**COMPUTER APPLICATIONS**

**(Two Hours)**

Answers to this Paper must be written on the paper provided separately.

You will **not** be allowed to write during the first **15** minutes.

Attempt **all** questions from **Section A** and **any four** questions from **Section B.**

The intended marks for questions or parts of questions are given in bracket [ ]

**SECTION – A (40 Marks)**

**Question 1.**

(a) Mention any two attributes required for class declaration.      [2]

(b) State the difference between token and identifier.       [2]

(c)  Explain instance variable. Give an example.     [2]

(d)  What is inheritance and how is it useful in Java.       [2]

(e)  Explain any two types of access specifier.   [2]

**Question 2.**

(a)  What is meant by an infinite loop ? Give one example.   [2]

(b)  State the difference between = = operator and equals( ) method .     [2]

(c)  Differentiate between actual parameter and formal parameter.    [2]

(d)  What is the use of exception handling in Java.    [2]

(e)  Differentiate between base and derived class. [[2]

**Question 3**

**(**a)  Explain the function of each of the following with an example :   [2]

            (i)         break;

            (ii)        continue;

 (b) Convert the following segment into equivalence for loop.       [2]

                        {

                        int i, i=0;

                        while(i<=20)

                        System.out.print(i+” “);

                        l++;

                       }

(c)   If a = 5, b = 9 calculate the value of :         [2]

 a+ = a++-++b+a

 (d)   Give the output of the following expressions.   [2]

            (i)         If x = -9.99, calculate Math.abs(x);  
(ii)        If x = 9.0, calculate Math.sqrt(x);

 (e)  If,    String x = “Computer”;      [4]

        String y = “Applications”;

What do the following functions return for:

            (i)        System.out.println  (x.substring(1,5));

            (ii)        System out.println  (x.indexOf(x.charAt(4)));

            (iii)       System.out.println (y+x.substring(5)));

            (iv)        System.out.println (x.equals(y)));

(f)   If, array [ ] = {1,9,8,5,2};      [2]

            (i)         What is array length( )?

            (ii)        What is array [2]

 (g)  What does the following mean ?   [2]

 Employee stuff = new Employee( )

(h)  Write a Java statement to input / read the following from the user using the keyboard. [2]

(i)         Character         (ii)        String

**SECTION – B (60 Marks)**

Attempt any **four** questions from this Section.

**Question 4.**

Define a class E**mployee** having the following description :    [15]

**Instance variables  :**

int pan                           to store personal account number

String name                 to store name

double tax income      to store annual taxable income

double tax                    to store tax that is calculated

**Member functions :**

input ( )                       Store the pan number, name, taxable income

calc( )                          Calculate tax for an employee

display ( )                    Output details of an employee

Write a program to compute the tax according to the given conditions and display the output as per given format.

**Total Annual Taxable Income                 Tax Rate**

Upto Rs, 1,00,000                                             No tax

From 1,00,001 to 1,50,000                             10% of the income exceeding Rs. 1,00,000

From 1,50,001 to 2,50,000                             Rs. 5000 + 20% of the income exceeding Rs. 1,50,000

Above Rs. 2,50,000                                            Rs. 25,000 + 30% of the income exceeding Rs. 2,50,000

**Output :**

**Pan Number                  Name                                    Tax-income                 Tax**

**\_\_                                \_\_                                            \_\_                    \_\_**

**\_\_                                \_\_                                            \_\_                    \_\_**

**\_\_                                \_\_                                            \_\_                    \_\_**

**Question 5**

Write a program to input a string and print out the text with the uppercase and lowercase letters reversed, but all other characters should remain the same as before.   [15]

**Example :**

**INPUT**                    :           WelComE TO School

**OUTPUT**                   :           wELcOMe to sCHOOL

**Question 6**

Define a class and store the given city names in a single dimensional array. Sort these names in alphabetical order using the Bubble Sort technique only.   [15]

**INPUT**         :          Delhi,Bangalore,Agra, Mumbai,Calcutta

**OUTPUT** :          Agra,Bangalore,Calcutta,Delhi, Mumbai

**Question 7**

Write a menu driven class to accept a number from the user and check whether it is a palindrome or a Perfect number.  [15]

(a)        Palindrome number :

(a number is a Palindrome which when read in reverse order is same as read in the right order)

Example : 11, 101, 151 etc.

(b)        Perfect number :

(a number is called Perfect if it is equal to the sum of its factors other than the number itself)

Example : 6 = 1 + 2 + 3

**Question 8.**

Write a class with the name volume using function overloading that computes the volume of a cube, a sphere and a cuboid. [15]

**Formula :**

volume of a cube (vc) = s\*s\*s

volume of a sphere (vs) = 4/3 \* pi \* r \* r \* r

(where pi = 3.14 or 22/7)

Volume of a cuboid (vcd) = l \* b \* h

**Question 9**

Write a program to calculate and print the sum of each of the following series:       [15]

(a)        Sum (S)  = 2 – 4 + 6 – 8 + ………. -20

(b)        Sum (S) = x + x + x + x + ………….. + x

 2    5    8    11                           20

             (Value of x to be input by the user. )