

G. D. Somani Memorial School (ICSE), Mumbai-400005

Preliminary Exam

SUB : Computer Applications (Xth)

Marks : 100

Date : 23-01-2008

Time: 2 hrs.

SECTION A

(40 Marks)

[Attempt all Questions]

Question I

- A. Name the 2 types of Java Programs. [2]
- B. Name any two OOP's principles [2]
- C. What is the 'this' keyword in Java? Give an example. [2]
- D. State the difference between pure and impure functions. [2]
- E. State the difference between constructor and method. [2]

Question II

- A. Explain the term 'scope of a variable' through an example. [3]
- B. What is a package ? Give an example. [2]
- C. Explain the use of a ternary operator through an example. [3]
- D. What is the difference between (x = 9) and (x == 9) ? [2]

Question III

- A. Study the method given below and answer the questions that follow, alongwith its working.

```
int sample(int a, int b)
{
    // assume a and b both are > 0
    int ans, sm, la;
    if(a<b)
    {
        sm = a ; la = b;
    }
    else
    {
        sm = b ; la = a;
    }
    ans = la;
    while (ans % sm != 0)
        ans += la;
    return ans;
}
```

1. What will be the value returned on invoking sample(7,5) ? [2]
2. What will be the value returned on invoking sample(6,8) ? [2]

- B. Study the section of code given and answer the questions that follow: [4]

```
String x = "hello";
String y = "world";
1. System.out.println(x+y);
2. System.out.println(x.length( ));
3. System.out.println(y.charAt(3));
4. System.out.println(x.equals(y));
```

Contd....2

C. Differentiate between toLowerCase() and toUpperCase() methods. [2]

Question IV

A. What are the smallest and largest integer values for the primitive type int? [2]

B. What is the value of x after the evaluation of the expression [2]

$x += x++ + --x + 4$; if $x = 3$ before evaluation? [2]

C. What will be the result of (1/0.0)? [2]

D. Write the equivalent while loop for the loop : [2]
for(; ;) (s;) // where s represents some statements.

E. What will be the value returned by the following : [2]
System.out.println(5>9?true : false);

SECTION B

[Attempt any 4 questions]

Question V

Create a class Pattern with the methods to display the pattern shown where 'r' is the number of rows and 'b' represents a blank space [7]

methodA(int r)

```
{
    1
    1 b 1
    1 b 1 b 1
    1 b 1 b 1 b 1
    ..... and so on upto r
}
```

methodB(int r) [8]

```
{
    1
    1 b 2 b 1
    1 b 2 b 3 b 2 b 1
    ..... and so on upto r
}
```

Question VI

Create a class with two separate methods to calculate and return the summation of the series shown :

A. $\frac{1+2}{1 \times 2} + \frac{1+2+3}{1 \times 2 \times 3} + \dots + \frac{1+2+3+\dots+n}{1 \times 2 \times 3 \times \dots \times n}$ [8]

B. $1 + 4 + 9 + 16 + 25 + \dots$ upto n terms [7]

Question VII

Create a class Solid with an overloaded method vol() to compute the volume of

A. Cylinder (Formula : $2 p r h$) where $p = 3.14$ [4]

B. Cuboids (Formula : $2 (L \times B + B \times H + H \times L)$) [4]

C. Display the menu using switch case to output volume as per User's choice and invoke relevant methods. [7]

Contd....3

Question VIII

Create a class Array2D with the following features:

Instance variable: stud[][] // which stores the name and exam scores of each individual student [2]

Include a constructor to store the data in the instance. [2]

Methods : double studAvg(int r)
 // returns an individual student average [5]

void classAvg()
 // invokes studAvg() by passing the student position as parameter
 and calculates and displays the class average [6]

Question IX

Create a class to initialize a string through a constructor. [2]

Return the output in the format given below:

Sample Output :

Original String: All wars are born in mind

Alphabet count: 20

Vowel count: 7

Consonant count: 13

Also include the following methods:

- To return the total count of alphabets [4]
- To return the total count of vowels [4]
- To invoke the relevant methods and display the desired output [5]

Question X

Create a class WageArray with the following features:

Wages[] // member variable initialized using initializer list. [3]

Member Methods:

max() // to display the maximum wage [2]

min() // to display the minimum wage [2]

sum() // to display the total wages given out monthly [3]

selSort() // to sort Wages[] in descending order using selection sort [5]

END