



# SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

**AN AUTONOMOUS INSTITUTION**



Approved by AICTE, New Delhi and Affiliated to Anna University,  
Chennai

## **INTERNAL ASSESSMENT EXAMINATION – III PROBLEM SOLVING & C PROGRAMMING**

### **QUESTION BANK**

#### **PART A**

1. What is a function?
2. What are the types of function?
3. What is call by value and call by reference?
4. What are the categories of function?
5. What is built-in and user defined function?
6. What is a pointer? Give an example.
7. State pointer arithmetic's .
8. What is a null pointer? Give an example.
9. What is recursion?
10. What is structure and union?
11. Give an example each for an array of structure and structure within structure.
12. How does structure and union manages memory storage?
13. State the difference between structure and union.
14. What is a preprocessor directive? Give an example.
15. List any four preprocessor directives.

#### **PART – B / PART C QUESTIONS**

1. Write a program to find the factorial of a given number using recursion.
2. Illustrate function categories with an example
3. Explain call by value and call by reference with an example program
4. Write a program using pointer arrays to arrange given numbers in ascending order
5. Explain pointer arithmetic with necessary examples
6. Using student details regno, name, mark, Write a program to illustrate structure for accepting and printing student information
7. Explain union with an appropriate example.
8. Explain memory allocation of structure and union with an example program.
9. With an example program explain at least five preprocessor directives.
10. Test for an array of numbers arr, return true if the array can be rearranged to form an arithmetic progression. Otherwise, return false. Use pointer arrays and leetcode to solve.

**Example:**

**Input:** arr = [3,5,1]

**Output:** true

**Explanation:** We can reorder the elements as [1,3,5] or [5,3,1] with differences 2 between each consecutive elements.

11. Write a C program to create a basic student management system to store and manage the names of students in a class. The class size is limited to 5 students. Program code should:  
Use an array of pointers to store student names.  
Demonstrate dynamic input for names.  
Include a function to search for a student by name.
12. Construct a C Program to display Employee Details and calculate the PF for the Employee using Structures.

13. Assume an integer  $n$  (in base 10) and a base  $k$ , return the sum of the digits of  $n$  after converting  $n$  from base 10 to  $k$ . Use function and leetcode to solve

Example:

Input:  $n = 34$ ,  $k = 6$

Output: 9

Explanation: 34 (base 10) expressed in base 6 is 54.  $5 + 4 = 9$ .

14. Write a C program to create structure student with members name, mark1, mark2 and union compute with members total and average. Calculate the total marks and average of the student. Print student details name, mark1, mark2, total and average as output.