

Group A (20 Marks)**[Test Time: 1 hr.]***Answer all the Questions in this group***Question 1.**

- I. Which of the following are primitive data types?
(a) double (b) String (c) char (d) Integer
- II. The keyword used to call package in the program:
(a) extends (b) export (c) import (d) package
- III. Write a method prototype name check() which takes an integer argument and returns a char:
(a) char check() (b) void check (int x) (c) check (int x) (d) char check (int x)
- IV. Predict the output of the following code snippet: String P = "20", Q = "22";
int a = Integer.parseInt(P);
int b = Integer.valueOf(Q);
System.out.println(a+""+b);

(a) 20 (b) 20 22 (c) 2220 (d) 22
- V. Missing a semicolon in a statement is what type of error?
(a) Logical (b) Syntax (c) Runtime (d) No error
- VI. What is a user-defined function in Java?

a) A function provided by the Java API
b) A function that a programmer writes according to their needs
c) A function that is built into the Java language
d) A function that only performs mathematical operations
- VII. Which of the following is true about a user-defined function in Java?
a) It must return an integer value
b) It can return any type of value, or no value at all
c) It cannot accept parameters
d) It is automatically called by the JVM

VIII. What is the correct way to declare a user-defined function that returns an integer value in Java?

- a) void myFunction() { }
- b) int myFunction() { return 0; }
- c) myFunction() int { return 0; }
- d) myFunction(int) { return 0; }

Java Arrays

IX. What is an array in Java?

- a) A single value stored in a variable
- b) A data structure that can store multiple values of different types
- c) A data structure that can store multiple values of the same type
- d) A built-in Java class for creating graphical interfaces

X. How do you declare an array of integers with 5 elements in Java?

- a) int array[5];
- b) int[] array = new int[5];
- c) int array = {5};
- d) int array = new int[5];

Question 2.

I. Convert the following if else if construct into switch case:

```
if (ch== 'c' || ch=='C')
    System.out . print("COMPUTER");
else if (ch== 'h' || ch=='H')
    System.out . print("HINDI");
else
    System.out . print("PHYSICAL EDUCATION");
```

II. Give the output of the following:

- (i) Math.pow (36,0.5) + Math.cbrt (125)
- (ii) Math.ceil (4.2) + Math.floor (7.9)

III. Evaluate the expression when the value of $x = 4$:

$x * --x + x++ + x$

IV. Give the output of the following program segment:

```
int n = 4279; int d;
while(n>0) {
    d=n%10;
    System.out.println(d);
    n=n/100;
};
```

V. Consider the given array and answer the questions given below:

```
int x[ ]={4,7,9,66,72,0,16};
```

(a) What is the length of the array?

(b) What is the value in $x[4]$?

Group B (30 Marks) [2 x 15]

*Must Attempt **Question 5** and any one of Question 3 or Question 4*

Question 3.

Design a class called **Overloads** to overload a method `number()` as follows:

(i) **void number (int num, int d)** - To count and display the frequency of a digit in a number.

Example:

num = 2565685

d = 5

Frequency of digit 5 = 3

(ii) **void number (int n1)** - To find and display the sum of even digits of a number.

Example:

n1 = 29865

Sum of even digits = 16 -

Also, Write a **main()** method to create an object and invoke the above methods.

Question 4.

Write a program to search for an integer value input by the user in the sorted list given below using **binary search technique**. If found display "Search Successful" and print the element, otherwise display "Search Unsuccessful"

```
int [] array = {31, 36, 45, 50, 60, 75, 86, 90};
```

```
int[] target = 90;
```

Question 5.

Write a Java User Defined methods for **bubble_sort()** and **linear_search()** that will take an integer array as input and perform the task accordingly. If found display "Search Successful" and print the element, otherwise display "Search Unsuccessful". Apply them in the main method for the array given below:

```
int[] numbers = {12, 34, 56, 7, 89, 10, 23, 45, 67};
```

```
int target = 23;
```

Also, Write the Output.