



Diploma in Engineering, Semester-II, January 2026
25DES12002 – Data Structures Using C
(Common to All)

Time: 3 Hrs

Full Marks:60 Marks

(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **all the** questions

- a. Define Array and its types.
- b. Write down common operations on arrays.
- c. Define Queue and its types.
- d. Define weighted graph and degree of a graph.
- e. Define bubble sort and quick sort.

CO #	Blooms Level
CO1	K1
CO1	K1
CO2	K2
CO3	K2
CO4	K1

PART – B

(10 x 5 = 50 Marks)

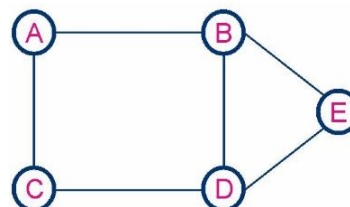
Answer **ANY TWO (a, b OR c, d)** from all the questions below

2. a. Explain data, information and data types with suitable examples.
 - b. Explain operations of data structures with suitable examples.
- (OR)
- c. Explain classification of data structures with examples.
 - d. Explain algorithm complexity with examples.
- 3.a. Write a C program to find the length of a string using strlen().
 - b. Given matrix A[3][4], base address = 2000 and size = 4 bytes. Find the address of A[2][3] in row major order.

Marks	CO #	Blooms Level
5	CO1	K2
5	CO1	K3
5	CO2	K2
5	CO2	K3
5	CO2	K2
5	CO3	K3

(OR)

- c. Explain string operations in C with suitable examples.
 - d. Define row major order and column major order with examples.
- 4.a. Define queue and explain queue operations.
 - b. Explain linear queue and circular queue with suitable diagrams.
- (OR)
- c. Define linked list and explain types of linked list.
 - d. Draw the memory representation of linked list with suitable example.
- 5.a. Explain graph representation methods.
 - b. Compare adjacency matrix and adjacency list.
- (OR)
- c. Explain different types of graphs with examples.
 - d. Construct adjacency list for the given graph.



- 6.a. Explain quick sort with algorithm and example.
 - b. Explain merging algorithm with suitable example.
- (OR)
- c. Explain binary search with suitable example
 - d. Define pivot and explain its role in quick sort.

5	CO2	K2
5	CO3	K3
5	CO2	K2
5	CO3	K3

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