GN-8708

(3 Hours)   [Total Marks: 100]

N.B.: **(1) Question No.1 is compulsory**
    (2) Attempt any four questions from the remaining
    (3) Make suitable assumptions if required and state them clearly

Q 1. a   Explain the significance of keywords 'public' , 'static' and ' void', in main method of a java

     application program.   05

   b.   Explain the structure of Java Virtual Machine.   5

   c.   Write a program to evaluate sum of following series: 10

    $1 + 1 / x + 1/ x^2 + 1/x^3 + ...+ 1/ x^n$

    Take value of x and n as non zero- positive integers from user.

Q. 2. a Write a program to replace all the occurrences of a particular character in a line of   10

    text, with a new character. Take the input line and the two characters as a user input.

    For example if the text line is : keep our city clean

    The character ' e' to be replaced with '#' then the output is: k##p our city cl#an

   b. Write an interactive program to create a Vector object and populate it with names of cities.

    Program should display and implement following menu choices: 10

        i)   Add city - if city name already exists in the Vector then program should display
            appropriate message
        ii)   Remove city – if city does not exist in Vector then program should display
            appropriate message
        iii) Display all- should display entire Vector content

Q. 3 . Assume a Bank maintains two kinds of accounts for its customers. One called savings account

    and the other current account. The savings account interest rate is 5% per year and for current

    account there is no interest. Saving account should hold a minimum balance but there is no

    restriction on current account. Create an abstract class called Account that stores customer

    name, account number . Derive savings and current account classes from the Account class

    and add specific attributes to each of the derived classes. Write an interactive program to

create specific type of account and it should allow following functionality:

      i.   Accept deposits and update balance
      ii.   Compute and deposit interest
      iii.   Permit withdrawal and update balance

Each of these functionality should be coded in appropriate classes   20

Q.4 a. What is Exception? Explain the exception handling in java with suitable examples   10

   b. Write a java applet to display a circle, a line and an arc inside the applet's visible area 10

Q.5. a. What are packages in java? With example show how to create a package in java and add

     classes to it.   10

  b. Each post-paid telephone connection object stores its telephone-number, customer-name and

    address. The telephone company wants to keeps a tab of how many post paid connections have

    been sold. Write a program to implement the above requirement and display total post-paid

    connections sold by the company.

    What additions will have to be made in post-paid telephone connection object to make the

    above possible?   10

Q.6 a. What is multithreading? Explain thread life cycle.   10

   b. The mains voltage supplied by a sub-station is measured at hourly interval for 72 hours.

    Write a program to display following: 10

      i.   The recorded voltage for 72 hours
      ii.   The hours (numbered 1 to 72) at which the recorded voltage varied from the
            mean by more than 10%.

Q. 7 Write notes on (any two)   20

    a. Concept of streams in java and stream classes

    b. Difference between Abstract class and Interface

    c. Applet Life Cycle