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)   Name any *four* tokens of Java.   [2]

(b)   Give the difference between actual parameter and formal parameter.   [2]

(c)   What is an identifier?   [2]

(d)   Write an expression in Java for $\cos x \ + \ \sqrt{a^2 + b^2}$.   [2]

(e)   What is the result produced by $2 - 10*3 + 100/11$?   Show the steps.   [2]

Question 2

(a)   What is the difference between *local* variable and *instance* variable?   [2]

(b)   int x =20, y = 10, z;

   What is the value of z in

   z = ++x * (y − −) − y ?

   Show the steps.   [2]

(c)   What is the purpose of default in a switch?   [2]

(d)   Give the difference between *linear* search and *binary* search.   [2]

(e)   What will be the output of the following code?

float x = 7.87;

System.out.println(Math.ceil(x);

System.out.println(Math.floor(x);   [2]

Question 3

(a)   State the difference between *if-else if ladder* and *switch...case*.   [2]

(b)   Explain the concept of constructor overloading with an example.   [2]

(c)   What will be the output of the following program segments?

   (i)   String s = "application";

           int p = s.indexOf('a');

           System.out.println(p);

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

   (ii)   String st = "PROGRAM";

           System.out.println(st.indexOf(st.charAt(4)));   [2]

   (iii)   int a = 0;

           if(a>0 && a<20)

             a++;

             else a-- ;

             System.out.println(a);   [2]

   (iv)   int a= 5, b = 2,c;

           if (a>b || a ! = b)

           c = ++a+--b;

           System.out.print(c+ " "+a+ " "+b);   [2]

   (v)   int i = 1;

           while(i++<=1)

           {

           i++;

           System.out.print(i + " ");

           }

           System.out.print(i);   [2]

(d)   Differentiate between isUpperCase(char) and toUpperCase(char).   [2]

(e)   What is the difference between a constructor function and a member function of a class?   [2]

(f)   What is the difference between a static member function and a member function which is not static?   [2]

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** such that the logic of the program is clearly depicted.*

*Flow-Charts and Algorithms **are not required.***

Question 4

Define a class taximeter having the following description:

Data members/instance variables

int   taxino   - to store taxi number

String name - to store passenger's name

int km   - to store number of kilometres travelled

Member functions:

taximeter() -- constructor to initialize taxino to 0, name to " "and b to 0.

input() - to store taxino,name,km

calculate() - to calculate bill for a customer according to given conditions

kilometers travelled(km)	Rate/km
≤ 1 km	Rs 25
1 < km ≤ 6	Rs 10
6 < km ≤ 12	Rs 15
12 < km ≤ 18	Rs 20
>18 km	Rs 25

 display()- To display the details in the following format

Taxino	Name	Kilometres travelled	Bill amount
-	-	-	-

Create an object in the **main** method and call all the above methods in it.   [15]

Question 5

Write a menu driven program to find the sum of the following series depending on the user choosing 1 or 2

1.   S=1/4+1/8+1/12.........upto n terms
2.   S=1/1!-2/2!+3/3!.......upto n terms

where **!** stands for factorial of the number and the factorial value of a number is the product of all integers from 1 to that number, e.g. $5! = 1 \times 2 \times 3 \times 4 \times 5$.
(use switch-case).   [15]

Question 6

Write a program to accept a sentence and print only the first letter of each word of the sentence in capital letters separated by a full stop.

Example :
INPUT SENTENCE :   "This is a cat"
OUTPUT :   T.**I.A.**C.   [15]

Question 7

Write a program to create an array to store 10 integers and print the largest integer and the smallest integer in that array.   [15]

Question 8

Write a program to calculate the sum of all the prime numbers between the range of 1 and 100.   [15]

Question 9

Write a program to store 10 names in an array. Arrange these in alphabetical order by sorting. Print the sorted list. Take single word names, all in capital letters, e.g. SAMSON, AJAY, LUCY, etc.   [15]