Reg. No ..... Name **23U113**

END SEMESTER EXAMINATION : NOVEMBER 2023

SEMESTER 1 : INTEGRATED M.Sc. PROGRAMME COMPUTER SCIENCE - DATA SCIENCE

COURSE : **21UP1CRMCP1 : PROGRAMMING IN C LANGUGAGE**

(For Regular 2023 Admission and Improvement/Supplementary 2022/2021 Admission)

Time : Three Hours Max. Weightage: 30

PART A

Answer any 8

1. Analyze the following code segment and determine how many times the loop will be executed:

```
m = 1 ;
do {
    _____
    _____
    m = m + 2;
}while (m < 10);
```

2. Identify the error(s) in the following piece of code, if any:

```
# Include<stdio.h>
main(){
printf ("Welcome to C programming");
};
```

3. Define the concept - NULL pointer.
4. State the significance of the header file `stdio.h`.
5. Mention the limitation of putc() function with respect to other file functions.
6. If a file cannot be opened due to some reasons, it returns a _____ pointer.
7. If a pointer 'ptr' points to a variable 'x', write the statement that would represent the idea.
8. Write the statement to read a string input from keyboard.
9. State the use of `sizeof()` in C.
10. Write a sample structure declaration that would store the details of an employee.

(1 x 8 = 8 Weight)

PART B

Answer any 6

11. Considering the following structure declaration, calculate the total memory (in bytes) that would be required by the structure variable:

```
struct book
{
    int book_id;
    char book_name[5];
    float book_price;
}b[2];
```

12. Sometimes, it is required to purposefully exit from a loop. With an example, explain how this can be achieved.
13. Predict the output of the following code when executed:

```
int m[] = {10, 20, 30, 40, 50};
int x, y = 0;
for (x = 0; x < 5; x++)
    y = y + m[x];
printf ("%d", y);
```

14. Predict the output of the following segment of code:

```
# include <stdio.h>
main(){
    int k, num = 30;
    k = (num < 10) ? 100 : 200 ;
    printf ("%d", num);
    return 0;
}
```

15. Differentiate between local and global variables.
16. Explain any one method to detect end-of-file in C.
17. Discuss how branching operation is represented in a flowchart.
18. Describe the limitations of getchar() and scanf() functions for reading strings.

(2 x 6 = 12 Weight)

PART C
Answer any 2

19. Write a program that illustrates how an array is used as a member of a structure.
20. Using recursion, write the code to accept a limit 'n' and display Fibonacci series upto 'n'.
21. Create a C program that uses a user-defined function to find the average of 3 numbers by passing the numbers to the function, and returning the result after calculating the average.
22. Draw a flowchart that prints the following pattern:

```
@
@@
@@@
@@@@
```

(5 x 2 = 10 Weight)