

**DIPIETE – ET/CS (NEW SCHEME)**

Time: 3 Hours

**JUNE 2012**

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. If you want to store a maximum of 15 characters in a String variable, you need to tell C++ to put aside \_\_\_\_\_ memory locations. (The 15 characters include the null character.)
- (A) 14 (B) 15  
(C) 16 (D) Either (A) or (B) will work
- b. The \_\_\_\_\_ mode tells C++ to open a file for input
- (A) add::ios (B) in::file  
(C) ios::app (D) ios::in
- c. To be called object-oriented, a programming language must allow
- (A) functions that return only a single value  
(B) #include files  
(C) inheritance  
(D) All of the above
- d. A function that returns no values to the program that calls is \_\_\_\_\_
- (A) not allowed in C++ (B) type void  
(C) type empty (D) type barren
- e. If container classes are carefully constructed, then these tools are available to work with structures that are not \_\_\_\_\_
- (A) valid without container classes (B) programmer-defined  
(C) type-specific (D) public

- f. Which of the following statement is false?
- (A) A function is a block of code that performs a specific task
  - (B) Functions allows programmers to break large and complex problems into small and manageable tasks
  - (C) Functions allow programmers to use existing code to perform common tasks
  - (D) Functions can be called, or invoked, only once in a program
- g. When a child class function is called, the compiler looks first for a matching function name in the \_\_\_\_\_
- (A) class of the object using the function name
  - (B) immediate ancestor class
  - (C) base class
  - (D) descendant class
- h. A function that is called automatically each time an object is destroyed is a
- (A) constructor
  - (B) destructor
  - (C) destroyer
  - (D) terminator
- i. If you create an instantiation of a class template with an int, and then create a second instantiation with a double, then
- (A) you must precede each function call with the word int or double
  - (B) once a function is used as one type, it becomes unavailable for use with the other type
  - (C) there is no difference in the procedure to call a member function
  - (D) you cannot perform this operation in C++
- j. Sending a copy of data to a program module is called \_\_\_\_\_
- (A) passing a value
  - (B) making a reference
  - (C) recursion
  - (D) setting a condition

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

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- Q.2** a. Using simple program define structure of C++ program? Describe different component used in program. (8)
- b. Write short notes on any **TWO**:
- (i) Operators in C++
  - (ii) Object oriented programming
  - (iii) Identifiers (8)

**Q.3** a. What is an array? Explain with example which performs input-output operations on arrays. (10)

b. Write short notes on any **TWO**:

(i) Pointers

(ii) Structures

(iii) Two-dimensional array

(6)

**Q.4** a. Write a program which uses class, object and member functions to input two numbers add two numbers and display the result. Also write output of the same. (8)

b. What do you understand by member functions? Consider the following example and name the member function and write the output of it. (8)

```
#include <iostream>
using namespace std;
struct X {
    int a, b;
    int add();
};
int a = 10;
int X::add() {return a + b;}
int main() {
    int answer;
    X xobject;
    xobject.a = 1;
    xobject.b = 2;
    answer = xobject.add();
    cout << object.a << "+" << xobject.b << "=" << answer << endl;
}
```

**Q.5** a. Discuss operator overloading with the help of an example. Write the step for defining an overloaded operator. Write some examples of operator which cannot be overloaded. (8)

b. What is copy constructor? Write the output of the given program. (8)

```
#include <iostream>
using namespace std;
struct A {
    int i;
    A() : i(10) { }
};
struct B {
    int j;
    B() : j(20) {
        cout << "Constructor B(), j =" << j << endl;
    }
    B(B& arg) : j(arg.j) {
        cout << "Copy Constructor B(B&), j =" << j << endl;
    }
    B(const B&, int val = 30) : j(val) {
```

```
        cout << "Copy Constructor B(const B&, int), j =" << j << endl;
    }
};
struct C {
    C() { }
    C(C&) { }
};
int main() {
    A a;
    A a1(a);
    B b;
    const B b_const;
    B b1(b);
    B b2(b_const);
    const C c_const;
    // C c1(c_const);
}
```

- Q.6** a. What do you mean by inheritance? What are the different kinds of inheritance supported by C++? Discuss with the help of an example. (10)
- b. What do you mean by multiple inheritance? Explain with example. (6)
- Q.7** a. Explain polymorphism or function overloading with the help of a suitable example. (8)
- b. With the help of a suitable example explain exception handling. (8)
- Q.8** a. What is template? Explain function and class templates with example. (12)
- b. What are structures in User-define Data types? Explain. (4)
- Q.9** a. With a suitable example explain File I/O classes and Functions in C++. (10)
- b. Write short notes on
- (i) Streams
  - (ii) Random Access Files (6)