Reg.No:							

SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
Coimbatore – 641 035.

A

B.E / B.Tech – Internal Assessment Exam- I
Academic Year 2023-2024 (Even)
SECOND SEMESTER (REGULATION R2023)

23ITT101 – PROGRAMMING IN C AND DATA STRUCTURES

Time: $1^{1/2}$ Hours **Maximum Marks: 50**

Answer All Questions

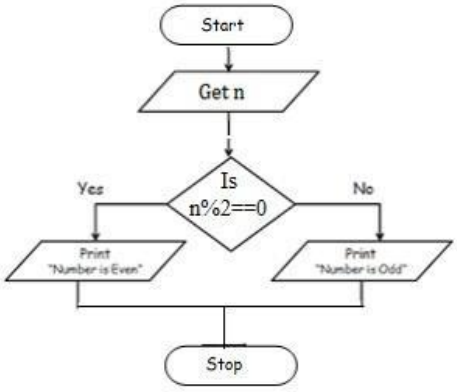
PART A — (5 x 2 = 10 Marks)

1. Define pseudocode. Write a pseudocode to find greatest of two numbers. CO1 REM

   A **Pseudocode** is defined as a step-by-step description of an algorithm.

   ```
   BEGIN
   READ a,b
   IF (a>b) THEN
   DISPLAY a is greater
   ELSE
   DISPLAY b is greater
   END IF
   ```

2. Draw the flow chart to find whether a number even or odd. CO1 APP



3. Write a program to determine whether a person is eligible to vote. CO1 APP

```
#include <stdio.h>

int main()
{
   int age;
   printf("Enter age : ");
   scanf("%d", &age);
   if (age >= 18)
      printf("You can Vote!");
   else
      printf("You cant Vote!");
   return 0;
}
```

4. List out the significance of break statement in loops. CO2 UND

- The break statement in C is used for breaking out of the loop.
- The break command allows you to terminate and exit a loop (that is, do , for , and while) or switch command from any point other than the logical end.

5. Give the difference between while and do-while statements. CO2 REM

While	*Do-while*
1. Condition is at top.	1. Condition is at the bottom.
2. No necessity of bracket if there is single statement in body.	2. Brackets are compulsory even if there is a single statement.
3. There is no semicolon at the end of while.	3. The semicolon is compulsory at the end do-while.
4. Computer executes the body if and only if condition is true.	4. Computer executes the body at least once even if condition is false.
5. This should be used when condition is more important.	5. This should be used when the process is important.
6. This loop is also refered as entry controlled loop.	6. This loop is also refered as exit controlled loop.

PART B — (2 x 13 = 26 Marks & 1 x 14 = 14 Marks)

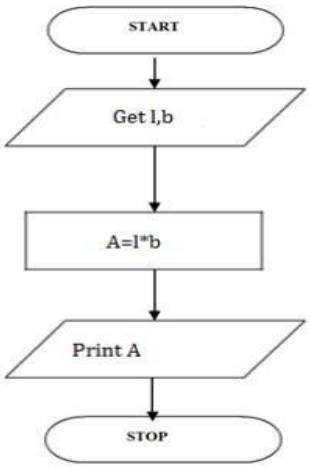
6. (a) i) Explain in detail about Structure of C programming with a Sample C program. CO1 UND 8

1. Documentation
2. Preprocessor Section
3. Definition

4. Global Declaration
5. Main() Function
6. Sub Programs

```
int main(void)
{
  int y = 55;
  printf("Sum: %d", sum(y));
  return 0;
}
```

ii) Draw flow chart along with the pseudo code to find area of a Rectangle. CO1 APP 5



Pseudo Code
BEGIN
READ l,b
CALCULATE A=l*b
DISPLAY A
END

(OR)

(b) i) Discuss the different types of operators used in C. CO1 UND 6

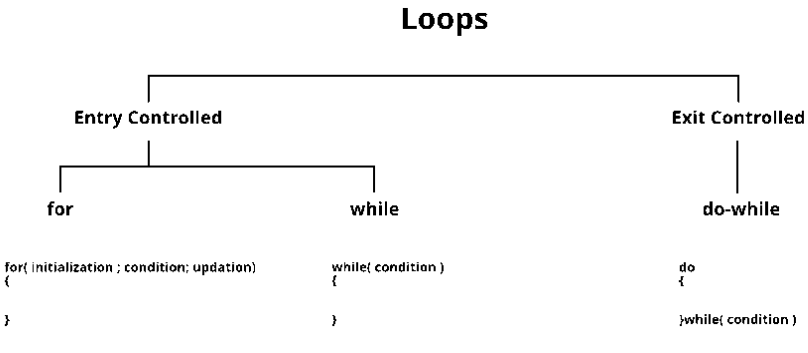
1. Arithmetic Operators
2. Relational Operators
3. Logical Operators
4. Bitwise Operators
5. Assignment Operators
6. Other Operators

ii)Explain the data types and its types in C with suitable examples.

