

S.E. CMPN C-Scheme June 2026

(3 Hours)

SEM III

Total Marks: 80

09/06/2026

- N.B:** (1) Question No. 1 is compulsory
 (2) Attempt any three questions out of the remaining five questions
 (3) Figures to the right indicate full marks
 (4) Make suitable assumptions wherever necessary with proper justifications

- Q1** A. Compare Linear and Hierarchical data structures with suitable example. [05]
 B. Evaluate postfix expression $*82+63-5+$ using stack. Show stack status. [05]
 C. Explain graph representation using: [05]
 1) Adjacency Matrix
 2) Adjacency List
 (with example)
 D. Write C functions to insert and delete elements in circular queue using linked list. [05]
- Q2** A. Construct Huffman Tree for string "algorithm" and determine codes. [10]
 B. Write a C program to convert infix expression to postfix using stack. [10]
- Q3** A. Perform following operations on Doubly Linked List: [10]
 • Insert node at beginning
 • Delete last node
 • Display list in reverse
 Write C program.
 B. Write C functions for insertion and searching in Binary Search Tree. [10]
- Q4** A. Construct AVL Tree for elements: 65, 24, 98, 12, 44, 71, 32, 56, 89, 5. [10]
 Show rotations.
 B. Explain Priority Queue with applications. [05]
 C. Define Topological Sorting with example. [05]
- Q5** A. Insert values into hash table (size = 8) using Linear Probing: [10]
 21, 34, 55, 78, 12, 43, 66 Hash function: $h(k)=k \bmod 8$.
 B. Write algorithm to check balanced parenthesis using stack. [10]
- Q6** A. Construct B-Tree of order 3 for: 40, 75, 22, 18, 90, 64, 51, 33. Show steps. [10]
 B. Write C function for DFS traversal and explain BFS traversal. [10]
