Fourth Semester B. E. (Computer Science and Engineering) Examination

OBJECT ORIENTED PROGRAMMING

Time : 3 Hours]   [Max. Marks : 60

Instructions to Candidates :—
   (1)   Assume suitable data wherever necessary.
   (2)   Solve any **Two** sub – questions, Q. **One,** Q. **Two**, Q. **Three**, Q. **Four.**
   (3)   Q. **Five**, Q. **Six** are compulsory.

1.   (a)   (i)   Explain access modifiers used in java. Draw the table showing the accessibility inside and outside the package.

           (ii)   What is object oriented programming ? How is it different from procedure oriented programming ?   3 + 2 (CO 1)

     (b)   How is object allocated memory ? Write a program to demonstrate constructor overloading.   5 (CO 1)

     (c)   Create a class Election which has an array to store list of candidate. Class contains a method vote with String parameter name. This method is called by main function with the candidate name which the voter has voted for. The method updates the vote count accordingly. The display method displays the result as candidate name and number votes he got. Write appropriate main( ) to show demonstration of all methods.   5 (CO 1)

2.   (a)   What is runtime polymorphism ? How is it used in java ? Explain with an example.   5 (CO 1)

     (b)   State true / false and justify :—

           (1)   If a method is marked as final, it means it cannot be overloaded by subclass.

           (2)   Base class members can access derived class members.

(3) If any class is declared as abstract, it is not necessary to declare the method as abstract.

(4) If a variable is declared in an interface, the value cannot be changed.

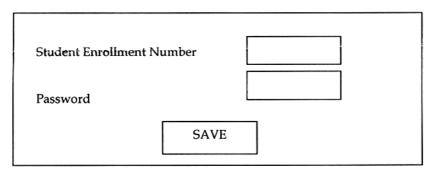(5) Static variables can be accessed without creating object.

5 (CO 1)

(c) In a school students are playing various games. There are different teams for different games. Some students play only football, some play only cricket. There is a group of students who play both football and cricket. Football team record information regarding NoOfGoals. Cricket team record information regarding matches won as one day team and test team. The students who play in both teams should store information for both the plays. Design code for above scenario. 5 (CO 1)

3. (a) Write a program to create an ArrayList of students. The student class contain name, marks of 3 subjects. Implement comparator on total marks to sort the array in descending order. 5 (CO 2)

(b) In a primary school age criteria for nursery is 3 years. The school is accepting forms online for nursery admissions. Write a user defined exception for wrong age entry. Consider the age is provided through a form. Also provide exception handling mechanism to handle the exception. 5 (CO 1)

(c) Discuss the need of generic class in jave. What is meant by wild card ? Explain with an example. 5 (CO 2)

4. (a) Design a program to count words and vowels in the file "File.txt" and display the count. Use character based reading and writing. 5 (CO 3)

(b) Demonstrate the use of following methods with respect to thread with proper example :—

(i) sleep( )

(ii) join( )

(iii) isAlive( )

(iv) wait( ) 5 (CO 3)

(c) Explain Serialization with an example. 5 (CO 3)

5. (a) Write a program to design the form below. The password text field should show '*' when user types the text. When save button is clicked the information should be saved to file.

```
┌─────────────────────────────────────────────────┐
│                                                 │
│   Student Enrollment Number    ┌───────────┐    │
│                                └───────────┘    │
│                                ┌───────────┐    │
│   Password                     └───────────┘    │
│                                                 │
│                          ┌─────────────┐        │
│                          │    SAVE     │        │
│                          └─────────────┘        │
│                                                 │
└─────────────────────────────────────────────────┘
```

10 (CO 3, CO 4)

6. (a) Explain servlet lifecycle with an example. 5 (CO 4)

(b) Consider a table Orders stored in database. It contains Item Name, Quantity and Rate. Write a program to fetch all the records from Orders, calculate total amount and display it. 5 (CO 4)