

2018
SECTION A (40 MARKS)
Attempt all questions

Question 1.

- (a) Define abstraction. [2]
 (b) Differentiate between the searching and sorting. [2]
 (c) Write a difference between the functions `isUpperCase()` and `toUpperCase()`. [2]
 (d) How are private members of a class different from public members? [2]
 (e) Classify the following as primitive or non-primitive data types: [2]
 (i) `char` (ii) `arrays` (iii) `int` (iv) `classes`

Question 2.

- (a) (i) `int res = 'A'`; What is the value of **res**? [2]
 (ii) Name the package that contains wrapper classes. [2]
 (b) State the difference between **while** and **do while** loops. [2]
 (c) `System.out.print("BEST "); System.out.print("OF LUCK");`
 Choose the correct option for the output of the above statements
 (i) BEST OF LUCK [2]
 (ii) BEST OF LUCK [2]
 (d) Write the prototype of a function **check** which takes an integer argument and returns a character. [2]
 (e) Write the return data type of the following. [2]
 (i) `endsWith()` (ii) `log()`

Question 3.

- (a) Write a Java expression for the following: [2]

$$\frac{\sqrt{3x + x^2}}{a + b}$$
- (b) What is the value of `y` after evaluating the expression given below?
`y += ++y + y-- + --y`; when `int y = 8` [2]
- (c) Give the output of the following: [2]
 (i) `Math.floor(-4.7)` (ii) `Math.ceil(3.4) + Math.pow(2,3)`
- (d) Write two characteristics of a constructor. [2]
- (e) Write the output of the following: [2]
`System.out.println("Incredible"+"\n"+"India");`
- (f) Convert the following if else if construct into switch case [2]

```

If(var==1)
    System.out.println("good");
else if(var==2)
    System.out.println("better");
else if(var==3)
    System.out.println("best");
else
    System.out.println("Invalid");

```
- (g) Give the output of the following string functions: [2]
 (i) `"ACHIEVEMENT".replace('E','A')` (ii) `"DEDICATE".compareTo("DEVOTE")`
- (h) Consider the following String array and give the output [2]
`String arr[] = {"DELHI","CHENNAI","MUMBAI","LUCKNOW","JAIPUR"};`
`System.out.println(arr[0].length()>arr[3].length());`
`System.out.print(arr[4].substring(0,3));`
- (i) Rewrite the following using ternary operator: [2]

```

if(bill>10000)
    discount=bill*10.0/100;
else
    discount=bill*5.0/100;

```
- (j) Give the output of the following program segment and also mention how many times the loop is executed: [2]

```

int i;
for(i=5;i>10;i++)
    System.out.println(i);
System.out.println(i*4);

```

2018 SECTION B (60 MARKS)

Attempt any four questions

Question 4.

Design a class **RailwayTicket** with following description:

Instance variables/data members:

String name : To store the name of the customer
 String coach : To store the type of coach customer wants to travel
 long mobno : To store customer's mobile number
 int amt : To store basic amount of ticket
 int totalamt : To store the amount to be paid after updating the original amount

Member methods:

void accept() - To take input for name, coach, mobile number and amount.

void update() - To update the amount as per the coach selected
 (extra amount to be added in the amount as follows)

Types of Coaches	Amount
First_AC	700
Second_AC	500
Third_AC	250
Sleeper	None

void display() - To display all details of a customer such as name, coach, total amount and mobile number

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

[15]

Question 5.

Write a program to input a number and check and print whether it is a **Pronic** number or not. (Pronic number is the number which is the product of two consecutive integers)

Examples: 12=3x4

20=4x5

42=6x7

[15]

Question 6.

Write a program in Java to accept a string in lower case and change the first letter of every word to upper case. Display the new string.

Sample input: we are in cyber world.

Sample output: We Are In Cyber World

[15]

Question 7.

Design a class to overload a function volume() as follows:

(i) double volume(double R) – with radius(R) as an argument, returns the volume of sphere using the formula: $V = \frac{4}{3} \times \frac{22}{7} \times R^3$

(ii) double volume(double H, double R) – with height(H) and radius(R) as the arguments, returns the volume of a cylinder using the formula: $V = \frac{22}{7} \times R^2 \times H$

(iii) double volume(double L, double B, double H) – with length(L), breadth(B) and height(H) as the arguments, returns the volume of a cuboid using the formula: $V = L \times B \times H$

[15]

Question 8.

Write a menu driven program to display the pattern as per user's choice.

Pattern 1

ABCDE

ABCD

ABC

AB

A

Pattern 2

B

LL

UUU

EEEE

For an incorrect option, an appropriate error message should be displayed.

[15]

Question 9.

Write a program to accept name and total marks of **N** number of students in two single subscript array **name[]** and **totalmarks[]**.

Calculate and print:

(i) The average of the total marks obtained by N number of students.

[average = (sum of total marks of all the students)/N]

(ii) Deviation of each student's total marks with the average.

[deviation= total marks of a student – average]

[15]