PRE BOARD EXAMINATION
COMPUTER APPLICATIONS
(Theory)
(Two hours)

Answers to this paper must be written on the paper provided separately.

*You will **not** be allowed to write during the first 15 minutes.*

This time is to be spent in reading the question paper.

The time given at the head of this paper is the time allowed for writing the answers.

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*This paper is divided into **two** sections.*

*Answer all the questions in **Section A** and **any four** questions from **Section B**.*

The intended marks for questions or parts are given in [ ].

SECTION A [40 Marks]

*Attempt **all** questions from this section.*

Question 1

(a) What is the difference between an object and a class? [2]

(b) Define the term JVM. [2]

(c) State the difference between a Boolean literal and a character literal. [2]

(d) State a difference between instance methods and static methods. [2]

(e) Write two advantages of defining methods in a program. [2]

Question 2

(a) Why class is known as a user defined datatype? [2]

(b) Differentiate between private and protected visibility modifiers. [2]

(c) Explain the difference between break and continue. [2]

(d) State two differences between constructor and function. [2]

(e) Write two advantages of using array in a program. [2]

Question 3

(a) What will be the output of the following program segment?

(i)
```
int s = 0, i;
int[ ] x = {1, 3, 5, 7, 9};
{
for(i = 0; i < x length; i++);
s+ = x[i];
System.out.print("s:" + s);
```
[2]

(ii)
```
String a = "application";
int p = a.indexof('c');
```

```
System.out.println(p);
System.out.println(p + a);
```
[2]

(iii)
```
int a;
for(a = 10; a < 50; a++)
{
if(a = = 18)
break;
System.out.println(a);
}
```
[2]

(b) How many times will the given loop execute? What will be the value displayed?

```
int x = 2, y = 50;
do
{
    ++x;
    y– = x++;
}
    while (x <= 10);
    System.out.println(y);
```
[4]

(c) In the program given below, state the name and value of the :

method argument or argument variable

class variable(s)

local variable(s)

instance variable(s)

```
class myClass
{
static int x = 7;
int y = 2;
public static void main(String avgs[ ]
{  myClass obj = new myClass( );
System.out.println(x);
obj.sampleMethod(5);
int a = 6;
System.out.println(a);
}
void sampleMethod(int n) {
System.out.println(n);
System.out.println(y);
}
}
```
[4]

The rent for a mobike is charged on the following basis :

First five days ₹ 500 per day.

Next five days ₹ 400 per day.

Rest of the days ₹ 200 per day.

void display( ) : to display the details in the following format

Bike No. Phone No. No. of days Charge [15]

Question 5

Write a JAVA program to find the shortest and the longest word in a string. [15]

Question 6

Write a program to input 10 integers elements in an array and sort them in descending order

using the bubble sort technique. [15]

Question 7

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

i. double area (double a, double b, double c) with three double arguments and returns the area of a scalene triangle using the formula :

area = $\sqrt{s(s-a)(s-b)(s-c)}$ where s = (a + b + c) / 2

ii. double area (int a, int b, int height) with three integer arguments and returns the area of a trapezium using the formula :

area = ½ * height * (a + b)

iii. double area(double diagonal1, double diagonal2) with two double arguments and returns the area of a rhombus using the formula :

area = ½(diagonal1 * diagonal2) [15]

Question 8

Write a program to accept the year of graduation from school as an integer value from the user. Using the binary search technique on the sorted array of integers given below, output the message "Record exists" if the value input is located in the array. If not, output the message "Record does not exist". [15]

Question 9

Using the switch statement, write a menu driven program :

i. To check and display whether the number input by the user is a composite number or not (A number is said to be a composite, if it has one or more than one factors excluding 1 and the number itself).

eg. 4, 6, 8, 9, ...

ii. To find the smallest digit of an integer that is input

Sample input : 6524

Sample output : Smallest digit is 2 [15]

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