

**ANURAG Engineering College**

(An Autonomous Institution)

I B.Tech I Semester Supplementary Examinations, June/July - 2024

**C PROGRAMMING AND DATA STRUCTURES**

(COMMON TO CIVIL &amp; EEE)

**Time: 3 Hours****Max. Marks: 60****Section – A (Short Answer type questions)****(10 Marks)****Answer All Questions**

	<b>Course Outcome</b>	<b>B.T Level</b>	<b>Marks</b>
1. Explain the result of the bitwise OR operation between the binary numbers 1010 and 1100.	CO1	L2	1M
2. Define type conversion.	CO1	L1	1M
3. Explain the purpose of a function in C programming.	CO2	L2	1M
4. Define and declare a two-dimensional array in C programming.	CO2	L1	1M
5. Define and declare a integer pointer.	CO3	L1	1M
6. Explain the difference between direct and indirect pointers in c programming.	CO3	L2	1M
7. What is enumerated data type.	CO4	L1	1M
8. Explain different types of string manipulation functions?	CO4	L1	1M
9. Which data structure are used in static memory allocation.	CO5	L1	1M
10. Explain the different types of the data structure?	CO5	L2	1M

**Section B (Essay Questions)****Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Explain the concepts of operator precedence and associativity in programming languages with examples. How do these concepts impact the evaluation of expressions?	CO1	L2	10M
<b>OR</b>			
B) Explain the differences between data types, variables, and constants in the context of C programming. Provide examples to illustrate each concept.	CO1	L2	10M
12. A) Explain how the conditional statement (if-else ladder) assigns a grade based on the value of num. Provide the output of the program for num = 75 as Grade B.	CO2	L2	10M
<b>OR</b>			
B) Explain recursion and its types in C programming. Provide an example of each type and discuss its application in solving problems.	CO2	L2	10M
13. A) Explain how an array of strings is stored in C and write a C program that demonstrates the following tasks: i) Declare and initialize an array of strings with five different names. ii) Print each string in the array on a new line. iii) Explain the output of the program in terms of memory allocation.	CO3	L2	10M
<b>OR</b>			
B) Explain the concept of using pointers for inter-function communication in a C program. Illustrate your explanation with an example where a function modifies the value of a variable in the calling function using pointers. Include the relevant C code and explain each part of the code.	CO3	L2	10M

14. A) Explain how you would define and use a structure in C to store information about a student, including the student's ID, name, and GPA. Write a C program snippet to demonstrate how to:
- Define the structure.
  - Declare a variable of the structure type.
  - Initialize the structure members.
  - Access and modify the structure members.
- Provide comments in the code to explain each step.
- OR**
- B) a) Explain the purpose of a union in C programming and how it differs from a structure.
- b) Write a C program to demonstrate the use of the union Data by storing and accessing values of different types (integer, float, and string).
15. A) Explain how the following queue operations are implemented using arrays in C:
- Enqueue: Adding an element to the end of the queue.
  - Dequeue: Removing an element from the front of the queue.
  - Peek: Retrieving the element at the front of the queue without removing it.
- Write a C program to implement these operations on a queue using an array. Provide a detailed explanation of each function in the program.
- OR**
- B) Explain how the Insertion sort algorithm works and write a C program to implement it. Provide an example to demonstrate the execution of your program.