

TE SEM-5 (EXTC) June 2026 G-Scheme

12/6/26

Time: 3 Hours

Total Marks: 80

N.B.: 1. Question No. 1 compulsory.

2. Attempt any Three out of remaining Five questions.

3. Figures to the right indicate full marks.

4. Draw neat diagram wherever necessary.

5. Assume suitable data if required.

1. Attempt any four out of five

A) What is stack? Elaborate one application of stack. 05

B) How to implement stack using an array? 05

C) How data structures are used in computer applications? 05

D) What is time complexity and space complexity referring to algorithm? 05

E) What is adjacency matrix in graph? Justify 05

2. Attempt any two out of three

A) How to add new node at the given location of singly linked list and delete node at the end of singly linked list? Justify with algorithm and example. 10

B) What is linked list? Justify two applications of linked list. 10

C) How singly linked list and doubly linked list are different? How to add node and delete node from doubly linked list? 10

3. Attempt any four out of five

A) Discuss two applications of queue in details. 05

B) Justify different types of trees with examples and neat diagrams 05

C) How graph and tree are different? Justify. 05

D) How queue is implemented using an array? Justify with example and diagram. 05

E) How data structures are classified? Justify. 05

4. Attempt any two out of three

A) What is traversing of a tree? Compare different traversing techniques used on tree. 10

B) What is traversing of a graph? Compare different techniques for traversing of a graph. 10

C) What is BST? How to operate on BST? Justify with example. 10

5. Attempt any two out of three

A) How queue is classified? Justify with examples 10

B) How collision is resolved in hashing? Justify with examples. 10

C) How hashing is performed? Justify with example. 10

6. Attempt any two out of three

A) Explore two types of searching algorithms with example and performance parameters. 10

B) Explore two types of sorting algorithms with examples and performance parameters. 10

C) How linked list is implemented? Justify with example. 10