

Code: AC55/AT55/ AC105/AT105

Subject: OBJECT ORIENTED PROGRAMMING WITH C++

## AMIETE – CS/IT (Current &amp; New Scheme)

Time: 3 Hours

**June 2019**

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)**

a. What happens when we try to compile the class definition in following code snippet?

```
Class Birds{ };
```

```
Class peacock; protected Birds{ };
```

(A) It will not compile because class body of Birds is not defined

(B) It will not compile because class body of peacock is not defined.

(C) It will not compile because a class cannot be protected inherited from other class.

(D) It will compile successfully

b. Which of the following statements is incorrect?

(A) Friend keyword can be used in the class to allow access to another class.

(B) Friend keyword can be used for a function in the public section of a class.

(C) Friend keyword can be used for a function in the private section of a class.

(D) Friend keyword can be used on *main()*.

c. Which of the following statement is correct regarding destructor of base class?

(A) Destructor of base class should always be static.

(B) Destructor of base class should always be virtual.

(C) Destructor of base class should not be virtual

(D) Destructor of base class should always be private.

d. Which of the following two entities (reading from Left to Right) can be connected by the dot operator?

(A) A class member and a class object.

(B) A class object and a class.

(C) A class and a member of that class.

(D) A class object and a member of that class.

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- e. How can we make a class abstract?
- (A) By making all member functions constant.
  - (B) By making at least one member function as pure virtual function.
  - (C) By declaring it abstract using the static keyword.
  - (D) By declaring it abstract using the virtual keyword.
- f. Which of the following statements is correct when a class is inherited publicly?
- (A) Public members of the base class become protected members of derived class.
  - (B) Public members of the base class become private members of derived class.
  - (C) Private members of the base class become protected members of derived class.
  - (D) Public members of the base class become public members of derived class.
- g. Which of the following statements is correct about the constructors and destructors?
- (A) Destructors can take arguments but constructors cannot.
  - (B) Constructors can take arguments but destructors cannot.
  - (C) Destructors can be overloaded but constructors cannot be overloaded
  - (D) Constructors and destructors can both return a value
- h. Which of the following statement is correct with respect to the use of friend keyword inside a class?
- (A) A private data member can be declared as a friend.
  - (B) A class may be declared as a friend.
  - (C) An object may be declared as a friend.
  - (D) We can use friend keyword as a class name.
- i. Which of the following keywords is used to control access to a class member?
- (A) Default
  - (B) Break
  - (C) Protected
  - (D) Asm
- j. Which of the following is the only technical difference between structures and classes in C++?
- (A) Member function and data are by default protected in structures but private in classes
  - (B) Member function and data are by default private in structures but public in classes.
  - (C) Member function and data are by default public in structures but private in classes.
  - (D) Member function and data are by default public in structures but protected in classes.

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

- Q.2**
- a. Why do we need the preprocessor directive `#include<iostream>`? (4)
  - b. Show and explain the flowchart for creating, compiling, linking and executing a C++ program. (6)
  - c. Write a program to set number of precision points. Display the results of  $22/7$  in different precision settings. (6)
- Q.3**
- a. Explain the use of switch case statement. (4)
  - b. What is transfer of control? Explain the control transfer keywords used in C++ (6)
  - c. Write a program to find the incentive to be offered to a salesman based on the sales of number of item/turnover. Use else if ladder. (6)
- Q.4**
- a. What is difference between call by value and call by reference ? Explain with the help of example. (6)
  - b. When is function defined as inline and why? (4)
  - c. Write a recursive function to calculate the following series for a given value of n  
$$\sum_{i=1}^n \left(\frac{1}{n!}\right)$$
 (6)
- Q.5**
- a. Describe the mechanism of accessing data members and member functions in the following cases:
    - (i) inside a member function of the same class.
    - (ii) inside a member function of another class. (4+4=8)
  - b. List some of the special properties of the constructor functions. What do you mean by dynamic initialization of objects? Why do we need to do this? (8)
- Q.6**
- a. What is the difference between overloading of binary operators and unary operators? (5)
  - b. How are friend functions used to carry out overloading of operators? In which situation are they helpful? (5)
  - c. Write a program to pass reference of object to operator function and change the contents of object. Use single object as source and destination object. (6)

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- Q.7** a. How are constructors and destructors executed in multilevel inheritance? (6)  
b. Describe how an object of a class that contains objects of other classes created? (5)  
c. What are the advantages and disadvantages of inheritance? (5)
- Q.8** a. What is generic programming? How is it implemented in C++? (5)  
b. Distinguish between overloaded functions and function templates. (6)  
c. Distinguish between the term class template and template class. (5)
- Q.9** a. What is STL? How is it different from the C++ standard Library? Why is it gaining importance among the programmers? (6)  
b. What is the major difference between a sequence container and an associative container? (6)  
c. What is an iterator? What are its characteristics? (4)