

AMIETE – CS/IT (NEW SCHEME) – Code: AC55/AT55**Subject: OBJECT ORIENTED PROGRAMMING WITH C++****Time: 3 Hours****Max. Marks: 100****JUNE 2009****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.**
- **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. In an object-oriented paradigm, objects are grouped into _____.
(A) object group (B) classes
(C) procedures (D) programs
- b. In the iostream C++ library, _____ is the standard input stream taking input from the keyboard.
(A) cin (B) scanf
(C) cout (D) cerr
- c. The sizeof() operator accepts _____ parameter.
(A) no (B) more than one
(C) size (D) one
- d. The _____ statement allows selection among multiple sections of code, depending on the value of an expression.
(A) if (B) break
(C) switch (D) for
- e. The _____ operator gives the address of the operand.
(A) ? (B) &
(C) ++ (D) *
- f. C++ supports _____.
(A) only call-by-value
(B) only call-by-reference
(C) both call-by-value and call-by-reference
(D) call-by-function
- g. The _____ operator destroys the object created with operator new.
(A) old (B) delete
(C) destroy (D) erase
- h. Multiple inheritance allows declaring a derived class or subclass that inherits properties from _____.
(A) only one super class (B) member function
(C) more than one base class (D) only one base class
- i. An abstract class contains at least one _____.
(A) abstract function (B) function

(C) virtual function

(D) pure virtual function

j. The typeid operator allows the type of an expression to be determined at _____.

(A) run-time

(B) compile-time

(C) random

(D) error-time

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

- Q.2** a. What is the difference between procedural programming paradigm and OOP paradigm? (6)
- b. What do you mean by lvalue? List atleast five operators of C++ and state whether they can be lvalue or not. (10)
- Q.3** a. What are the five methods for repeating an action in a C++ program? Write a C++ program to find the sum and average of the given numbers using the while loop. (10)
- b. What are nested structures? Define a nested structure Person having name, address and dateOfBirth as members. (6)
- Q.4** a. List the main characteristics of the following:
 (i) inline functions (ii) main function (8)
- b. Write both iterative version and recursive version of the C++ program to calculate and display Fibonacci numbers up to N. (8)
- Q.5** a. Define a constructor. Briefly explain the following types of constructors
 (i) default constructor
 (ii) copy constructor
 (iii) overloaded constructors (8)
- b. What are the advantages of operator new over malloc function? (4)
- c. What is the scope of an identifier? What is the output of the following C++ program segment? (4)
- ```
int a = 10;
{
 int a = 20;
 cout<<a<<endl;
 cout<<::a<<endl;
}
cout<<a;
```
- Q.6** a. Write a C++ program that has a class called POINT which stores coordinates in (x, y) form. Define constructor, destructor and overload '-' operator to calculate distance between two points. (10)
- b. What is a cast operator? Is it possible to have multiple cast operators in a class? Explain with the help of an example. (6)
- Q.7** a. What is inheritance? What are the benefits of using inheritance? (6)
- b. What is a virtual function? How is it different from pure virtual function? (4)

c. What is static binding and dynamic binding of functions? How is dynamic binding achieved in C++?

(6)

**Q.8** a. What are templates? How are they different from macros? Write a function template to swap two elements passed to it as arguments. (10)

b. What is an exception? What are the three language constructs that C++ provides to implement exception handling? Explain. (6)

**Q.9** a. What are streams in C++? What are the advantages of C++ I/O stream class library over C standard I/O library? (6)

b. What is a standard template library (STL)? Briefly explain sequence containers and associative containers. (10)