2008

SECTION A (40 MARKS)

Attempt all questions

Question 1

(a) Mention any *two* attributes required for class declaration.

(b) State the difference between *token* and *identifier.*

(c) Explain *instance* variable. Give an example.

(d) What is *inheritance* and how is it useful in Java?

(e) Explain any two types of access specifier. [10]

Question 2

(a) What is meant by an *infinite* loop? Give an example.

(b) State the difference between = = *operator* and equals() *method.*

(c) Differentiate between *actual* parameter and *formal* parameter.

(d) What is the use of *exception handling* in Java?

(e) Differentiate between *base* and *derived* class. [10]

Question 3

(a) Explain the function of each of the following with an example:

(i) break;

(ii) continue; [4]

(b) Convert the following segment into equivalent *for* loop

```
{
int i,i=0;
while (i<=20)
System.out.print( i+"  ");
i++;
}
```
[2]

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

(d) Give the output of the following expressions,

(i) If *x* = -9.99, calculate Math.abs(x);

(ii) If *x* = 9.0, calculate Math.sqrt(x); [2]

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

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

(i) What is array.length()?

(ii) What is array[2]? [2]

(g) What does the following mean?
Employee staff = new Employee(); [2]

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

(i) Character

(ii) String [2]

2008

SECTION B (60 MARKS)

Attempt any four questions

Question 4

Define a class **employee** having the following description:

Data members/Instance Variables:

int pan	to store personal account number.
String name	to store name.
double taxincome	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 1,50,000
Above Rs.2,50,000	Rs. 25,000+30% of income exceeding 2,50,000.

Output:

Pan Number	Name	Tax-income	Tax
-	-	-	-

[15]

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.

Example: INPUT : WelComE TO School

OUTPUT : wELcOMe to sCHOOL [15]

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.

INPUT: Delhi, Bangalore, Agra, Mumbai, Calcutta

OUTPUT: Agra, Bangalore, Calcutta, Delhi, Mumbai [15]

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.

(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 [15]

Questions 8

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

Formula: volume of a cube (vc) = s*s*s

volume of a sphere (vs) = $4/3\ \pi\ r^3$ (where π = 3.14 or 22/7)

volume of a cuboid (vcd) = lbh [15]

Question 9

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

(a) Sum (S) = 2-4+6-8+ … -20

(b) Sum (S) = x/2 + x/5 + x/8+ x/11 + ….+ x/20

(Value of *x* to be input by the user.) [15]