

Time Allowed: 2:30 Hours

Note: Objective part is compulsory. Attempt any three questions from subjective part.

Objective Part (Compulsory)

(2*12)

- Q.1.** Write short answers of the following in 2-3 lines each on your answer sheet.
- ✓ Differentiate between function overloading and function overriding?
 - What is the purpose of information hiding?
 - ✓ Give example of exception catching.
 - ✓ Give example of any overloaded operator of string class.
 - ✓ How do you differentiate a class from an object?
 - ✓ Why do we use a friend function?
 - What happens in case a user does not provide a constructor?
 - Can sorting help in searching the elements of an array?
 - Can a constructor call another constructor using *this* keyword? Give example.
 - What are containers and iterators used for?
 - When do we need to allocate memory dynamically?
 - How many destructors can be defined in a class? Argue with reasoning.

Subjective Part (3*12)

- Q.2.** Create a class Rectangle with attributes(data members) length and width, each of which defaults value set to 1 by the help of constructor. Provide member functions that calculate the perimeter and the area of the rectangle. Also, provide set and get functions for the length and width attributes. Set function assigns value to length and width and get function prints these values. The set functions should verify that the length and width are each floating-point numbers larger than 0.0 and less than 20.0. (12)
- Q.3.** a) Write detailed note on Inheritance. Also clearly mention the relationship between base class and derived class. (8)
b) Differentiate between virtual functions and pure virtual functions. (4)
- Q.4.** a) Compare in detail the following access modifiers. (6)
i. Public
ii. Private
iii. Protected
b) Write a simple program that overloads the Unary prefix and postfix ++ and -- operators. (6)
- Q.5.** Create a *Distance* class with instance variable *feet* and *inches*. Write suitable parameterized constructor, getter and setter functions. Also write another function to add two objects of class distance in such a way that if resultant inches exceed 12, feet should be incremented by 1 and inches decremented by 12 by using the statement *dist3.add(dist1, dist2)*; where *dist1*, *dist2* and *dist3* are objects of class *Distance* and *add* is a user-defined function. (12)
- Q.6.** Define a class for a bank account that includes the following data members, (3*4)
Name of depositor, account number, type of account, balance amount in the account.
The class also contains the following member functions:
i. A constructor to assign initial default value.
ii. A constructor to assign values from the user.
iii. Deposit function to deposit some amount. It should display error message if deposited amount is less than or equal to 0, and not add that amount in balance amount.
iv. Withdraw function to withdraw amount from an account. It should display an error message if withdrawn amount is greater than balance amount in the account or if withdrawn amount is negative.