Reg.No.

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam - 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 5019

B.E. / B.Tech. DEGREE SUPPLEMENTARY EXAMINATIONS – FEB. / MAR. 2020
First Semester
Computer Science and Engineering
U19CS101 – PROGRAMMING FOR PROBLEM SOLVING
(Common to Electrical and Electronics Engineering, Electronics and Communication Engineering, Information Technology & Biotechnology)
(Regulation 2019)

Time : Three Hours | Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. Design an algorithm that accepts three numbers as input from the terminal and find the greatest among the three numbers using if statement.
2. Compare pseudo code and algorithm with an example.
3. Find the output of the following code.

```
main()
{
 int x=100;
 printf("%d\n", 10 + x++);
 printf("%d\n", 10 + ++x);
}
```

4. Relationship between Celcius and Fahrenheit is governed by the formula.

$$F=9C/5 + 32$$

Develop a C program to read the temperature in Celsius from the terminal and convert the temperature to Fahrenheit and print it.

5. Write down the syntax for declaring a string variable to read the line of text as string input from the terminal and display it using string functions.
Test case :
Input :
Str = " Have a nice Day"

6. What is the output of the following program.

```
main()
{
    int m[ ] = {1,2,3,4,5}
    int x,y=0;
    for(x=0; x<5 ; x++)
        y=y + m[x];
    printf("%d",y);
}
```

7. Write a C program to swap the two values with temporary variable using function.

   Test case:

   Input: a=10 , b=5

   Output: a=5 , b=10

8. What is a Pointer? How will you represent a pointer variable. Give an example.
9. Define enumerated data type? Give an example.
10. Find the size of the following.

a) union

```
{
    int rollno ;
    char name[10];
    float cgpa;
};
```

b) structure

```
{
    int rollno ;
    char name[10];
    float cgpa;
};
```

PART – B

(5 x 13 = 65 Marks)

11. a) i. Design an algorithm to find the minimum value and maximum value from the given list of elements. Read the input value from the keyboard. (6)

    ii. Discuss in detail about the basic organization of a computer with suitable illustrations. (7)

(OR)

b) i. Draw a flowchart for finding the Grade of student in a class and display the result. (Note: If marks >90 Grade = A , marks>80 Grade=B, marks>70 Grade = C, marks>60 Grade = D, marks>=50 Grade = E, marks<50 Grade = "Fail"). (7)

    ii. Elaborate the advantages of using flowchart in software development and list out the various flowchart symbols available with its purpose. (6)

12. a) Develop a simple calculator program using switch case for performing various arithmetic operations such as

"+" - Addition
"-" - Subtraction
"*" - Multiplication
"/" - Division
"%" - Modulus

(OR)

b) i. Compare while loop , for loop and do-while loops with example for each. (5)

ii. Develop a C program to find the sum of the digits of an integer and the number of digits in the integer that is given as input by the user.

Test Case: Input: 15390
Output:
Sum of the digits=18
No. of digits = 5

For an incorrect choice, an appropriate error message should be displayed. (8)

13. a) i. Explain the following string manipulations functions with examples. (8)
   a. String copy
   b. String Concatenate
   c. String length
   d. String Compare

ii. Write a C program to count the total number of vowels in a string. For example (5)
Input string: I am proud to be an Indian
Output: Total vowels – 10

(OR)

b) Develop a code in C to implement matrix multiplication using two dimensional array. (Read the input values for the arrays in run time).

14. a) i. The Fibonacci numbers are defined recursively as follows:
F1=1
F2=1
Fn= Fn-1 + Fn-2, n>2
Write a function that will generate and print the first n Fibonacci numbers. Test the function for n=5,10,15 (8)

ii. Explain in detail about function prototypes and its types with suitable examples. (5)

(OR)

b) i. Explain pointers to functions in detail with an example. (5)

ii. Write a C program to check whether the given string is a palindrome or not, using functions. (8)

15. a) Create a structure of employees having the following information:
Employee id
Employee name
Date of joining
Salary
Write a C program to input information of 20 employees and display the employee details.

(OR)

b) i. Discuss in detail about union? Compare union with structure and justify how union is different from structure with an example? (8)

ii. Elaborate bit-field and give their significance with example. (5)

PART – C

(1 x 15 = 15Marks)

16. a) Write a C program to create an array of structures named "STUDENT" with fields name, cell no, address and percentage mark. Read the data pertaining to 'n' students and list the name of the students whose percentage marks is greater than or equal to 85.

(OR)

b) i. Explain array of structures and structure within a structure with examples. (8)

ii. Write a C function isprime(num) that accepts an integer argument and returns 1 if the argument is prime, a 0 otherwise. Write a C program that invokes this function to generate prime numbers between the given ranges. (7)