

Code: AC55/AT55/ AC105/AT105

Subject: OBJECT ORIENTED PROGRAMMING WITH C++

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours

DECEMBER 2018

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- Can main() function be made private?
(A) Yes, always
(B) Yes, if program doesn't contain any classes
(C) No, because main function is user defined
(D) No, never
- What is the additional feature in classes that was not in structures?
(A) Data members
(B) Member functions
(C) Static data allowed
(D) Public access specifier
- If there is an abstract method in a class then,
(A) Class must be abstract class
(B) Class may or may not be abstract class
(C) Class is generic
(D) Class must be public
- Is it possible to have all the abstract classes as base classes of a derived class from those?
(A) Yes, always
(B) Yes, only if derived class implements all the methods
(C) No, because abstract classes doesn't have constructors
(D) No, never
- If class C inherits class B. And B has inherited class A. Then while creating the object of class C, what will be the sequence of constructors getting called?
(A) Constructor of C then B, finally of A
(B) Constructor of A then C, finally of B
(C) Constructor of C then A, finally B
(D) Constructor of A then B, finally C

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- f. How many types of inheritance can be used at a time in single program?
- (A) Any two types
 - (B) Any three types
 - (C) Any 4 types
 - (D) Any type, any number of times

- g. Which class/set of classes can illustrate polymorphism in the following code:

```
abstract class student
{
    public : int marks;
    calc_grade();
}
class topper:public student
{
    public : calc_grade()
    {
        return 10;
    }
};
class average:public student
{
    public : calc_grade()
    {
        return 20;
    }
};
class failed{ int marks; };
```

- (A) Only class student can show polymorphism
 - (B) Only class student and topper together can show polymorphism
 - (C) All class student, topper and average together can show polymorphism
 - (D) Class failed should also inherit class student for this code to work for Polymorphism
- h. Which is the universal exception handler class?
- (A) Object
 - (B) Math
 - (C) Errors
 - (D) Exceptions
- i. Which among the following is correct syntax to declare a 2D array using new operator?
- (A) char (*pchar)[10] = new char[][10];
 - (B) char (pchar) = new char[][10];
 - (C) char (*char) = new char[10][];
 - (D) char (*char)[][10]= new char;

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j. What is output of the following program?

```

class student
{
    public : int marks;
    void disp()
    {
        cout<<"its base class"
    };
    class topper:public student
    {
        public :
        void disp()
        {
            cout<<"Its derived class";
        }
    }
}
void main() {student s; topper t;
             s.disp();
             t.disp();
}

```

- (A) Its base class Its derived class
 (B) Its derived class Its base class
 (C) Both (A) and (B)
 (D) None of these

**Answer any FIVE Questions out of EIGHT Questions.
 Each question carries 16 marks.**

- Q.2** a. Differentiate between structure and class with example. (6)
- b. Write a C++ program that uses a function to print whether the given number is prime or not. (10)
- Q.3** a. Write difference between for, while and do while loop. Explain importance of each with the help of example. (8)
- b. Write a C++ program to find summation of two matrices using pointers. (8)
- Q.4** a. Define function overloading. Write a C++ program to define three overloaded functions to swap two integers, swap two floats and swap two doubles. (10)
- b. Explain return by value and return by reference with example. (6)

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- Q.5** a. List the characteristics of a constructor. Write a C++ program to define a suitable parameterized constructor with default values for the class distance with data members feet and inches. (8)
- b. Differentiate between public, private and protected. (8)
- Q.6** a. Write a C++ program to create a class called STRING and Implement the following operations. Display the result after every operation by overloading the operator <<.
i) STRING S1= 'VTU'
ii) STRING S2 = 'BELGAUM'
iii) STRING S3 = S1+S2 (Use copy constructor) (10)
- b. Write merits and demerits of operator overloading. (6)
- Q.7** a. Explain the visibility of base class members for the access specifiers: private, protected and public while creating the derived class and also explain the syntax for creating derived class. (8)
- b. Write a C++ program to illustrate multiple inheritance. (8)
- Q.8** a. Define exception handling. Explain the use of try, catch and throw for exception handling in C++. (8)
- b. Write short note on: (8)
i. Class Template
ii. Namespaces
- Q.9** a. Differentiate between early binding and late binding, with an example explain how late binding can be achieved in C++. (8)
- b. Explain the use of ifstream and ofstream classes for file input and output. (8)