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



Question Paper Code: 5005

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – DECEMBER 2019
 First Semester

Computer Science and Engineering
 U15CS101 – FUNDAMENTALS OF COMPUTING AND C PROGRAMMING
 (Common to Electrical and Electronics Engineering, Electronics and Communication
 Engineering, Information Technology & Biotechnology)
 (Regulation 2015)

Time : Three Hours

Maximum : 100 Marks

Answer ALL the questions

PART – A

(10 x 2 = 20 Marks)

1. What is a Translator? Mention its types.
2. Is *printf()* a keyword? Give a line of justification.
3. List the rules of an identifier.
4. What is the output of the following program?

```
#include<stdio.h>
void main()
{
    float a= 3.567;
    printf("%10.3f",a);
}
```

Denote the space(s) by using ‘_’(underscore).

5. When do we use *continue*? Give an example code with output.
6. Will there be an output for the following program code? If there is an output then, what will it be?

```
#include<stdio.h>
main( )
{
char name[]={ 'E', 'N', 'G', 'I', 'N', 'E', 'E', 'R', '\0' };
printf("%s", name);
}
```

7. Will there be an output for the following program code? If there is an output then, what will it be?

```
#include<stdio.h>
int fun(int n) {
    if (n != 0)
        return n + fun(n-1);
    else
        return n;
}
main()
{
    printf("%d",fun(10));
}
```

8. Will there be an output for the following program code? If there is an output then, what will it be?

```
#include<stdio.h>
main( )
{
    int i=5,*p,**p1,***p2;
    p=&i
    p1=&p;
    p2=&p1;
    printf("%5d",++(**p2));
}
```

9. Differentiate between an array and structure.

10. Will there be an output for the following program code? If there is an output then, what will it be?

```
#include<stdio.h>
union Data
{
    int i;
    int j;
};
int main( )
{
    union Data data;
    data.j = 220;
    data.i = 10;
    printf( "data.j : %d\n", data.j);
    return 0;
}
```

PART – B

(5 x 13 = 65 Marks)

11. a) What are the components of a Computer System and elaborate on its working with a neat block diagram. Write an algorithm/flowchart to check whether the year given is a leap year or not. (2+4+7)

(OR)

- b) Design an algorithm to check whether a given number is prime or not. Trace the working of the algorithm for the given two numbers, 17 and 25. (6+7)

12. a) Write all the loop control statements with its syntax in C programming language. Write a program to generalize the pattern display with any given number of rows. (3+3+7)

```
*****  
*****  
*****  
***  
*  
*
```

(OR)

- b) What are the Bitwise operators in C program? Write a program to find the sum of the series $(n-1)/1! - (n-2)/2! + (n-3)/3! - (n-4)/4! + \dots \mp (n-m)/m!$. Use recursive function(s) wherever its possible. (3+5+5)

13. a) Write a program to read a matrix from the user and display the transpose of the matrix after assigning it to another array. Also, find the largest element value in the matrix. (10+3)

(OR)

- b) Write a program to concatenate two strings without using the library function *strcat()*. Also, find the string length in the program without using any library function. (7+6)

14. a) What is a function and why do we require function? Write a program to find the reverse for any given integer number using recursive function. (2+3+8)

(OR)

- b) Define *pointer of a pointer of a pointer*. How will you declare it in C program? Using dynamic memory allocation function and without using any array, write a program to find the largest and smallest of any 'n' random values. (2+2+4+5)
15. a) Create a structure to store the name, address, age and salary of an employee. Write a program which allows the user to input information of multiple employees. In the program, find the employee with the highest and lowest salary, displaying the details of the employees. (3+5+5)
- (OR)
- b) Write a program to read 'n' numbers from the user and find the smallest, largest and the sum of all numbers by using pointer.

PART – C

(1 x 15 = 15 Marks)

16. a) Write a program without using any of the standard string library functions to verify whether the given string is a Palindrome or not. Use Pointer wherever applicable. (10+5)
- (OR)
- b) Write a program using the dynamic memory functions to allocate space for name, roll number, semester, branch and scores in four (4) subjects in the semester. Read the details of 'N' students in the class and identify the class topper scoring highest total in the class. (5+5+5)