

**THE KAVERY ENGINEERING COLLEGE**  
(An Autonomous Institution)

**B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025**

**Third Semester**

**Electrical and Electronics Engineering**

**CS3353 - C Programming and Data Structures**

**Regulations - 2021**

**Duration: 3 Hrs**

**Maximum: 100 Marks**

**PART – A (ANSWER ALL QUESTIONS) (Marks 10\*2=20)**

| <b>Q.No</b> | <b>Questions</b>                                                    | <b>BLT</b> | <b>CO</b> | <b>Marks</b> |
|-------------|---------------------------------------------------------------------|------------|-----------|--------------|
| 1.          | Define the term keyword.                                            | L1         | 1         | 2            |
| 2.          | Show the initialization of an array?                                | L2         | 1         | 2            |
| 3.          | How to define a union in C.                                         | L2         | 2         | 2            |
| 4.          | Outline about pre-processor.                                        | L2         | 2         | 2            |
| 5.          | Illustrate types of list. Show the structure of doubly linked list. | L2         | 3         | 2            |
| 6.          | Infer the application of queue.                                     | L2         | 3         | 2            |
| 7.          | Define complete binary tree.                                        | L1         | 4         | 2            |
| 8.          | What is collision? List out the collision resolution techniques.    | L1         | 4         | 2            |
| 9.          | Define internal and external sorting.                               | L2         | 5         | 2            |
| 10.         | Compare linear and binary search.                                   | L2         | 5         | 2            |

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

| <b>Q.No</b> | <b>Questions</b>                                                                                                                | <b>BLT</b> | <b>CO</b> | <b>Marks</b> |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|------------|-----------|--------------|
| 11.         | a i Write a C program using recursive function to calculate the factorial of a number.                                          | L3         | 1         | 8            |
|             | ii Write a C program to find the largest of three numbers.                                                                      | L3         | 1         | 8            |
|             | <b>Or</b>                                                                                                                       |            |           |              |
|             | b i Build a C program that performs addition of 2D arrays.                                                                      | L3         | 1         | 8            |
|             | ii Build C Program to reverse an array element in an array.                                                                     | L3         | 1         | 8            |
| 12.         | a i Write a C program to store the employee information using structure and search a particular employee using Employee number. | L3         | 2         | 10           |
|             | ii Compare structures and unions                                                                                                | L3         | 2         | 6            |

**Or**

|           |     |                                                                                                                                                                                                                                                                              |    |   |    |
|-----------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|----|
|           | b i | Write a C program to copy contents from one file to another file.                                                                                                                                                                                                            | L3 | 2 | 10 |
|           | ii  | Experiment with four types of preprocessor directives.                                                                                                                                                                                                                       | L3 | 2 | 6  |
| 13.       | a   | Write a C program for linked list implementation of list.                                                                                                                                                                                                                    | L3 | 3 | 16 |
| <b>Or</b> |     |                                                                                                                                                                                                                                                                              |    |   |    |
|           | b   | Convert the $(A+(B*C-(D/E^F)*G)*H)$ given infix expression to postfix expression using stack. Also evaluate the resultant postfix expression with the below mentioned value using stack. A=5, B=2, C=10, D=8, E=2, F=3, G=6, H=3.                                            | L3 | 3 | 16 |
| 14.       | a i | Create a binary search tree for the following numbers start from an empty binary search tree. 45, 26, 10, 60, 70, 30, 40. Show the different tree traversal techniques. Delete keys 10, 60 and 45 one after the other and show the trees at each stage.                      | L3 | 4 | 10 |
|           | ii  | Construct an expression tree for the postfix expression $a\ b\ c\ *\ +\ d\ e\ *\ f\ +\ +$ .                                                                                                                                                                                  | L3 | 4 | 6  |
| <b>Or</b> |     |                                                                                                                                                                                                                                                                              |    |   |    |
|           | b   | Given the input { 4371, 1323, 6173, 4199, 4344, 9679, 1989 } and a hash function of $h(X)=X \pmod{10}$ show the resulting:<br>a. Separate Chaining hash table<br>b. Open addressing hash table using linear probing<br>c. Open addressing hash table using quadratic probing | L3 | 4 | 16 |
| 15.       | a   | Write a C program to sort 'n' numbers using merge sort. Identify how the following numbers are sorted using mergesort: 42, 28, 90, 2, 56, 39, 12, 87, 81, 26.                                                                                                                | L3 | 5 | 16 |
| <b>Or</b> |     |                                                                                                                                                                                                                                                                              |    |   |    |
|           | b   | Write a C program to sort 'n' numbers using quick sort. Identify how the following numbers are sorted using mergesort: 42, 28, 90, 2, 56, 39, 12, 87, 81.                                                                                                                    | L3 | 5 | 16 |