A data type is an attribute associated with a piece of data that tells a computer system how to interpret its value. CO1 UND 7

Array and pointer
User-defined:
Structure
Union
Type def
enumeration

7. (a) Enumerate the operation of various looping statements in C with suitable examples.



CO2 REM 13

(OR)

(b) i) An Armstrong number is a three-digit integer such that the sum of the cubes of its digits is equal to the number itself. For example, 371 is an Armstrong number since 3^3 + 7^3 + 1^3 = 371. Write a c program to find whether a given number 417 is an Armstrong number or not.

CO2 APP 7

```
#include <stdio.h>
int main() {
   int num, originalNum, remainder, result = 0;
   printf("Enter a three-digit integer: ");
   scanf("%d", &num);
   originalNum = num;
   while (originalNum != 0) {
     // remainder contains the last digit
      remainder = originalNum % 10;
     result += remainder * remainder * remainder;
     // removing last digit from the orignal number
     originalNum /= 10;
   }
   if (result == num)
      printf("%d is an Armstrong number.", num);
   else
      printf("%d is not an Armstrong number.", num);
   return 0;
}
```

ii) Write C program to print first ten natural numbers.

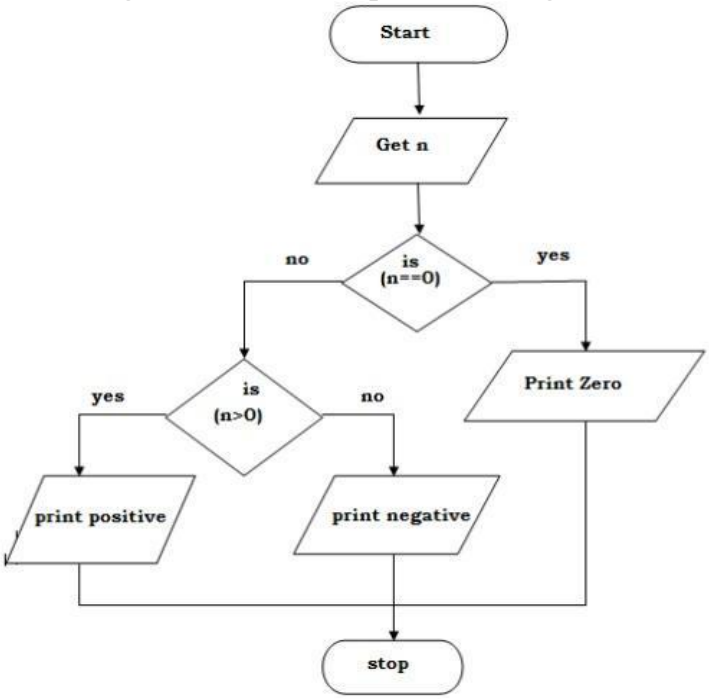
CO2 APP 6

```
#include<stdio.h>

void main() {
  int i; //Variable definition
  printf("The first 10 natural numbers are:\n ");
  for (i = 1; i <= 10; i++) //Iteration 10 times
  {
```

```
    printf("%d \t", i); //Print the number.
  }
}
```

8. (a) Give the algorithm,Flowchart and Pseudo code to check whether given number is positive, negative or zero.



CO1 APP 14

(OR)

(b) Assume an example of grading system of the students in an institution. The grading is done according to the following rules:

Obtained marks	Grade
100-95	A+
85-94	A
75-84	B
60-74	C
50-59	D
<50	FAIL

CO2 APP 14

Now Construct a C program to Calculate students' grade using if–else ladder concept.

```
#include <stdio.h>
int main(void){
int num;
printf("Enter your mark ");
scanf("%d",&num);
printf(" You entered %d", num); // printing outputs
        if(num >95)&&(num<=100)
{
```

```
        printf(" You got A+ grade");}
        else if(num >=84)&&(num<=94)
        {printf(" You got A grade");}
        else if(num >=75)&&(num<84)
{
        printf(" You got B grade");}
        else if(num >=60)&&(num<75)
        {
        printf(" You got C grade");}
        else if(num >=50)&&(num<59) // printing outputs
        printf(" You got D grade");
}
                else if ( num < 50){
                printf(" You Failed in this exam");
                }
return 0;
}
```

Prepared By **Verified By** **HoD**