2026

4th Semester Examination (CCFUP : NEP)

COMPUTER SCIENCE

Paper : MI 4-T

(Minor)

(Data Structure)

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Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Group - A

Answer any ***five*** questions : 2×5=10

1. Define a doubly linked list.
2. What is recursion?
3. State two advantages of binary search over linear search.
4. What is a circular queue?
5. Define sparse matrix.
6. What is a height-balanced tree?
7. Write the difference between stack and queue.
8. What is postfix expression?

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Group - B

Answer any ***four*** questions : 5×4=20

9. Explain the operations of push and pop in a stack using array representation.

10. Write the algorithm for selection sort and explain it with an example. 3+2

11. Explain singly linked list with suitable diagram and discuss insertion operation.

12. Construct an AVL tree using the following numbers :

    45, 30, 20, 35, 60, 50, 70, 65

    Show the steps after each insertion.

13. Convert the following infix expression into postfix expression using stack method :

    (A + B) * (C – D)/E + F

14. Explain circular queue using array representation. Mention its advantages over linear queue.

Group - C

Answer any ***one*** question : 10×1=10

15. What is threaded binary tree? Explain pre-order, in-order and post-order traversal with suitable example. 2+8

16. Explain recursion with the example of Fibonacci series. Write down the algorithm for quick sort technique. 5+5