

2007

SECTION A (40 MARKS)

Attempt all questions

Question 1.

- (a) Name two types of Java programs.
 (b) Define *Instance Variable*. Give an example of the same.
 (c) Differentiate between *Binary Search* and *Linear Search*.
 (d) Assign the value of pie (i.e. 3.142) to a variable with requisite data type.
 (e) Explain with an example the *if else if* construct.

[10]

Question 2.

- (a) Differentiate between *Formal Parameter* and *Actual Parameter*.
 (b) Why do we need a constructor as a class member?
 (c) Explain the term *type casting*.
 (d) Name the following:-
 (i) A package that is invoked by default.
 (ii) A keyword, to use the classes defined in a package.
 (e) Name the class that is used for mathematical functions. Give an example of a function.

[10]

Question 3.

- (a) State the difference between `=` and `==`.
 (b) Write an equivalent Java syntax for the following expression:-

$$a = \frac{0.05 - 2y^3}{x-y}$$

[2]

[2]

- (c) Rewrite the following using ternary operator.

```
if(income<=10000)
tax=0 ;
else
tax=12;
```

[2]

- (d) Write a statement for each of the following:-

- (i) Store a number 275 as a String
 (ii) Convert the string to a numeric value
 (iii) Add it to the existing total of 1000 to update the total.

[3]

- (e) (i) What is the role of the keyword *void* in declaring functions?
 (ii) If a function contains several return statements, how many of them will be executed?
 (iii) Which OOP principle implements function overloading?

[3]

- (f) What is the output of the following:-

```
(i) System.out.println ("four : " + 4 + 2);
    System.out.println (" four : "+(2+2));
(ii) String S1 = "Hi";
    String S2 = "Hi";
    String S3 = "there";
    String S4 = "HI";
    System.out.println(S1 + "equals" + S2 + "→" + S1.equals(S2));
    System.out.println(S1 + "equals" + S3 + "→" + S1.equals(S3));
    System.out.println(S1+ "equals" + S4 + "→" + S1.equals(S4));
    System.out.println(S1 + "equalsIgnoreCase"+S4+ "→" +S1.equalsIgnoreCase(S4));
```

[2]

[4]

- (g) Evaluate the following expressions,

if the values of the variables are a = 2, b = 3 and c=9.

- (i) $a - (b++) * (-c)$
 (ii) $a * (++b) \% c$

[2]

2007**SECTION B (60 MARKS)***Attempt any four questions***Question 4**Define a class **salary** described as below:-

Data Members: Name, Address, Phone, Subject Specialization, Monthly Salary, Income Tax.

Member methods:

- (i) To accept details of a teacher including the monthly salary.
- (ii) To display the details of the teacher.
- (iii) To compute annual Income Tax as 5% of the annual salary above Rs. 1,75,000/-

Write main method to create object of the class and call the member methods.

[15]

Question 5

Write a program to compute and display the sum of the following series:-

 $(1+2)/(1 \times 2) + (1+2+3)/(1 \times 2 \times 3) + (1+2+3+4 \dots n) / (1 \times 2 \times 3 \times 4 \dots n)$

[15]

Question 6

Write a program to initialize the given data in an array and find the minimum and maximum values along with the sum of the given elements.

Numbers: 2 5 4 1 3

Output: Minimum value : 1

Maximum value: 5

Sum of the elements: 15

[15]

Question 7

Write a program to enter a sentence from the keyboard and count the number of times a particular word occurs in it. Display the frequency of the search word.

Example:

INPUT:

Enter a sentence : the quick brown fox jumps over the lazy dog.

Enter a word to be searched : the

OUTPUT:

Searched word occurs : 2 times.

[15]

Question 8

Using a switch statement, write a menu driven program to convert a given temperature from Fahrenheit to Celsius and vice versa. For an incorrect choice, an appropriate error message should be displayed.

(HINT: $C = 5/9 \times (F - 32)$ and $F = 1.8 \times C + 32$)

[15]

Question 9

Write a program using a method Palin(), to check whether a string is a Palindrome or not. A Palindrome is a string that reads the same from left to right and vice versa. E.g. MADAM, ARORA, ABBA, etc.

[15]