

**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)