University of Sargodha

BS 2nd Term Examination 2016

Subject: Computer Science   **Paper: Object Oriented Programming (CMP:2124)**

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 questions in 2-3 lines only.   (12*2)

i.   Write a suitable 2-arg constructor for a class with 1st data member as int and 2nd is of type float?

ii.   What is Static function? Write only one use of Static function?

iii.   How protected access specifier is different form private?

iv.   Write two different statements where scope Resolution operator is used?

v.   What is difference b/w late binding & Early binding?

vi.   What is Exception? Why we use it?

vii.   What is difference b/w abstract & concrete class?

viii.   Define composition?

ix.   Write the syntax of a pure virtual function?

x.   Write the name of two basic features of OOP?

xi.   What is data abstraction?

xii.   Write a statement in which 2-arg Constructor of base class calls 1-arg constructor of derived class?

Subjective Part   (12*3)

Q # 2: Create a car class that uses registration no and color as its data members. Write any one suitable construtor of your choice (no-arg/2-arg), a function to accept values from user and another method to display values on monitor. Create two objects of the class and display their values on monitor. Accept values from the user for one object before displaying.

Q # 3: Write a program that declares a <u>Shape</u> as abstract class. There are two classes <u>Circle</u> and <u>Rectangle</u> that are derived from Shape class to calculate the area and perimeter of the relevant shapes(i.e. Circle and Rectangle). Also use the appropriate constructors (to initialize data members). Formulas used to calculate the area and perimeter are as follows.

Area of Circle $= \pi r^2$; Perimeter of Circle $= 2\pi r$

Area of rectangle $=$ length * width   ; Perimeter of Rectangle $= 2$(Length + Width)

Note: Implement the principle of polymorphism in Q # 3.

Q # 4. Create a Person class that includes name as its data member. Create another class Teacher that is derived from Person class and includes his grade (int type) and his salary (float type) as his data member. Write multiple constructors and display functions to create and display data of objects of teacher class.

Q # 5. Create a Distance class which has two data members feet and inches of type int and float respectively. Write the appropriate constructor and other member functions in order to add two objects by passing them as parameter to a function named <u>add</u> by using expression

d3 = d1.add(d2);

in the main function where d1, d2, d3 are the objects of Distance class.

Q # 6: Create an <u>Address</u> class that uses <u>House #</u> , <u>Street #</u> and <u>name of city</u> as data members of the Address class. Create another class Person that defines name as its data member and uses the above Address class as the data member of the Person class. Use suitable constructor to initialize the data members of Person class and display method to display the object of Person.