

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.

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

*Attempt all questions from **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) Write two features of Java. [2]
- (b) What do you mean by identifier? [2]
- (c) Differentiate between object and class. [2]
- (d) Why is main() function so special? [2]
- (e) Differentiate between empty loop and infinite loop. [2]

Question 2

- (a) Differentiate between an ordinary variable and an array variable. [2]
- (b) What do you mean by 'this' keyword? [2]
- (c) What do you mean by constructor? [2]
- (d) What is function prototype? [2]
- (e) What is function overloading? [2]

Question 3

- (a) Write Java expression for the following:- [2]
 - (i) $(\sqrt{a} + b^4) / ab$
 - (ii) $1.5 - 1.0e^5$
- (b) Evaluate the following :- [2]
 - (i) $3 * a++ + ++a * 4$ if $a = 2$
 - (ii) $a-- + ++a \% 4$ if $a = 5$

This paper consists of 4 printed pages.

(c) Give the output:- [2]

```
int n = 6, s = 0;
for(int j = 1 ; j < n; j++)
if(n % j == 0)
s += j;
System.out.println(s);
```

(d) Predict the output:- [2]

```
String s = "COMPUTER";
String s1 = "SCIENCE"
System.out.println(s1.concat(s));
System.out.println(s1.substring (5, 6) + s.substring (3, 5));
System.out.println(s.indexOf('E') + s1.indexOf('E'));
System.out.println(s1.replace('E', 'T'));
```

(e) Give the output:- [2]

```
int p[ ] = {11, 21, 31, 41, 51};
p[0] = 10;
p[3] = p[1];
int m = p[1] - p[0];
int n = p[3] + 22 + p[2]
System.out.println("The difference = " + m);
System.out.println("The sum =" + n);
```

(f) Give the output:- [2]

```
double a = -6.35 , b = 14.74;
System.out.println(Math.abs(Math.ceil(a)));
System.out.println(Math rint(Math.max(a, b)));
```

(g) Name the Java keywords:- [4]

- (i) Indicates that a method has no return type.
- (ii) Stores the address of the current calling object.
- (iii) informs that an error has occurred in an I/O operation.
- (iv) Distinguishes between instant variables and class variables.

(h) Which escape sequence represent the new line character and null character? [2]

SECTION B [60 Marks]

Attempt *any four* questions from this Section.

The answers in this Section should consist of the programs either Blue J environment or any program environment with Java as the base.

Each program should be written using variable descriptions/Mnemonic Codes so that the logic of the program is clearly depicted.

Flow charts and algorithms are not required.

Question 4

[15]

Define a class named movieMagic with the following description :

Instance variable / Data members :

int year : to store the year of release of the movie
String title : to store the title of the movie
float rating : to store the popularity rating of the movie
(minimum rating = 0.0 and maximum rating = 5.0)

Member Methods :

movieMagic() : Default constructor to initialize numeric data members to 0 and string data member to " "
void accept() : To input and store year, title and rating
void display() : To display the title of the movie and a message based on the rating as per the table below

Rating	Message to be displayed
0.0 to 2.0	Flop
2.1 to 3.4	Semi-Hit
3.5 to 4.5	Hit
4.6 to 5.0	Super Hit

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

Question 5

[15]

Write a program to display the sum of factors of all non-prime numbers from 11 to 90.

Question 6

[15]

Special words are those words which start and end with the same letter.

Eg. WINDOW , COMIC

Palindrome words are those words which read the same from left to right and vice-versa. Eg. MADAM , LEVEL

All palindromes are special words but all special words are not palindromes.

Write a program to accept a word. Print and display whether the word is palindrome or only special word.

Question 7

[15]

Write a program to print the second largest no. from a list of 10 nos. and print the no. as well as its position where it occurs.

Question 8

[15]

DOCOMO charges the call rate at 1.3 p/sec, for using SIM used in a cell phone from their consumers. However, the company offers different schemes for recharging the SIM as per the given tariff :

Amount of Recharging	Scheme
Upto ₹ 60	No bonus talk time
₹ 61 and upto ₹ 120	103 % talk time
₹ 121 and upto ₹ 200	105 % talk time
₹ 201 and upto ₹ 500	110 % talk time
More than ₹ 500	120 % talk time

Write a program in Java to display the amount received after recharging under the scheme. The program also displays the amount to be paid for a call by taking the duration as an input.

Question 9

[15]

Write a class with the name volume using function overloading that computes the volume of a cube, sphere and cuboid.

$$\text{Volume of a cube (vc)} = s * s * s$$

$$\text{Volume of a sphere (vs)} = \frac{4}{3} * \pi * r * r * r$$

$$\text{Volume of a cuboid (vcd)} = l * b * h$$
