

DIPIETE – ET/CS (NEW SCHEME) – Code: DE70 / DC56**Subject: OBJECT ORIENTED PROGRAMMING WITH C++****Time: 3 Hours****Max. Marks: 100****DECEMBER 2011****NOTE: There are 9 Questions in all.**

- Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.
- 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. Object-Oriented Technology's use of _____ facilitates the reuse of the code and architecture and its _____ feature provides systems with stability, as a small change in requirements does not require massive changes in the system:
- (A) Encapsulation; inheritance (B) Inheritance; polymorphism
(C) Inheritance; encapsulation (D) Polymorphism; abstraction
- b. Which one of the following will read a character from the keyboard and will store it in the variable c?
- (A) `c = getc();` (B) `getc(&c);`
(C) `c=getchar();` (D) `getchar(&c);`
- c. How constructor differs from destructor?
- (A) Constructors can be overloaded but destructors can't be overloaded
(B) Constructors can take arguments but destructor can't
(C) There is no difference
(D) Both (A) and (B)
- d. 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 options

- e. In C++ operator >> is called as
- (A) An extraction operator or get from operator
 - (B) An insertion operator or put to operator
 - (C) An extraction operator or put to operator
 - (D) None of the above
- f. What is the difference between a declaration and a definition of a variable?
- (A) Both can occur multiple times but declaration must occur first
 - (B) A definition occurs once, but a declaration may occur many times
 - (C) A declaration occurs once, but a definition may occur many times
 - (D) Both can occur multiple times but definition must occur first
- g. #define MAX_NUM 15
Referring to the sample above, what is MAX_NUM?
- (A) MAX_NUM is an integer variable
 - (B) MAX_NUM is a precompiler constant
 - (C) MAX_NUM is a preprocessor macro
 - (D) MAX_NUM is an integer constant
- h. If this is the only code in the source code file, what would be the output for the following program?
- ```
int main()
{
 cout << "RAR" << endl;
 return 0;
}
```
- (A) Execution time error
  - (B) Syntax error
  - (C) RAR
  - (D) None
- i. An exception is caused by
- (A) a hardware problem
  - (B) a problem in the operating system
  - (C) a syntax error
  - (D) a run time error
- j. Which one of the following variable names is NOT valid?
- (A) go\_cart
  - (B) go4it
  - (C) 4season
  - (D) \_what

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

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- Q.2** a. Distinguish between Procedure-oriented programming and Object-oriented Programming. (8)

- b. List at least four new operators added by C++ which aid OOP. (4)
- c. Write a C++ program that will ask for a temperature in Fahrenheit and display it in Celsius. (4)
- Q.3** a. Write a program that reads two 3x3 matrices and adds them. The program should also display the result as a 3x3 matrix. (8)
- b. Write a program that reads the student name and marks in three subjects and displays 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)
- Q.4** a. Declare a class to represent bank account of customers with the following data members: name of the depositor, account number, type of accounts (s for savings and c for current), balance amount. (4)
- b. The class also 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. (4)
- c. Write a program that implements the above specifications. (8)
- Q.5** a. Write a program to overload the unary minus operator using friend function. (8)
- b. When do we need constructors? What is a parameterized constructor? What are the advantages of using default arguments in constructors? (8)
- Q.6** a. Write short notes on the following with example or diagram.
- (i) Single Inheritance
  - (ii) Multilevel Inheritance
  - (iii) Multiple Inheritances
  - (iv) Hierarchical Inheritance (8)
- b. Is it possible that a function is friend of two different classes? If yes, then how it is implemented in C++? (8)
- Q.7** a. Write short notes on the following with example.
- (i) Virtual Functions
  - (ii) Pure Virtual Functions
  - (iii) Abstract Class (8)
- b. Differentiate between Early binding and Late binding. (4)
- c. What are the various keywords on which exception handling is built? Explain each one of them. Give an example. (4)

- Q.8**
- a. Write a template function to sort an array of elements. (6)
  - b. Differentiate between overloaded functions and function templates with example. (6)
  - c. When should you use template and when should you use Inheritance? (4)
- Q.9**
- a. Define the class **Student** which has name (char name[20]) and age(int). Define the default constructor, member functions **get\_data()** for taking the name and age of the Student, **print()** for displaying the data of Student. (5)
  - b. For the above defined class create an array of students of size N and write the friend function **sort(Student arr[N])** which sorts the array of Students according to their age. (6)
  - c. Create a file "STUDENT.DAT" for storing the above objects in sorted order. (5)