

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Third Semester**Electrical and Electronics Engineering***CS3353 / UCST24304 – C Programming and Data Structures***(Common to Electronics and Communication Engineering)**Regulations – 2021 & 2024**Duration : 3 Hrs**Maximum : 100 Marks***PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

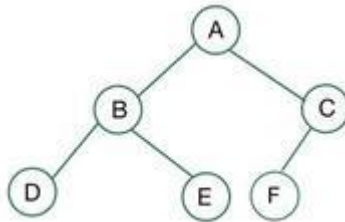
<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	Define data types and variables in C with examples.	L1	1	2
2.	What is the difference between expression and statement in C?	L1	1	2
3.	Define structure and union. Give one example for each.	L1	2	2
4.	What are preprocessor directives? Give examples.	L1	2	2
5.	What is a linked list? How is it different from an array?	L1	3	2
6.	Justify how stack overflow can occur in a recursive factorial function.	L2	3	2
7.	For a binary tree with 7 nodes, find the number of edges and leaf nodes.	L2	4	2
8.	Given a hash function $h(k)=k \bmod 10$, find the hash address for keys 25, 37, 42.	L3	4	2
9.	Differentiate between linear search and binary search.	L1	5	2
10.	What is heap sort? Mention its time complexity.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain the different types of operators in C with examples.	L2	1	10
	ii Write a C program to compute the sum and average of n numbers using arrays.	L3	1	6
	Or			
	b i Explain the different types of control statements in C with syntax and examples.	L2	1	10
	ii Write a recursive function to generate Fibonacci series up to n terms.	L3	1	6
12.	a i Explain pointer to function with suitable syntax and example.	L3	2	8
	ii Write a C program to copy contents of one file to another using file handling functions.	L3	2	8
	Or			
	b i Discuss the use of enumerated data types and typedef in C.	L3	2	8
	ii Write a C program to find the sum of array elements using pointer arithmetic.	L3	2	8

13. a i Compare array-based and linked list implementations of List ADT. L4 3 8
- ii Implement the stack ADT -push, pop and display using arrays. L3 3 8
- Or
- b i Explain circular linked list with suitable diagram. L4 3 8
- ii Write a C program to implement a queue using linked list. L3 3 8

14. a i Perform the inorder, preorder and postorder traversals for the given binary tree. L3 4 8



- ii Describe open addressing and separate chaining hashing techniques. L2 4 8
- Or
- b i Write an algorithm for insertion in a binary search tree. L3 4 8
- ii Explain rehashing and its importance in hashing. L2 4 8
15. a i Compare the efficiency of insertion sort, quick sort, and merge sort. L2 5 8
- ii Write a C program to perform binary search on a sorted array. L3 5 8
- Or
- b i Explain heap construction and heap sort algorithm with an example. L2 5 8
- ii Write a C program to perform quick sort on a list of numbers. L3 5 8