

AMIETE – CS/IT {NEW SCHEME}

Time: 3 Hours

JUNE 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. Can two classes contain member function with the same name?

- (A) NO
- (B) Yes, but only if the two classes have the same name
- (C) Yes, but only if the main program does not declare both kinds
- (D) Yes, this is always allowed

b. Reference to its own class can be accepted by

- (A) simple constructor
- (B) copy constructor
- (C) Both (A) and (B)
- (D) None of these

c. Consider the following statements:

```
int x=22, y=15;
```

```
x=(x<y)? (x+y):(x-y)
```

What will be the value of x after executing these statements

- (A) 22
- (B) 37
- (C) 7
- (D) Error cannot be executed

d. What is the purpose of the main method?

- (A) To build a user interfaces
- (B) To hold the APIs of the application
- (C) To create buttons and
- (D) To act as the entry point for the program

e. Reusability can be achieved through

- (A) inheritance
- (B) composition
- (C) association
- (D) reference

- f. Which is true for a reference in C++?
- (A) a reference can be passed to a function
 - (B) a reference can be return by a function
 - (C) an independent reference can be created
 - (D) All of these
- g. A value that is automatically passed to a function when no explicit argument is specified in the function call is called as
- (A) Call-by value
 - (B) Default argument
 - (C) Constant argument
 - (D) Virtual function
- h. Exception handling is targeted at
- (A) Run-time error
 - (B) Compile time error
 - (C) Logical error
 - (D) All of these
- i. You can have _____ “catch” associate with a single “try”
- (A) Only one
 - (B) More than one
 - (C) Two
 - (D) None of these
- j. The block of memory allocated by the new is released by using
- (A) delete
 - (B) realloc
 - (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. Describe the basic characteristics of Object-Oriented Programming. (6)
- b. What is the main advantage of passing arguments by reference? Explain this with an example. (4)
- c. What is the output of the following program? In view of these outputs, explain the meaning of pre/post increment & pre/post decrement operators. (6)
- ```
#include <iostream.h>
#include<conio.h>
void main()
{
int a=5,b=0;
clrscr();
b=b(++a);
cout<< "\n\nb =" <<b;
```

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```
b=b+(a++);
cout<< "\n\nb =" <<b;
```

```
b=b+(--a);
cout<< "\n\nb =" <<b;
```

```
b=b+(a--);
cout<< "\n\nb=" <<b;
getch();
}
```

- Q.3** a. Write a program that read the student name and marks in three subjects and display the total marks and percentage obtained by the student. The program should declare the student as a structure and read and write the elements accordingly. (8)
- b. Write a C++ program to generate the following series:  
1 2 3 5 8 13 21 34..... (8)
- Q.4** a. Explain inline function in C++ using a suitable example. State various situations where inline expansion may not work. (8)
- b. Explain meaning of a reference and call by reference method. Write a C++ program that swap two numbers using call by reference. (8)
- Q.5** a. Write a C++ program that implement the following specifications:  
A class that represent bank account number, type of accounts (s for savings and c for current), balance amount.  
The class contains member functions to do the following:  
(i) To initialize the data member  
(ii) To deposit money  
(iii) To withdraw money after checking balance (minimum balance is Rs. 1000/-)  
(iv) To display the data members (12)
- b. Why is a destructor function required in class? Can a destructor accept argument? (4)
- Q.6** a. What do you mean by operator overloading? What is the difference between implementation of overloading unary and binary operators using member and friend functions? (8)
- b. Illustrate with an example the overloading of ++ operator for incrementing. (8)
- Q.7** a. What is polymorphism? Differentiate between compile-time and run-time polymorphism using suitable examples. (8)

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- b. Is it possible for a derived class to inherit two or more base classes? Explain how it is implemented in C++ using an example program and its output. (8)
- Q.8** a. What is a class template? Write a template-based complete program for adding two objects of the vector class. (8)
- b. How is an exception handled in C++? Write a program that illustrates the application of multiple catch statements. (8)
- Q.9** a. Using a suitable C++ program, illustrate the meaning of following ios function: width(), fill() and precision(). (10)
- b. Briefly explain the three foundational items of the standard template library(STL):  
*containers, algorithms and iterators* (6)