

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2024
(Regular/Improvement/Supplementary)

COMPUTER SCIENCE
FCSS1C02 – ADVANCED DATA STRUCTURES

Time: 3 Hours**Maximum Weightage: 30****Section A: Short answer questions. Answer any *four* questions. Each carries *two* weightage.**

1. Define space complexity of an algorithm with an example.
2. Which data structure is used to implement recursion and why?
3. Define splay tree.
4. Give any four applications of Linked list.
5. Define tries.
6. What are the merits and demerits of adjacency list?
7. Define the process rehashing.

(4 × 2 = 8 weightage)

Section B: Short essay questions. Answer any *four* questions. Each carries *three* weightage.

8. Write an algorithm to insert and delete an element from a circular queue?
9. Analyze the complexity of binary search algorithm.
10. Write a note on Red Black Tree.
11. Define algorithm. How can we analyze its efficiency?
12. Write Huffman algorithm for extended binary tree.
13. What is a hash function? Give some use cases of hashing in Data structure.
14. Differentiate between Max-heap and Min-heap.

(4 × 3 = 12 weightage)

Section C: Essay questions. Answer any *two* questions. Each carries *five* weightage.

15. What is an ADT? Give an overview of various abstract data types.
16. Give a detailed account on the ways of traversing a binary tree, also write the algorithm with proper examples?

(P.T.O.)

17. Explain collision resolution techniques in hashing.

18. Write notes on:

a) Deaps

b) Leftist heaps

c) Binomial heaps

d) Fibonacci heaps

e) Binary heaps

(2 × 5 = 10 weightage)