I 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)   Define abstraction.   [2]

(b)   (i)   int res = 'A'. What is the value of res?   65   [1]

      (ii)   Name the package that contains wrapper classes.   java.lang   [1]

(c)   Write 2 characteristics of a constructor.   [2]

(d)   Define 'this' keyword.   [2]

(e)   What is Java character set called? Mention one of its feature.   [2]

Question 2

(a)   Explain temporary instance.   [2]

(b)   Differentiate between pure and impure function.   [2]

(c)   Mention any 2 elements required for class declaration.   [2]

(d)   Modulus operator is used under what circumstances.   [2]

(e)   Differentiate between call by value and call by reference.   [2]

Question 3

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

$$\sqrt{\frac{3x+x^2}{a+b}}$$

This paper consists of 4 printed pages.

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(b) Give the output of the following program 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);
```

(c) Define precedence of operators. [2]

(d) Differentiate between local var.s global variable. [2]

(e) Give the output:- [2]

```
int x[ ] = {4, 8, 9, 15};
int y[ ] = {16, 32, 84, 75, 56};
x = y;
System.out.println("x[1]=" + x[1]);
```

(f) Evaluate if int k = 8, m = 11, r = 7:- [2]

k+ = (− − m % s) * (m++ * (10 + r++))

(g) Explain the following:- [2]

(i) base type of an array

(ii) user defined data type

(h) Name the levels of visibility of data members of a class. [2]

(i) Give the output:- [4]

```
String a = "MALAYALAM";
System.out.println(a.indexOF(a.charAt(6)));
System.out.println(a.substring(2, 6));
System.out.println(a.replace('A', '*'));
System.out.println("MODEL".compareTO(MONEY"));
```

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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 Library with the following description :

Instance variable / Data members :

int acc_num	:	stores the accession number of the book
String title	:	stores the title of the book
String author	:	stores the name of the author

Member Methods :

void input( )	:	To input and store the accession number, title and author
void compute( )	:	To accept the number of days late, calculate and display the fine charged at the rate of ₹ 2 per day.
void display( )	:	To display the details in the following format :

Accession Number	Title	Author
—	—	—

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

Question 5
[15]

Write a program to input a string and convert it into uppercase and print the pair of vowels and number of pair of vowels occurring in the string.

Example : Input   :   "BEAUTIFUL BEAUTIES"

        Output   :   Pair of vowels : EA, AU, EA, AU, IE

                No. of pair of vowels :   5

Question 6
[15]

Write a program to input and store the weight of ten people. Sort and display them in descending order using the selection sort technique.

Eg. WINDOW , COMIC

3

Question 7

[15]

Write a menu driven program to find and display the sum of the series according to user's choice :-

(i) $s = \dfrac{x}{1} + \dfrac{x}{2} + \dfrac{x}{3} + \dfrac{x}{4} + \dfrac{x}{5} \ldots\ldots$ to n terms.

(ii) $s = 1 + (1 * 2) + (1 * 2 * 3) + \ldots\ldots + (1 * 2 * 3 * 4 \ldots\ldots * 20)$

Question 8

[15]

The Electricity Board charges from their consumers according to the units consumed per month. The amount to be paid as per the given tariff :

Units Consumed	Charges
Upto 100 units	₹ 5.50 per unit
for next 200 units	₹ 6.50 per unit
for next 300 units	₹ 7.50 per unit
more than 600 units	₹ 8.50 per unit

Write a program to input consumer's name, consumer number and the units consumed. The program displays the following information at the time receiving the money receipt as :-

        Money Receipt
Consumer Number   :
Consumer's Name   :
Units consumed   :
Amount to be paid :

Question 9

[15]

Design a class to overload a function compare( ) as follows :-

(i)   void compare(int, int)   :   to compare two integer values and print the greater of the two integers.

(ii) void compare(char, char)   :   to compare the numeric value of two characters and print with the higher numeric value.

(iii) void compare(string, string) :   to compare the length of the two strings and print the longer of the two.

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