ROLL NO. _____

Code: DE70/DC56 Subject: OBJECT ORIENTED PROGRAMMING WITH C++

DIPIETE – ET/CS

Time: 3 Hours **JUNE 2013** **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. The use of the break statement in a switch statement is

(A) optional
(B) compulsory
(C) not allowed, It gives an error message
(D) to check an error

b. A C++ program contains a function with the header int function(double d, char c). Which of the following function headers could be used within the same program?

(A) char function(double d, char c) **(B)** int function(int d, char c)
(C) both **(A)** and **(B)** **(D)** neither **(A)** nor **(B)**

c. Using the wardrobe structure within the ShopList structure is an example of a good programming principle, known as _____

(A) reusability **(B)** polymorphism
(C) redundancy **(D)** recursion

d. Header files often have the file extension _____

(A) .h **(B)** .he
(C) .hea **(D)** .head

e. The step-by-step instructions that solve a problem are called _____

(A) an algorithm **(B)** a list
(C) a plan **(D)** a sequential structure

f. When you pass a variable _____, C++ passes only the contents of the variable to the receiving function

(A) by reference **(B)** by value
(C) globally **(D)** locally

g. What does C++ append to the end of a string literal constant?

(A) a space **(B)** a number sign (#)
(C) an asterisk (*) **(D)** a null character

h. An array name is a _____

(A) subscript **(B)** formal parameter
(C) memory address **(D)** prototype

i. To use an input or output file, the program must include the _____ header file

(A) filestream.h **(B)** fstream.h
(C) instream.h **(D)** inoutstream.h

j. The _____ mode tells C++ to open a file for input

(A) add::ios **(B)** in::file
(C) ios::app **(D)** ios::in

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

Q.2 a. What do you mean by scope of variable? How variables can be initialized? Explain with example. **(6)**

b. What are the two types of comments that can be added to a C++ program? **(4)**

c. Write a program that reads the name of the user and prints a greeting message to the user. For example, if the name entered by the user is 'Ram', then program should print
Hello Ram ! **(6)**

Q.3 a. Differentiate classes and structures with examples and write code segment for both. **(6)**

b. In C++ it is not possible to pass a complete block of memory by value as a parameter to a function, but we are allowed to pass its address (using arrays). Justify with example. **(4)**

c. Which arithmetic operations can be performed on pointers? Explain with suitable examples. **(6)**

Q.4 a. Class can hold both data and functions? Explain your answer with suitable example. **(6)**

b. Write a program which invokes a function by value and explain it. **(6)**

c. Explain advantages of friend function in C++ programming. **(4)**

Q.5 a. What is operator overloading? Write a program to demonstrate the use of overloading of addition operator. **(8)**

b. What is the use of constructor? Write general syntax for constructor. **(4)**

c. What will be output of following program? **(4)**

```
#include <iostream>
using namespace std;
```

```
class IETE
{
private:
int a;
public:
IETE()
{ }
IETE(int w)
{
a=w;
}
IETE(IETE& e)
{
a=e.a;
cout << " Example of Copy Constructor";
}
void result()
{
cout<< a;
}
};
void main()
{
IETE e1(50);
IETE e3(e1);
cout<< "\ne3=";e3.result();
}
```

Q.6 a. What is inherited from the base class? Explain with an example. **(6)**

b. What is Inheritance? Write advantages of it. **(5)**

c. Write the output of the following program? **(5)**

```
#include <iostream>
using namespace std;
class IETE
{
public:
    IETE( ) { x=0; }
    void f(int n1)
    {
        x= n1*5;
    }
    void output(void) { cout << "\n" << "x=" << x; }
private:
    int x;
};
class sample: public IETE
{
public:
```

```
        sample( ) { s1=0; }
        void f1(int n1)
        {
             s1=n1*10;
        }
         void output(void)
        {
              IETE::output();
              cout << "\n" << "s1=" << s1;
        }
private:
      int s1;
};
int main(void)
{
        sample s;
        s.f(10);
        s.f1(20);
        s.output();
}
```

Q.7 a. What are virtual functions? Why virtual functions are needed? What are properties of virtual functions? Explain and write syntax for virtual function. **(8)**

b. Differentiate between static and dynamic polymorphism. **(4)**

c. Write a program showing use of exception handling. **(4)**

Q.8 a. With the help of an example, explain the function template and class template. **(10)**

b. Write the syntax for following and explain its uses—
(i) Template specialization (ii) Parameter values for templates **(6)**

Q.9 a. Write short note on **(3×3)**

(i) Standard input and output
(ii) File I/O
(iii) I/O Parameters

b. Explain random access file streams. Where are they required? **(7)**