. (06 Marks)
- b. Define default arguments. Demonstrate with an example program. (07 Marks)
- c. What are function templates? Explain with an example of Bubble sort program for integers and doubles. (07 Marks)

### Module-2

- 3 a. Define static data members and static member functions of a class. Explain with example program. (08 Marks)
- b. What are constructors and destructors? Explain different types of constructors with example program. (08 Marks)
- c. Explain the use of scope resolution operator. (04 Marks)

OR

- 4 a. Explain dynamic memory allocation operators. Demonstrate with an example program. (07 Marks)
- b. Illustrate how you can allocate objects dynamically with an example program. (08 Marks)
- c. Write a C++ program to swap two numbers using pointers. (05 Marks)

### Module-3

- 5 a. Write a C++ program to create a class called MATRIX using two dimensional array of integers. Implement the following operations by overloading the operators :
  - i) == operator to check the capability of two matrices
  - ii) + operator to perform addition of two matrices
  - iii) - operator to perform subtraction of two matrices.Note : If  $m1 == m2$  then  $m3 = m1 + m2$  and  $m4 = m1 - m2$  else display error message. (10 Marks)
- b. Demonstrate overloading of ++ and -- operators using friend function. (06 Marks)
- c. What are the restrictions for operator overloading. (04 Marks)

OR

- 6 a. Explain the base class access specifiers with example for each. (09 Marks)
- b. Explain how to pass parameters to base class constructors with example program. (05 Marks)
- c. Explain virtual base classes with example program. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written e.g.  $42+8=50$ , will be treated as malpractice.



**Module-4**

- 7 a. Define virtual functions. Demonstrate how to call virtual functions through base class. (10 Marks)  
b. What are abstract classes? Explain with example program. (07 Marks)  
c. Differentiate between early and late binding. (03 Marks)

**OR**

- 8 a. Explain formatting I/O using ios members. (07 Marks)  
b. Define extractors and inserters. Explain how to create. Your own extractors and inserters with example program. (10 Marks)  
c. Explain setting and clearing format flags. (03 Marks)

**Module-5**

- 9 a. Explain exception handling in C++. Write a C++ program to demonstrate multiple catch statements. (10 Marks)  
b. Explain how to restrict the exceptions and rethrow the exceptions with example program for each. (10 Marks)

**OR**

- 10 a. Define class templates. Explain with an example program of two generic data types. (07 Marks)  
b. Explain categories of containers in STL. (09 Marks)  
c. Write a short notes on vector class. (04 Marks)

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