NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: I - THEORY EXAMINATION (2024- 2025)

Subject: Fundamentals of Computer Science

Time: 3 Hours   **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

*1. This Question paper comprises of **three Sections -A, B, & C.** It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A   20

1. Attempt all parts:-

1-a.   The brain of any computer system is……………….…….……. (CO1, K1)   1

    (a)   Cache Memory

    (b)   Memory

    (c)   CPU

    (d)   Hard Disk

1-b.   When an algorithm is written in the form of a programming language, it becomes a _____ (CO1, K1)   1

    (a)   Flowchart

    (b)   Program

    (c)   Pseudo code

    (d)   Syntax

1-c.   Which of the following is an exit controlled loop? (CO2, K2)   1

    (a)   While loop.

    (b)   For loop.

    (c)   do-while loop.

    (d)   None of the above.

1-d.   Write output of below program? (CO2, K2)   1

```
int main()
{
```

```
int i,j;
for(i = 0,j=0;i<5;i++)
{
printf("%d%d--",i,j);
}
return 0;
}
```

(a)   00--10--20--30--40--

(b)   0--01--12--23--34--

(c)   00--01--02--03--04--

(d)   Compilation Error

1-e.   The keyword used to transfer control from a function back to the calling function is. (CO3, K1)   1

(a)   switch

(b)   goto

(c)   go back

(d)   return

1-f.   Input/output function prototypes and macros are defined in which header file? (CO3, K1)   1

(a)   conio.h

(b)   stdlib.h

(c)   stdio.h

(d)   dos.h

1-g.   Assuming int is of 4bytes, what is the size of int arr[15];? (CO4, K2)   1

(a)   15

(b)   19

(c)   11

(d)   60

1-h.   Write output of C program with arrays and pointers. (CO4, K2)   1
```
int main()
{
int size=4;
int a[size];
a[0]=5;a[1]=6;
a[2]=7;a[3]=8;
printf("%d %d", *(a+2), a[1]);
```

(a)   86

(b)   76

(c)   66

(d)   compiler error

1-i. For a typical program, the input is taken using _____ (CO5, K1)   1
    (a) scanf
    (b) command lines
    (c) files
    (d) all of the above

1-j. What are the first and second arguments of fopen? (CO5, K1)   1
    (a) A character string containing the name of the file & the second argument is the mode
    (b) A character string containing the name of the user & the second argument is the mode
    (c) A character string containing file pointer & the second argument is the mode
    (d) None of the mentioned

2. Attempt all parts:-

2.a. Discuss difference between variable and keywords in C with example. (CO1, K2)   2

2.b. Discuss difference between "if-else" and "switch-case". (CO2, K2)   2

2.c. Write different types of functions. (CO3, K1)   2

2.d. Discuss the difference between an array and pointer. (CO4, K2)   2

2.e. Write the use of fprintf() in file handling with proper syntax. (CO2, K2)   2

SECTION-B   30

3. Answer any <u>five</u> of the following:-

3-a. Design a flow-chart to find sum of first n natural numbers. (CO1, K3)   6

3-b. Differentiate among Assembler, Compiler and Interpreter. (CO1, K2)   6

3-c. Write a C program to find the biggest of three numbers. (CO2, K3)   6

3-d. Draw the following pattern in C using loop statement. (CO2, K3)   6
```
*
**
***
****
*****
```

3.e. Write a C program to find diameter, circumference and area of circle using functions (CO3, K3)   6

3.f. Define Structure and write the general syntax for declaring and accessing members. (CO4, K2)   6

3.g. Write any five file handling functions with proper syntax. (CO5, k2)   6

SECTION-C   50

4. Answer any <u>one</u> of the following:-

4-a. Draw a flow chart and write algorithms to calculate factorial of a number. Also write down all symbols used in flow chart with their purpose.(CO1, K3)   10

4-b. Explain various types of arithmetic operators in C language with help of example.   10

When precedence of two operators in an arithmetic expression is same, how associativity helps in identifying which operator will be evaluated first. Illustrate it with the example. (CO1, K2)

5. Answer any <u>one</u> of the following:-

5-a.	Give the syntax and explain the working of switch-case statement. Write the program to implement the menus based basic calculator using switch case . (CO2, K3)	10
5-b.	Explain the following loop and control structures with examples: (CO2, K2)	10

     a) if ..... else ladder statement
     b) continue statement
     c) while statement

6. Answer any <u>one</u> of the following:-

6-a.	Define Recursive function. Write a C Program to find the factorial of a given number using recursive function. (CO3, K3)	10
6-b.	Explain different types of storage classes in C with example. (CO3, K2)	10

7. Answer any <u>one</u> of the following:-

7-a.	Write a program to perform addition of two matrices. (CO4, K3)	10
7-b.	Explain the row major and column major memory representation of array. Also mention how we can compute the address of an element in each case. (CO4, K2)	10

8. Answer any <u>one</u> of the following:-

8-a.	What are the different file opening modes in C?. Write a program to copy the contents of one file into other file. (CO5, K3)	10
8-b.	What are the main features of UNIX? Write a program in C to delete a specific line from a file. (CO5, K3)	10