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) What is Data Hiding? [2]

(b) What is meant by private visibility of a method? [2]

(c) Find and correct the errors in the following program segment. [2]

```
int n[ ] = (2,4,6,8,10);
for(int i=0;i<=5;;i++)
System.out.println("n["+i+"] + n[i]);
```

(d) Explain the statement – "**Java is a Compiled and Interpreted Language**" [2]

(e) What is UNICODE? [2]

Question 2.

(a) Explain "**Write Once Run Anywhere (WORA)**" [2]

(b) Explain the Identifier Naming Rules. [2]

(c) What will be the result of the following two expressions if i=10 initially: [2]
(i) ++i<=0 (ii) i++<=10

(d) State the difference between Class Variable, Instance Variable and Local Variable. [2]

(e) What do you mean by an empty loop? Give example. [2]

Question 3.

(a) Explain the following terms : [2]
(1) "static" keyword (2) Escape Sequence

(b) Differentiate between Java Applications and Java Applets. [2]

(c) When two mathematical operations have the same precedence, how is the operation performed? [2]

(d) Can arrays be initialized before declaring them? Give example. [2]

(e) Give two rules to be followed while overloading a function. [2]

Question 4.

(a) State the output of the following program segment: [2]

```
int i=1;
int s[ ]={2,4,6,7,8,9,10};
while(i<s.length)
 {
       System.out.println(s[i]+1);
       if(i<s.length-3)
       s[i+1]++;
       i++;
 }
```

(b) What is an array? How is it different from a String? [3]

(c) What is the role of 'function signature' in a function declaration? [2]

(d) Write a valid Java statement for each of the following: [3]

(1) Store a number 800.00 as a String.

(2) Convert the String object '**add**' into lowercase form.

(3) Check the equality of two Strings and store the result into a variable '**res**'.

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 5.

Write a program in Java to print all the PALINDROME numbers in the range between m and n (both inclusive). The input contains two positive integers m and n, where m<n and m<3000 and n<3000.

[**Note:** A Palindrome number is a number whose reverse is equal to the original number.] [15]

Question 6.

Write a menu driven program to input a number (<=50) from the Decimal Number system and perform the following operations using switch-case:

(a) Convert it into its equivalent Binary number using the function **void binary(int)**

(b) Convert it into its equivalent Roman number using the function **void roman(int)** [15]

Question 7.

Write a Java program to input a sentence from the user and display the words which contain the alphabet 'A' in them in either Lowercase or Uppercase.

Sample Input : All is well that ends well.

Sample Ouptut : All
that [15]

Question 8.

A Credit card company allows a limit to spend ₹15000 to its clients. It also offers a cash back facility according the table shown below. Input the amount spent by the use and display the cash back amount he is entitled to. Use minimum number of conditions to solve the problem.

Amount (in ₹)	**Cash Back (in ₹)**
First 1000	100
Next 2000	200 + 2% of amount exceeding 1000
Next 4000	400 + 4% of amount exceeding 3000
Next 8000	800 + 8% of amount exceeding 8000

Write a program to declare the class '**Credit**' that takes in the name of the client and the amount spend by him. Calculate the cash back amount and print it along with all the other details.
[**Note:** Perform this for 20 clients. **Hint:** Use Arrays] [15]

Question 9.

(a) A "XYZ Bank Ltd." accepts for one year or more and the rule that bank adopts for paying the interest is as follows:

(i) If a deposit is less than ₹ 2000 and it is for 2 years or more, the interest rate is 5% compounded annually.

(ii) If a deposit is ₹ 2000 or more but less than ₹ 6000 and for 2 years or more, the interest rate is 7% compounded annually.

(iii) If a deposit is more than ₹ 6000 and it is for 1 year or more, the interest rate is 8% compounded annually.

(iv) On all deposits for 5 years or more, interest is 9.75% compounded annually.

(v) On all other deposits not under the above conditions, the interest is 3% compounded annually.

Write a program to input amount to deposit and number of years. Calculate the interest and total balance amount after the given number of years. Print amount deposited, number of years, interest gained and total amount paid after the given years. [8]

(b) The production (P) of crude oil of a country in millions of barrels may be estimated by the following set of instructions:

$P = 5 + 3t$, for $0 < t <= 3$
$P = 14 + (t - 5/2)$, for $t > 3$

Write a program in Java to find the quantity of production for every year t = 1 to 10 and print it. [7]

Question 10.

(a) Write a program to find the sum of the following series:
$1 - 2^1 + 3^2 - 4^3 + 5^4 - ...$ upto n terms [7]

(b) Write a program to compute the middle digit of a number entered. If the number does not have a middle digit, it has to give the average of the two middle digits. [8]

All the Best.

Don't Worry, You won't Fail ☺