**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.

1. Define Java byte code. [2]
2. Write a difference between *class* and an *object*. [2]
3. Name the following:
   1. The keyword which converts variable into constant.
   2. The method which terminates the entire program from any stage.

[2]

1. Which of the following are primitive data types?
   1. double
   2. String
   3. char
   4. Integer

[2]

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

# This Paper consists of 6 printed pages.

**T20 861 Turn Over**

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**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.**

1. Write a Java expression for the following:

√𝑏2 − 4𝑎𝑐

[2]

1. Evaluate the following if the value of x=7, y=5

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

[2]

1. Write the output for the following: String s1 = ''Life is Beautiful'';

System.out.println (''Earth'' + s1.substring(4)); System.out.println( s1.endsWith(''L'') );

[2]

1. Write the output of the following statement: System.out.println(''A picture is worth \t \''A thousand words.\'' '');

[2]

1. Give the output of the following program segment and mention how many times the loop will execute:

int k;

for ( k = 5 ; k < = 20 ; k + = 7 ) if ( k% 6==0 )

continue; System.out.println ( k );

[2]

1. What is the data type returned by the following library methods?
   1. isWhitespace()
   2. compareToIgnoreCase()

[2]

1. Rewrite the following program segment using logical operators: if ( x > 5 )

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

[2]

1. Convert the following **if else if** construct into **switch case**: 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'');

[2]

1. Give the output of the following:
   1. Math.pow (36,0.5) + Math.cbrt (125)
   2. Math.ceil (4.2 ) + Math.floor (7.9)

[2]

1. Rewrite the following using **ternary** operator: if(n1>n2)

r = true; else

r = false;

[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*** *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''

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

[15]

# Question 6.

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

Example: Input : India is my country Output : INDIA

IS MY

COUNTRY

[15]

# Question 7.

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

1. 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

1. 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.

[15]

# Question 8.

Write a menu driven program to perform the following operations as per user’s choice:

1. To print the value of c=a2+2ab, where **a** varies from **1.0** to **20.0** with increment of **2.0** and **b=3.0** is a constant.
2. To display the following pattern using **for** loop:

A AB ABC

ABCD ABCDE

Display proper message for an invalid choice.

[15]

# 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