COURSE CODE: 10B11CI614   MAX. MARKS: 25
COURSE NAME: Object-Oriented Systems and Programming
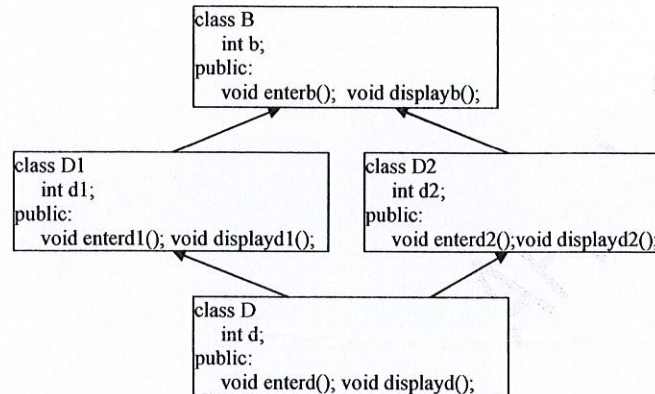COURSE CREDITS: 04   MAX. TIME: 1 HR 30 MIN

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. Implement the following class hierarchy using C++.   **[5 marks]**

2. Design a *SoccerPlayer* class that includes three integer fields: a *player's jersey number, number of goals*, and *number of assists*. Define the following function in the class:
   i.   Overload *extraction* and *insertion* operators for the class.
   ii. Include an *operator > ()* function for the class. One *SoccerPlayer* is considered greater than another if the sum of goals plus assists is greater.
   Create an array of 11 *SoccerPlayer*s, then use the greater than operator (>) to find the player who has the greatest total of goals plus assists.   **[5 marks]**

3. Create a class named ***Employee***. Data members include the *employee's identity, name*, and *salary*. The class has member functions as *enterData()* and *displayData()* to enter and display the details of an employee, respectively. Perform the following file handling operations for the above class:
   i.   Write multiple objects of this class into a file *"Emp.txt"*.
   ii. Count the number of objects written into the file.
   iii. Search and display the details of the employee based on his/her name.   **[5 marks]**

4. What is the difference between static and dynamic polymorphism? Illustrate with a suitable example (program).   **[4 marks]**

5. Differentiate between the following terms:
   i.   Virtual and pure virtual functions
   ii.   seekg() and seekp() pointers in file handling
   iii. Overloading of unary and binary operators.   **[6 marks]**