**Jaypee University of Engineering and Technology, Guna**

**Department of Computer Science and Engineering**

**Object Oriented Programming Lab (14B17CI271)**

**Lab Exercise-7**

**[Imp Note: All the programs must be written in C++ with distinguished variable names. If any kind of plagiarism is observed, the punctuality marks (10) will be awarded by zero.]**

1. Consider an example of declaring the examination result. Design three classes: Student, Exam, and Result. The Student class has data members representing roll number, name. Create the class Exam by inheriting Student class. The Exam class adds fields (data members) representing the marks scored in six subjects. Derive the Result from the Exam class, and it has its own fields such as total\_marks. Write an interactive program to model this relationship.
2. There is a class student, that stores name of school or university from which he is enrolled and name of highest degree he has obtained so far. It has the function to get and display the members. Design a class Employee with name and employee number. Derive Manager, Scientist and Laborer classes from Employee class. The manager class has extra attribute title (string type) and dues (float type). The scientist class has extra attributes number of publications. The Laborer class has nothing extra. The classes have necessary functions for set and display the information. The manager and scientist are students of a university also. Use inheritance. Test your program by creating objects of type manager, scientists and laborer.
3. Write a program with a mother class and a derived daughter class. Both of them should have a method void display () that prints a message (different for mother and daughter).In the main function declare an object of class daughter and call the display() method on it. Also suitably invoke the display() function of mother class using this object of class daughter.
4. An educational institution wishes to maintain a database of its employees. The database is divided into a number of classes whose hierarchical relationships are shown in Fig.1. The figure also shows the minimum information required for each class. Specify all the classes and define methods to create the database and retrieve individual information as and when required.

