

**B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2020 (Held during April, 2021)**

First Semester

**IT18101 – PROGRAMMING FOR PROBLEM SOLVING**

*Common to all Branches*

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

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

1. When nine devices are arranged in a mesh topology, each device needs \_\_\_\_\_ input / output ports.

- a. Three
- b. Nine
- c. Eight
- d. Seven

2. What is the output of this C code?

```
void main()
{
    int k = 7;
    int x = 0 == 1 && k++;
    printf("%d%d\n", x, k);
}
```

- a. 0 8
- b. 0 7
- c. 1 8
- d. 1 7

3. What will be the output of the following C code?

```
int main()
{
    register a=50;
    auto int b;
    b=a;
    printf("%d ", a);
    printf("%d ", b);

    return -1;
}
```

- a. Compiler error
- b. 50 0
- c. 50 50
- d. No output.

4. What will be the output of the following C code?

```
#include <stdio.h>
void main()
{
int i =0;
while(i <10)
{
    i++;
printf("hi\n");
while(i <8)
{
    i++;
printf("hello\n");
}
}
}
```

- Hi is printed 8 times, hello 7 times and then hi 2 times
  - Hi is printed 10 times, hello 7 times
  - Hi is printed once, hello 7 times
  - Hi is printed once, hello 7 times and then hi 2 times
- Write a C program to print the numbers which are not divisible by 3.
  - Write a pseudocode to search an element in an array.
  - Differentiate algorithm and pseudocode with example.
  - Can we change the value of macro during execution of the program? Justify.

**PART B - (4 X16 = 64 marks)**

09. (a) (i) Design a C program to print the Pascal triangle. (8)

```

      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
```

(ii) Dr. Chuck wants to calculate electricity bill based on the given condition: (8)

For first 40 units Rs. 0.40/unit

For next 60 units Rs. 0.85/unit

For next 100 units Rs. 1.25/unit

For unit above 200 Rs. 1.75/unit

An additional surcharge of 20% is added to the bill.

Input: Electricity unit charges

(OR)

- (b) (i) Implement a C program to arrange 15 asterisk in the shape of an equilateral triangle. (8)
- (ii) Write a C program to compute the EMI amount for a customer's purchase on loan using switch control statement. (8)

Number of years	EMI
1	15% of loan
2	16% of loan
3	17% of loan
4	18% of loan
5	19% of loan

10. (a) (i) Develop a C program to remove the duplicate numbers present in an array and display the remaining numbers. (8)
- (ii) Dr. Chuck was assigned the task of writing a C program to print the count of all the letters that are occurring in the given sentence. Can you help Dr. Chuck to finish the task? (8)

**(OR)**

- (b) (i) Develop a C program to enter n elements in array and find the second largest number from array. (8)
- (ii) Design a C program to (8)
- Implement string copy operation without using library function.
  - Read a sentence and print the frequency of vowels and total count of consonants.

11. (a) (i) Using array of pointers to a function, write a menu driven application to find the grade of 30 students in a class and to display minimum, maximum and average of all test marks for each student. (10)
- (ii) Write a 'C' program to find the length of the string "Venkateswara College of Engineering" using pointers. (6)

**(OR)**

- (b) (i) Write a C program to find the Greatest Common Divisor using recursive function. (8)
- (ii) Consider three tables with labels A, B and C pasted with values of Registration numbers 202015, 202017 and 202018 respectively. Using call by reference, swap the tables and print the registration numbers of the labels inside and outside the function. (8)

12. (a) (i) Define a structure called empdata with employee ID, name of the employee and salary details. Write a C program to read the details of employee ID, name of the employee and salary details of 100 employees and print the employee ID, and name of the employee whose salary is below Rs.15,000. **(16)**

**(OR)**

- (b) (i) Write a C program to accept student personal and academic details and store it in a file. Print students' mark sheet. **(12)**
- (ii) Create a macro function to find the maximum and minimum of three numbers. **(4)**