

2019
SECTION A (40 MARKS)
Attempt all questions

Question 1.

- (a) Name any two principles of Object-oriented Programming. [2]
 (b) Write a difference between unary and binary operator. [2]
 (c) Name the keyword which:
 (i) indicates that a method has no return type.
 (j) makes the variable as class variable [2]
 (k) Write memory capacity of **short** and **float** data type in bytes [2]
 (l) Identify and name the following tokens: [2]
 (i) public (ii) 'a'
 (iii) == (iv) { }

Question 2.

- (a) Differentiate between **if else if** and **switch case** statements. [2]
 (b) Give output of the following code:
 String P="20", Q="19";
 int a=Integer.parseInt(P);
 int b =Integer.parseInt(P);
 System.out.println(a+" "+b); [2]
 (c) What are the various types errors in Java? [2]
 (d) State the data type and value of **res** after the following is executed:
 char ch='9';
 res=Character.isDigit(ch); [2]
 (e) What is the difference between **linear search** and **binary search**? [2]

Question 3.

- (a) Write a Java expression for the following: [2]
 $|x^2+2xy|$
 (b) Write return type of the following functions:
 (i) startswith()
 (ii) random() [2]
 (c) If the **basic**=1500, what will be the value of tax after the following is executed?
 tax=basic>1200?200:100; [2]
 (d) Give the output of the following: and mention how many times the loop will execute.
 int i;
 for(i=5;i>=1;i--)
 {
 if(i%2==1)
 continue;
 System.out.print(i+" ");
 } [2]
 (e) State a difference between call by value and call by reference. [2]
 (f) Give the output of the following:
 Math.sqrt(Math.max(9,16)); [2]
 (g) Write the output of the following:
 String sa1="phoenix", s2="island";
 System.out.println(s1.substring(0).concat(s2.substring(2)));
 System.out.println(s2.toUpperCase()); [2]
 (h) Evaluate the following expression if the value of x=2,y=3 and z=1.:
 v=x+--z+y+++y [2]
 (i) String x[]= {"Artificial-intelligence", "IOT", "Machine learning", "Big data"};
 Give output of the following:
 System.out.println(x[3]);
 System.out.println(x.length); [2]
 (j) What is meant by a package? Give an example. [2]

2019**SECTION B (60 MARKS)***Attempt any four questions***Question 4.**Design a class **ShowRoom** with following description:

Instance variables/data members:

String name : To store the name of the customer
 long mobno : To store customer's mobile number
 double cost : To store cost of the items purchased
 double dis : To store discount
 double amount : To store amount to be paid after discount

Member methods:

ShowRoom - default constructor to initialize data members
 void input() - To input customer name, mobile number and cost.
 void calculate() - To calculate dicount on cost of purchased items based on following criteria:
 (extra amount to be added in the amount as follows)

Cost	Discount rate
Less than equal to Rs. 10000	5%
More than 10000 and less than equal to 20000	10%
More than 20000 and less than equal to 35000	15%
More than 35000	20%

void display() - To display customer name, mobile number, amount to be paid after discount

Write a main method also to create an object of the class and call the above member methods. [15]

Question 5.

Using switch statement write a menu driven program to do the following:

(a) To generate and print Letters from A to Z and their Unicode

Letters	Unicode
A	65
B	66
..	..
Z	90

b) Display the following pattern using iteration statement:

```

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

```

[15]

Question 6.

Write a program to input 15 integers in an array and sort them in ascending order using bubble sort. [15]

Question 7.

Design a class to overload a function series() as follows

(a) void series(int x,int n) – To display the sum of the series given below:

 $x1 + x2 + x3 + \dots xn$ terms

(b) void series(int p) – To display the following series:

0, 7, 26, 63 ... p terms

(c) void series() – To display sum of series:

 $1/2 + 1/3 + 1/4 \dots 1/10$

[15]

Question 8.

Write a program to input a sentence and convert it into uppercase and count and display the total number of words starting with letter 'A'.

Sample input: ADVANCEMENT AND APPLICATION OF INFORMATION TECHNOLOGY ARE EVER CHANGING

Sample output: Total number of words starting with letter 'A'= 4. [15]

Question 9.

A tech number has even number of digits. If the number is split in two equal halves, then square of sum of these halves is equal to the number itself. Write a program to generate and print all four digits tech numbers. Example: Consider the number 3025

Square of sum of the halves of 3025 = $(30+25)^2$

$$= (55)^2$$

$$= 3025 \text{ is a tech number}$$

[15]