

Set-1

OBJECT-ORIENTED PROGRAMMING USING C++

Full Marks : 70

Time : 3 hours

Answer six questions including Q. No. 1 which is compulsory

The figures in the right-hand margin indicate marks

1. Answer the following questions : 2 × 10

- (a) How are data and functions organized in an object-oriented program?
- (b) Why do we need the preprocessor directive `# include < iostream >`?
- (c) What is an abstract class?
- (d) What do you mean by dynamic initialization of objects? *using new operator*

(Turn Over)

(e) What are inline functions? Discuss its advantages and disadvantages.

(f) What are friend function and friend classes?

(g) How are constructors and destructors called explicitly?

(h) What is a parameterized constructor?

(i) How is an exception handled in C++?

(j) What is a C++ template?

2. (a) What is object-oriented programming? How is it different from procedure-oriented programming? Explain. 5

(b) Write a program in C++ to read five records of employee with the information name, gender, age, basic pay etc. and display after proper formatting in a tabular form. 5

3. (a) Write a program in C++ that defines a class

- called 'Box' with 3 double type variables height, width and length. Compute volume of the Box object using a function called 'volume' that takes just one argument. 5
input other two arguments
- (b) Explain constructors with arguments. How are arguments passed to constructors? 5
4. (a) What is the use of the keyword operator? Differentiate between operator overloading and function overloading. 5
- (b) Write a program to compute the area of a rectangle, triangle and a circle by overloading the area () function. 5
5. (a) What do you mean by polymorphism? Explain the role of virtual function in providing polymorphism? 5
and
- (b) What do you mean by public, protected and private attributes of a class? Why this distinction among attributes necessary? Explain your answer with suitable examples. 5
6. (a) What is pure virtual function? What happens when a derived class inherits a virtual function from a base class and then the derived class is used as a base for yet another derived class? Explain with a suitable example. 5
- (b) What do you mean by exception handling? Explain the mechanism of handling unexpected exceptions. 5
7. (a) What do you mean by function template? Discuss the concept of re-throwing of an exception. 5
- (b) Write a program to perform linear search in an array using template function. 5
8. (a) What are iterators? Differentiate between iterators and pointers. 5
(write) (define)
- (b) Explain the role of classes in software design. 5