ROLL NO. _____

Code: AC55/AT55 Subject: OBJECT ORIENTED PROGRAMMING WITH C++

AMIETE – CS/IT

Time: 3 Hours **DECEMBER 2014** **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. A function that changes the state of the cout object is called a(n) _____.

(A) member **(B)** adjuster
(C) manipulator **(D)** operator

b. What is the validity of template parameters?

(A) inside that block only **(B)** inside the class
(C) whole program **(D)** none of these

c. A file pointer is

(A) A stream pointer **(B)** A buffer pointer
(C) A pointer to FILE data type **(D)** All of these

d. Virtual functions are not used during

(A) Runtime **(B)** Compile time
(C) Static time **(D)** All of these

e. Which of the following is the most preferable method of throwing and handling exceptions?

(A) Throw by value and catch by value
(B) Throw by value and catch by reference
(C) Throw the pointer value and provide catch for the pointer type
(D) Throw by reference and catch by reference

f. Which of the following operators cannot be overloaded in C++?

(A) * **(B)** = =
(C) + = **(D)** ::

g. The parameter list in function overloading must differ by?

(A) Number of functions **(B)** Function Size
(C) Function Name **(D)** Number of argument

h. A _____ allows to define a group of functions that look the same, except for the types of one or more of their arguments or objects.

(A) function prototype **(B)** function template
(C) member function **(D)** function declaration

i. If a class C is derived from class B, which is derived from class A, all through public inheritance, then a class member function can access

(A) First time method of a class is called, the constructor method is called
(B) Every time method of a class is called, the constructor method is called
(C) Every time an instance of a class is created, the constructor method is called
(D) None of these

j. If a class C is derived from class B, which derived from class A, all through public inheritance, then a class C member function can access

(A) protected and public data only in C and B
(B) protected and public data only in C
(C) private data in A and B
(D) protected data in A and B

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

Q.2 a. Differentiate between:
(i) C and C++ **(3)**
(ii) Insertion and Extraction operator **(2)**
(iii) Polymorphism and Abstraction **(2)**
(iv) Source File and Object File **(2)**
(v) Bitwise and Logical operator **(3)**

b. Explain the basic structure of C++ with an example. **(4)**

Q.3 a. With the help of example, explain for-loop. **(4)**

b. Write a program that will read the integer elements of two single-dimensional array in ascending order and merge them in the third array. **(8)**

c. How a structure is different from an array? **(4)**

Q.4 a. What is the difference between passing a parameter by reference and by value? **(4)**

b. What do you mean by default arguments? Illustrate with suitable examples. **(6)**

c. Explain inline function and the situations where inline expansion may not work and why? **(6)**

Q.5 a. Define a class Rectangle which has a length and a breadth. Define the constructors and the destructor and member functions to get the length and the breadth. Write a global function which creates an instance of the class Rectangle and computes the area using the member functions. **(8)**

b. Can a copy constructor accept an object of the same class as parameter, instead of reference of the object? **(3)**

c. Discuss the various situations when a copy constructor is automatically invoked. **(5)**

Q.6 a. Define rules for operator overloading. Write a program to overload the subscript operator '[ ]'. **(8)**

b. With the help of example, explain the different types of user-defined conversions. **(8)**

Q.7 a. Differentiate between: **(3×2)**
(i) Static and Dynamic
(ii) private and public inheritance

b. What is multiple inheritance? Discuss the syntax and rules of multiple inheritance in C++. How can you pass parameters to the constructors of base classes in multiple inheritance? Explain with suitable example. **(10)**

Q.8 a. How are template functions overloaded? Explain with a suitable example. **(8)**

b. What are the rules used for namespace? **(2)**

c. What are the various ways of handling exceptions? Which one is the best? Explain. **(6)**

Q.9 a. Describe the different modes in which files can be opened in C++. **(4)**

b. Define a class Car which has model and cost as data members. Write functions
(i) to read the model and cost of a car from the keyboard and store it a file CARS.
(ii) to read from the file CARS and display it on the screen. **(8)**

c. What is the output of the following program segment?

```
Float pi = 3.14167234; int i =1, j=2;
cout.fill('$'); cout.ios::precision(5); cout.ios::width(10);
cout<<i*j*pi<<'\n';
```

(4)