

**BACHELOR OF TECHNOLOGY (CBCS - 2023)**  
**B. Tech. Sem-II Computer Science & Engineering : SUMMER : 2025**  
**SUBJECT: LINEAR DATA STRUCTURES**

Day : Tuesday  
Date : 03/06/2025

S-27697-2025

Time : 10:00 AM-01:00 PM  
Max. Marks : 60

**N.B :**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.
- 4) Use of non programmable **CALCULATOR** is allowed.
- 5) Assume suitable data if necessary.

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Q.1 Explain importance of time complexity and space complexity of an algorithm with suitable example. (10)

**OR**

Q.1 Write Algorithm to insert element in array with example. (10)

Q.2 State advantages and disadvantages of Linked list over array. Write a program to insert and display a node in linked list. (10)

**OR**

Q.2 What is Doubly linked list? Write a C code to insert and delete node in doubly linked list. (10)

Q.3 Write applications of stack. Write algorithm to covert infix to prefix expression. (10)

**OR**

Q.3 Illustrate stack operations PUSH and POP with example. (10)

Q.4 What are the limitations of queue? Explain the algorithms for various operations of circular queue. (10)

**OR**

Q.4 Write a C program to implement queue using array and different operations on it. (10)

Q.5 Discuss the common collision resolution strategies used in closed hashing system. (10)

**OR**

Q.5 Write a procedure for sorting a given list of elements in ascending order using Insertion sort method. (10)  
42, 23, 74, 11, 65, 58, 94, 36, 99, 87.

Q.6 Explain any six function used file handling. (10)

**OR**

Q.6 Explain sequential, Relative, and Indexed sequential file organization in detail. (10)

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