19BSIT29394

University of Sargodha

BS 2nd Semester/Term Examination 2020

Subject: BSSE/IT Paper: Object Oriented Programming (CMPC-102)

Time Allowed: 2:30 Hours **Maximum Marks: 60**

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

Objective Part (Compulsory)

Q.1. Write short answers of the following in 2-3 lines each on your answer sheet. (2*12)

i. Write purpose of copy constructor?
ii. How do you differentiate a class from an object?
iii. What is Polymorphism?
iv. Give example of exception handling.
v. Give example of any overloaded operator of string class.
vi. Can sorting help in searching array's elements?
vii. What happens in case a user does not provide a constructor?
viii. Discuss the relative merits of using protected access vs. using private access in base classes.
ix. What is the purpose of information hiding?
x. What do you mean by default member-wise assignment?
xi. Differentiate between sequence container and associative container.
xii. When do we need to allocate memory dynamically?

Subjective Part (3*12)

Q.2. 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.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. Create a *Distance* class with instance variable *feet* and *inches*. Write suitable parameterized constructor, getter and setter functions. Also write another function to subtract two objects of class distance in such a way that if resultant inches are less than 1, feet should be decremented by 1 and inches incremented by 12 by using the statement *dist3.sub(dist1, dist2)*; where dist1, dist2 and dist3 are objects of class *Distance* and *sub* is a user-defined function. (12)

Q .5. a) Give example of overloading a binary operator. (4)

b) Create an Address class that used House#, Street#, and name of a City as data members of the Address class. Create another class Person that defines Name as its data member and uses the above Address class's data members as its data members. Use constructors (both with and without parameters) to initialize the data members of Person class and display functions to display the objects of the Person class. (8)

Q.6. Define a class for a bank account that includes the following data members. (12)
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 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 that balance amount in the account or if withdrawn amount is negative.
