COMPUTER SCIENCE

Paper – 2

(Planning Session and Examination Session **:** Three hours)

The total time to be spent on the Planning session and the Examination session is Three hours.
After completing the Planning Session, the candidate may begin with the Examination Session.
A maximum of 90 minutes is permitted for the Planning Session.
However, if candidates finish earlier, they are to be permitted to begin the Examination Session.
(Maximum Marks : 80)

Instructions

As it is a practical examination the candidate is expected to do the following:

1.	Write an algorithm for the selected problem (Algorithm should be expressed clearly using any standard scheme such as pseudo code or in steps which are simple enough to be obviously computable)	10
2.	Write a program in **JAVA** language. The program should follow the algorithm and should be logically and syntactically correct.	20
3.	Document the program using mnemonic names / comments, identifying and clearly describing the choice of data types and meaning of variables.	10
4.	Code / Type the program on the computer and get a printout (Hard Copy). Typically, this should be a program that compiles and runs correctly.	10
5.	Test run the program on the computer using the given sample data and get a printout of the output in the format specified in the problem.	10
6.	Viva-Voce on the **Selected Problem.**	20

Solve any one of the following problem.

Question 1.

Design a program which inputs a date in six digit number format i.e. 141296 Test the validity of the date and print the date in full form. If date is invalid then print a message as "Invalid date".

1. Example :

   INPUT : 141296
   OUTPUT : 14th December , 96
   : VALID DATE

2. Example :

   INPUT : 230488
   OUTPUT : 23rd April , 88
   : VALID DATE

3. Example :

   INPUT : 300284
   OUTPUT : INVALID DATE

Question 2.

Write a program to fill in a two dimensional array in a circular fashion with natural numbers from 1 to N^2 , given N as input.

Example: if N = 4, N^2 = 16, then the array will be:

1	2	3	4
12	13	14	5
11	16	15	6
10	9	8	7

Question 3.

Accept a paragraph of text consisting of sentences that are terminated by either ".", ",", "!" or a"?" followed by a space. Assume that there can be a maximum of 05 sentences in a paragraph.

Design a program to perform the following:

(a) Arrange the sentences in alphabetical order of words, sentence by sentence.

(b) Separate the words which begin with a vowel.

Sample data 1:

INPUT : HELLO! HOW ARE YOU? WHEN ARE YOU COMING? HOPE TO SEE YOU SOON.

OUTPUT : HELLO! ARE HOW YOU? ARE COMING WHEN YOU? HOPE SEE SOON TO YOU.

VOWELS : ARE

Sample data 2:

INPUT : THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG.

OUTPUT : BROWN DOG FOX JUMPED LAZY OVER QUICK THE THE.

VOWELS : OVER