

DiplETE – ET/CS (Current & New Scheme)

Time: 3 Hours

JUNE 2017

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. Operator overloading concept implements
- (A) Inheritance (B) Polymorphism
(C) Both (A) & (B) (D) None of these
- b. Which of the following is not a valid file extension of C++ program source code?
- (A) .cpp (B) .c
(C) .rh (D) .he
- c. Which of the following can be passed as parameter to a function?
- (A) Object (B) Function
(C) Structure (D) All of these
- d. How many constructors can a class have?
- (A) 0 (B) 1
(C) 2 (D) any number
- e. The operator that cannot be overloaded is
- (A) ++ (B) ::
(C) () (D) ~
- f. Which of the following statement is false?
- (A) A function can be defined in the body of another function.
(B) A *while* loop can be nested in a *for* loop.
(C) An *if* statement can be written in a *do-while* loop.
(D) A *switch* statement can be written in a function.

- g. Identify the correct statement for the code segment given below:
class B : protected A { ... }
- (A) All the private, public and protected members of A become protected members of B.
(B) All the public and protected members of A become private members of B.
(C) All the public and protected members of A become public members of B.
(D) All the public and protected members of A become protected members of B
- h. When a class uses dynamic memory, what member functions should be provided by the class?
(A) An overloaded assignment operator (B) The copy constructor
(C) A destructor (D) All of these
- i. What is “num [4]” in these two expressions?
(i) int num[4] ; (ii) num[4] = 5 ;
(A) First is particular element, second is type
(B) First is size, second is particular element
(C) First is particular element, second is array size
(D) Both specify array elements
- j. _____ feature in OOP allows reusing code.
(A) Polymorphism (B) Inheritance
(C) Encapsulation (D) Data hiding

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

- Q.2** a. Define Object-oriented programming. List and explain various features of Object-oriented programming paradigm. (8)
b. What are the applications of void data type in C++? Write a C++ program that illustrates the concept. (8)
- Q.3** a. Write a C++ program to check if two strings are equal or not. (8)
b. What are structures in C++? How does a structure differ from an array? Explain. (8)
- Q.4** a. Write a class called “Student” with data members (char name, int rollnumber, int marks). Write appropriate inline member functions to enter and access the student data. Write a member function to calculate the average marks for a student and print it on the console. (12)
b. Explain advantages of friend function in C++ programming. (4)

Code: DE70/DC56/ DE122/DC106

Subject: OBJECT ORIENTED PROGRAMMING WITH C++

- Q.5** a. Define a class *Complex* having a real part and an imaginary part. Include the following functions in the class:
- A constructor to initialize the values of the members to 0
 - A function to initialize the data members of the class
 - Overload + operator to add two complex numbers
 - A function to display a complex number
- (10)**
- b. What is a destructor? What rules are applied when a destructor is defined? **(6)**
- Q.6** a. What is base class? How is it relevant in multiple inheritances? Does a constructor/destructor also inherited from base class to its derived class? **(8)**
- b. What is a virtual base class? When do we make a class virtual? Illustrate with a suitable C++ program the concept of virtual class. **(8)**
- Q.7** a. What is an exception? Explain the mechanism of throwing and re-throwing exceptions. **(10)**
- b. Explain the term Polymorphism. In what situation Virtual destructors are used? **(6)**
- Q.8** a. What do you mean by template in C++? Briefly explain its various types. List various limitations of using a template. **(8)**
- b. Write the syntax for following and explain its uses—
- (i) Template specialization
 - (ii) Parameter values for templates
- (4×2)**
- Q.9** a. Write a program to display the contents of file on the screen. **(8)**
- b. Explain the following: **(3+3+2)**
- (i) ifstream
 - (ii) ofstream
 - (iii) fstream