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 of questions are given in brackets [ ].

SECTION A (40 Marks)

*Attempt **all** questions*

Question 1.

(a) Define Java byte code. [2]

(b) Write a difference between *class* and an *object*. [2]

(c) Name the following: [2]

(i) The keyword which converts variable into constant.

(ii) The method which terminates the entire program from any stage.

(d) Which of the following are primitive data types? [2]

(i) double

(ii) String

(iii) char

(iv) Integer

(e) What is an operator? Name any two types of operators used in Java. [2]

Question 2.

(a) What is autoboxing in Java? Give an example. [2]

(b) State the difference between length and length() in Java. [2]

(c) What is constructor overloading? [2]

(d) What is the use of *import* statement in Java? [2]

(e) What is an infinite loop? Give an example. [2]

Question 3.

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

$\sqrt{b^2 - 4ac}$

(b) Evaluate the following if the value of x=7, y=5 [2]

x+=x++ + x + ++y

(c) Write the output for the following: [2]

```
String s1 = "Life is Beautiful";
System.out.println ("Earth" + s1.substring(4));
System.out.println( s1.endsWith("L") );
```

(d) Write the output of the following statement: [2]

```
System.out.println("A picture is worth \t \"A thousand words.\" ");
```

(e) Give the output of the following program segment and mention how many times the loop will execute: [2]

```
int k;
for ( k = 5 ; k < = 20 ; k + = 7 )
if ( k% 6==0 )
continue;
System.out.println ( k );
```

(f) What is the data type returned by the following library methods? [2]

(i) isWhitespace()

(ii) compareToIgnoreCase()

(g) Rewrite the following program segment using logical operators: [2]

```
if ( x > 5 )
if ( x > y )
System.out.println (x+y);
```

(h) Convert the following **if else if** construct into **switch case**: [2]

```
 if (ch== 'c' || ch=='C')
System.out . print("COMPUTER");
else  if (ch== 'h' || ch=='H')
System.out . print("HINDI");
else
System.out . print("PHYSICAL EDUCATION");
```

(i) Give the output of the following: [2]

(i) Math.pow (36,0.5) + Math.cbrt (125)

(ii) Math.ceil (4.2) + Math.floor (7.9)

(j) Rewrite the following using **ternary** operator: [2]

```
if(n1>n2)
r = true;
else
r = false;
```

SECTION B (60 Marks)

Attempt ***any four*** questions from this Section.

The answers in this Section should consist of the ***Programs in 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.

A private Cab service company provides service within the city at the following rates: [15]

	AC CAR	**NON AC CAR**
UPTO 5 KM	₹ 150 /-	₹ 120 /-
BEYOND 5 KM	₹ 10/-PER KM	₹ 08/- PER KM

Design a class **CabService** with the following description:

Member variables /data members:

String car_type - To store the type of car (AC or NON AC)

double km - To store the kilometer travelled

double bill - To calculate and store the bill amount

Member methods :

CabService() - Default constructor to initialize data members. String data members to " " and double data members to 0.0.

void accept () - To accept car_type and km (using Scanner class only).

void calculate () - To calculate the bill as per the rules given above.

void display() - To display the bill as per the following format

CAR TYPE:

KILOMETER TRAVELLED:

TOTAL BILL:

Create an object of the class in the main method and invoke the member methods.

Question 5.

Write a program to search for an integer value input by the user in the sorted list given below using **binary** search technique. If found display "Search Successful" and print the element, otherwise display "Search Unsuccessful" [15]

{31, 36, 45, 50, 60, 75, 86, 90}

Question 6.

Write a program to input a **sentence** and convert it into uppercase and display each word in a separate line. [15]

Example: Input : India is my country

Output : INDIA

IS

MY

COUNTRY

Question 7.

Design a class to overload a method Number( ) as follows: [15]

(i) void Number (int num , int d) - To count and display the frequency of a digit in a number.

Example:

num = 2565685

d = 5

Frequency of digit 5 = 3

(ii) void Number (int n1) - To find and display the sum of even digits of a number.

Example:

n1 = 29865

Sum of even digits = 16

Write a main method to create an object and invoke the above methods.

Question 8.

Write a menu driven program to perform the following operations as per user's choice: [15]

(i) To print the value of $c=a^2+2ab$, where **a** varies from **1.0** to **20.0** with increment of **2.0** and **b=3.0** is a constant.

(ii) To display the following pattern using **for** loop:

A
AB
ABC
ABCD
ABCDE

Display proper message for an invalid choice.

Question 9.

Write a program to input and store integer elements in a double dimensional array of size **3 x 3** and find the **sum** of elements in the left diagonal. [15]

Example:

1	3	5
4	6	8
9	2	4

Output: Sum of the left diagonal elements = (1 + 6 +4) = 11