Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 09 – 12- 2025 **Time:** 09:30am – 12:30pm

School: SOE	**Program:** ECE, EEE, VLSI	
Course Code: CSE2280	**Course Name:** C Programming and Data Structures	
Semester: III	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**16**	**16**	**24**	**24**	**20**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	Explain the use of void data type.	**2 Marks**	**L1**	**CO1**
2.	What is the purpose of **do..while** statement.	**2 Marks**	**L1**	**CO1**
3.	Differentiate between variables and data types with an example.	**2 Marks**	**L1**	**CO1**
4.	Define a pointer type.	**2 Marks**	**L1**	**CO2**
5.	Write code to create an enumerated type that has **TRUE**, **FALSE**.	**2 Marks**	**L1**	**CO2**
6.	What is **#include <header_name>** do? How is it possible to tell the pre-processor where to look for the header file.	**2 Marks**	**L1**	**CO2**
7.	What is List ADT?	**2 Marks**	**L1**	**CO3**
8.	List the operations of Queue ADT.	**2 Marks**	**L1**	**CO3**
9.	What is Binary Tree ADT. Reproduce the C code for the structure of a tree node.	**2 Marks**	**L1**	**CO4**
10.	List any two collision resolution techniques.	**2 Marks**	**L1**	**CO4**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Explain recursive functions in C. Write the recursive program for calculating factorial of a number.	**10 Marks**	**L2**	**CO1**
	b.	Explain structures in C. What are the different types to declare a structure. Show the code for declaring a structure containing **name**, **rollno**, **section**, **mgpa** of a **student** using both methods.	**10 Marks**	**L3**	**CO2**
		Or			
12.	**a.**	Explain various operators in C. Write a small C program that uses all the arithmetic operators in C	**10 Marks**	**L2**	**CO1**
	b.	Explain pointer arithmetic. Illustrate how array elements can be accessed with the help of pointer arithmetic by printing the array {10,20,30,40,50}	**10 Marks**	**L3**	**CO2**

13.	**a.**	Illustrate the working of Stack ADT with the help of neat diagrams. Also, show the code for each of the stack operation.	**20 Marks**	**L3**	**CO3**
		Or			
14.	**a.**	Given a linked list, implement the code of a function **SeqList reverseList(SeqList sl)**to reverse the list. Illustrate the working of the function for a list containing the elements 'A', 'B', 'C', 'D'. Also, show the code to print the list.	**20 Marks**	**L3**	**CO3**

15.	**a.**	Illustrate the four methods for traversing a tree. Draw an expression tree for the expression (a+b) * (c-d). Show the working of the four traversal methods.	**20 Marks**	**L3**	**CO4**
		Or			
16.	**a.**	Illustrate any two collision resolution techniques for the hash function h(k)= k mod 11. Examine the difference between them.	**20 Marks**	**L3**	**CO4**

17.	**a.**	Consider a list of elements: 74, 20, 53, 98, 42, 40, 6, 29, 43, 19. These elements will be searched at least 1000 times every day. There are two design choices. (i) use linear search algorithm. (ii) sort using insertion sort once and then search every time using binary search algorithm. Identify which design choice will be better by comparing number of comparisons made for 1000 unsuccessful comparisons.	**20 Marks**	**L4**	**CO5**
		Or			
18.	**a.**	Calculate the number of comparison operations necessary to sort the list of values: 84 63 57 83 35 27 85 using (i) bubble sort, (ii) insertion sort, (ii) mergesort algorithms. Examine which algorithm is the fastest.	**20 Marks**	**L4**	**CO5**