(3 Hours)   Total Marks : 80

N.B   1) Question **no. 1 is compulsory.**

      2) Attempt **any three from remaining** questions.

Q. 1   **a**   What role does "interface" play in multiple inheritance. Explain with example.   **[10]**
Demonstrate use of interface to achieve polymorphism with example.

     b   Differentiate between abstract class and interface   **[5]**

     c   Create a method size(Object z), that accepts a single refernce argument, z. If z   **[5]**
refers to "Rectangle" then size(z) returns its area, and if z is a refernce to a
"Cube" then size(z) returns its volume. If z refers to an object of any other class,
then size(z) returns -1.
(Hint: Use instanceof operator)

Q. 2   **a**   Explain different types of relationships among entities.   **[10]**
Define the relationships among the objects of given sentences:

         1)   Employee works on project.

         2)   Customer places order.

         3)   WebOrder, TelephoneOrder is a kind of order.

     b   What is the advantage of clause "finally"   **[10]**
List any 2 exceptions defined in Java. Explain use of try, catch and use of multiple
catch block .

Q. 3   **a**   Create class Student (roll number, name).   **[10]**
Class Test (mark1, mark2) inherit student class.
Create interface Sport with data member as sports_mark and method
set_sportMark().
Create class Result which extends Test and implements Sport and has a method
named calculate which finds total as (total=marks1+marks2+sports_mark) and
method which display all the details .
Create an object of Result class and show result.

b What is a class? How does it accomplish data hiding? What is the need of a constructor? **[10]**

Q. 4 **a** Explain access specifiers in JAVA. Can all methods of a class be private? **[10]**

b Which are the two different ways to create a thread? Write a multithreaded program to show inter-leaving of actions from 2 threads and display ABABABABABABAB **[5]**

c Write an applet program to display **[5]**
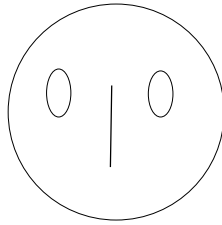
Q. 5 **a** Explain different features of JAVA. **[10]**

b Write a program to perform following operations on vector **[10]**

    1. To add city name to vector

    2. To remove city name from vector

    3. To display all city name

Q. 6 **a** Write a program to create a Package College with class Student and Marks **[10]**

Create class Student with data member as roll_num and Name. Accept the value from theuser in getdata() and display it in putdata()

Create class Marks that inherits Student with data member as marks (It is array accepting marks for 5 different subject). Accept the Marks in getdata() , Calculate the sum of marks display result of student in putdata() based on percentage (if > =90 display Merit if >=75 and <90 Distinction if >= 60 and <75 First class)

Create class Demo with Main function, create the object of the appropriate class and display the result for 2 different students.

b Explain System.arraycopy() method with example. **[5]**

c Differentiate between Array and Vector. **[5]**

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