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BT–4/JX 8307

OBJECT ORIENTED PROGRAMMING USING C++

Paper—IT-252E

Time : Three Hours] [Maximum Marks : 100

Note :— Attempt **FIVE** questions in all, taking at least **ONE** from each unit.

UNIT—I

1. (a) What is Object Oriented Analysis and how it differs from traditional analysis process ? 6

   (b) What are preprocessor directives ? Explain any three with examples. 6

   (c) What is Polymorphism in C++ ? How this concept helps programmers ? Explain in detail with suitable examples. 8

2. (a) Declare a class "Bank Account" to represent a bank account. Include the following members :

   Data members : name of the depositor, account number, type of account and balance amount.

   Member functions : to assign initial values, to deposit an amount, to withdraw amount, to display name, account number and balance. Define the member functions. Use these member functions in the main program. 9

   (b) What are constructors ? What is their utility ? Discuss their special characteristics. 6

   (c) Briefly discuss the concept of container classes. 5

UNIT—II

3. (a) Create a class vector that contains an integer array as a data member. Overload >> and << operators to perform input and output operations for the objects of this class. (E.g. if v is an object of class vector then statements like cin >> v and cout <<v should work.). 14

(b) What is composition ? How it differs from inheritance ? Give and explain an example to make the difference clear. 6

4. A hospital keeps record of indoor patients getting treatment in its four major speciality departments : cardiovascular, chest, cancer and orthopedics. Declare a base class patient with name of its patient, address of patient and name of speciality with input and display functions and derive four classes namely cardio, chest, cancer and ortho. The derived classes add additional information, date of admission, date of discharge, expenditure incurred by a patient. Write a program for 4 patients each availing services of one of speciality. Display complete information about the patient.

(Also use appropriate constructors and destructors in your program). 20

UNIT—III

5. (a) Write a program to illustrate runtime polymorphism using virtual functions. 10

(b) What are pure virtual functions ? 5

(c) Briefly discuss some of the rules that one should observe while using virtual functions. 5

6. (a) Write a program in C++ to append the contents of one text file to another text file. 10

(b) What are file pointers ? Give their significance. 5

(c) What is the use of write ( ) function ? Briefly discuss its syntax. 5

UNIT—IV

7. (a) What is generic programming ? How is it implemented in C++ ? 6

(b) Distinguish between overloaded functions and function templates. 7

(c) Write a short note on template inheritance. 7

8. (a) Write and explain any program that illustrates rethrowing an exception. 10

(b) List the advantages of exception handling over conventional means of error processing. 5

(c) Briefly discuss stack unwinding. 5