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 Encapsulation. [2]

(b) What are keywords? Give an example. [2]

(c) Name any two library packages. [2]

(d) Name the type of error (syntax, runtime or logical error) in each case given below: [2]

(i) Math.sqrt (36 – 45)

(ii) int a;b;c;

(e) If int x [ ] = { 4, 3, 7, 8, 9, 10}; what are the values of **p** and **q?** [2]

(i) p = x.length

(ii) q= x[2] + x[5] * x[1]

Question 2.

(a) State the difference between == *operator* and *equals ( )* method . [2]

(b) What are the types of casting shown by the following examples: [2]

(i) char c = (char)120;

(ii) int x = 't';

(c) Differentiate between *formal* parameter and *actual* parameter. [2]

(d) Write a function prototype of the following : [2]

A function **PosChar** which takes a string argument and a character argument and returns an integer value.

(e) Name any two types of access specifiers. [2]

Question 3.

(a) Give the output of the following string functions : [2]

(i) "MISSISSIPPI".indexOf('S')+ "MISSISSIPPI".lastIndexOf('I')

(ii) "CABLE".compareTo("CADET")

(b) Give the output of the following Math functions : [2]

(i) Math.ceil(4.2)

(ii) Math.abs(-4)

(c) What is a parameterized constructor? [2]

(d) Write down java expression for : [2]

$\mathbf{T} = \sqrt{A^2 + B^2 + C^2}$

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

```
if (x%2 == 0)
System.out.print("EVEN");
else
System.out.print("ODD");
```

(f) Convert the following while loop to the corresponding for loop: [2]

```
int m = 5, n = 10;
while (n>=1)
{
    System.out.println(m*n);
    n-- ;
}
```

(g) Write one difference between primitive data types and composite data types [2]

(h) Analyze the given program segment and answer the following questions: [2]

(i) Write the output of the program segment

(ii) How many times does the body of the loop gets executed?

```
for (int m=5; m<=20;  m+=5)
{   if (m%3==0)
        break;
    else
    if (m%5==0)
    System.out.println(m);
        continue;
    }
```

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

a+= a++ + ++a + --a + a-- ; when a = 7

(j) Write the return type of the following library functions : [2]

(i) isLetterOrDigit(char)

(ii) replace(char, char)

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.

Define a class named **BookFair** with the following description : [15]

Instance variables /Data members :

String Bname - stores the name of the book

double price - stores the price of the book

Member methods :

(i) BookFair() - Default constructor to initialize data members

(ii) void Input() - To input and store the name and the price of the book.

(iii) void calculate() - To calculate the price after discount. Discount is calculated based on the following criteria

Price	**Discount**
Less than or equal to ₹1000	2% of price
More than ₹ 1000 and less than or equal to ₹ 3000	10% of price
More than ₹ 3000	15% of price

(iv) void display() - To display the name and price of the book after discount.

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

Question 5.

Using the switch statement , write a menu driven program for the following: [15]

(i) To print the Floyd's triangle [Given below]

1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

(ii) To display the following pattern

I

I C

I C S

I C S E

For an incorrect option, an appropriate error message should be displayed.

Question 6.

Special words are those words which starts and ends with the same letter. [15]

Examples :

EXISTENCE

COMIC

WINDOW

Palindrome words are those words which read the same from left to right and vice-versa

Examples :

MALAYALAM

MADAM

LEVEL

ROTATOR

CIVIC

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

Write a program to accept a word check and print whether the word is a *palindrome* or only *special word*.

Question 7.

Design a class to overload a function SumSeries() as follows : [15]

(i) void SumSeries(int n, double x) – with one integer argument and one double argument to find and display the sum of the series given below :

$$s = \frac{x}{1} - \frac{x}{2} + \frac{x}{3} - \frac{x}{4} + \frac{x}{5} \ldots\ldots\ldots \text{ to n terms}$$

(ii) void SumSeries() – To find and display the sum of the following series :

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

Question 8.

Write a program to accept a number and check and display whether it is a **Niven** number or not. [15]

(Niven number is that number which is divisible by its sum of digits).

Example :

Consider the number 126.

Sum of its digits is 1+2+6 = 9 and 126 is divisible by 9.

Question 9.

Write a program to initialize the seven Wonders of the World along with their locations in two different arrays. Search for a name of the country input by the user. If found, display the name of the country along with its Wonder, otherwise display "Sorry Not Found!". [15]

Seven wonders - CHICHEN ITZA, CHRIST THE REDEEMER, TAJMAHAL, GREAT WALL OF CHINA, MACHU PICCHU, PETRA, COLOSSEUM

Locations - MEXICO, BRAZIL, INDIA, CHINA, PERU, JORDAN, ITALY

Example - Country Name : INDIA Output : INDIA - TAJMAHAL

Country Name : USA Output : Sorry Not Found!