

B.E./B.TECH. Degree Examination, **December 2020**

First Semester

IT18101 - PROGRAMMING FOR PROBLEM SOLVING

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

- The number of cables required for a network with 10 systems in Mesh and Ring topology is ____ and ____ respectively.
a) 10, 10 b) 45, 10 c) 10, 45 d) 45, 45
- Considering the current value of a as 5, what will be the most appropriate output of the following printf statement?
printf(“%d %d %d”, a, a++, a++);

- a) 7 6 5 b) 5 6 7 c) 5 5 6 d) 5 5 5

- Predict the output:

```
# include <stdio.h>
int main()
{
    int arr[] = {10,20,30,40,50,60,70,80};
    int n = (sizeof(arr)/sizeof(arr[0]))/2;
    int i;
    for(i=0;i<n;i++)
    printf(“%d ”,arr[i]);
    return 0;
}
```

- a) 10 20 30 40 b) 10 20 30 40 50 60 70 80 c) Error d) 10 20 30 40 50
- Predict the output:

```
#include<stdio.h>
int f(int n)
{
    static int i = 1;
    if (n >= 5)
        return n;
    n = n+i;
    i++;
}
```

```

    return f(n);
}
int main()
{
    printf("%d",f(3));
    return 0;
}

```

- a) 7 b) 5 c) 6 d) Garbage Value
5. a) Convert 260 from decimal to binary format
b) Convert 100010101 from binary to decimal format
 6. Do While loop will be executed atleast once irrespective of the condition. Justify.
 7. Consider the declaration `int a[10] = {1,2,3};`. What will be the output when the elements of the array are printed? Justify your answer.
 8. Differentiate Structure and Union data types.

PART B - (4 X16 = 64 marks)

09. (a) (i) Elucidate any 3 network topologies with necessary diagrams. (6)
(ii) Write an algorithm to convert temperature in Fahrenheit to Celsius. (5)
(iii) Draw a flowchart to find the roots of the quadratic equation. (5)

(OR)

- (b) (i) Brief about the organization of the computer with a neat illustration. (6)
(ii) Write an algorithm to swap two integers without using temporary variable. (5)
(iii) Draw a flowchart to print the factors of a given number. (5)
10. (a) (i) Write a C program to check whether a character is Alphabet, Vowel, Consonant or Digit. (8)
(ii) Illustrate the use of increment and decrement operators with a suitable example. (8)

(OR)

- (b) (i) Write a C program to display the first N Fibonacci numbers. (8)
(ii) Exemplify the use of switch statement with a suitable example. (8)
11. (a) (i) How `getch()` differs from `getche()`? Justify your answer with an example. (6)

- (ii) Write a C program to find the sum of the maximum and minimum even numbers present in the given array. If there is no even number in the array, display 0. **(10)**

(OR)

- (b) (i) Write a C program to count the number of vowels present in the given sentence. **(6)**

Note: The sentence can have multiple words separated by space.

The maximum length of the input will be 100 characters.

- (ii) Write a C program to find the product of two 3 x 3 matrices. **(10)**

12. (a) (i) Write a C program to get two inputs x and y and calculate the value of x raised to the power of y using recursion. **(8)**

- (ii) Illustrate the implementation of employee payroll processing system using Union. **(8)**

(OR)

- (b) (i) Write a C program to read the details of N books with each book details as Book-ID, cost, Author and find the book with maximum cost. **(8)**

- (ii) Elucidate the use of Enumerators in C with a suitable example. **(8)**