

Total No. of Questions : 5]

SEAT No. :

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[6317]-202

S.Y. B.B.A. (Computer Application)

CA-402:OBJECT ORIENTED CONCEPTS THROUGH CPP
(2019 Pattern) (Semester - IV)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

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

Q1) Attempt any EIGHT of the following. (Out of Ten)

[8 × 2 = 16]

- a) What is Object Oriented Programming (OOP)?
- b) What are applications of C++?
- c) Define the scope resolution operator in C++.
- d) List the memory management operators in C++.
- e) Define inline functions.
- f) What are default arguments in C++?
- g) Define a class and an object in C++.
- h) List the access specifiers in C++.
- i) What is the scope resolution operator in C++?
- j) Define a destructor in C++ with its syntax.

Q2) Attempt any four of the following. (Out of Five)

[4 × 4 = 16]

- a) What are manipulators in C++? Give an example.
- b) Define reference variable in C++ and explain its use with an example.
- c) Define Constructor. Explain any of its type along with example.
- d) Define inheritance and its types in C++.
- e) Explain operator overloading in C++ with an example.

P.T.O.

Q3) Attempt any Four of the following. (Out of Five) [4 × 4 = 16]

- a) Explain the difference between a structure and a class in C++.
- b) Explain the use of a static data member and a static member function in C++ with an example.
- c) Write a C++ which define a class named Bank Account with two private data members balance and interestRate. Implement a friend class named Bank with a function named get Interest() that calculates and returns the interest on the bank account using the interest rate.
- d) Explain the concept of virtual base class in C++ with an example.
- e) Explain the concept of objects as a function argument in C++.

Q4) Attempt any four of the following: (out of Five) : [4 × 4 = 16]

- a) Write a C++ program to demonstrate function overloading using the following functions:
 - i) `int sum(int a, int b)`
 - ii) `float sum(float a, float b)`
 - iii) `int sum(int a, int b, int c)`
- b) Write a class template named 'Pair' that can store a pair of values of different data types. The class should have two private data members, 'first' and 'second', and a constructor that can initialize both data members. The class should also have public member functions to get and set the values of the data members.
- c) Write a C++ program to read data from a file named "input.txt" and write the data to a new file named "output.txt". The program should remove any blank lines from the input file.
- d) Create a class called "Shape" with a protected member variable "color". Add a public method called "getColor()" that returns the value of "color". Create two subclasses of "Shape" called "Rectangle" and "Circle". The "Rectangle" class should have private member variables for "width" and "height" and a public method called "getArea()" that returns the area of the rectangle. The "Circle" class should have a private member variable for "radius" and a public method called "getArea()" that returns the area of the circle. Override the "getColor()" method in both subclasses to return the color of the shape.

- e) Trace the output of the following program and explain it.

```
#include <iostream.h>

int add(int a, int b)
{
    return a + b;
}

float add(float a, int b)
{
    return a + b;
}

int main()
{
    int x=5,y= 10;
    float a = 3.5, b = 7.2;
    cout << "Sum of" <<x <<" and " <<y <<"is: " <<add(x, y) <<endl;
    cout << "Sum of" <<a <<" and " <<b << "is: " <<add(a, b) <<endl;
    return 0;
}
```

Q5) Write a short note on any two of the following:(Out of three): [2 × 3 = 6]

- a) Virtual functions
- b) Exception handling
- c) Friend Function

