

**FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2022**  
(Regular/Improvement/Supplementary)

**COMPUTER SCIENCE**  
**FCSS1C02 – ADVANCED DATA STRUCTURES**

Time: 3 Hours

Maximum Weightage: 30

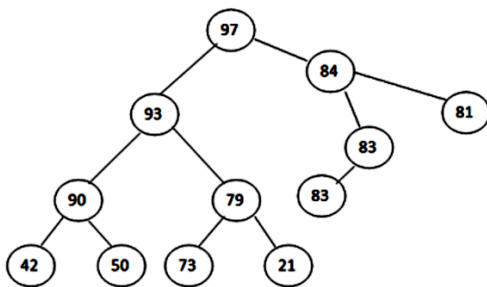
**Section A: Short answer questions. Answer any *four* questions. Each carries *two* weightage.**

1. Convert the infix expression  $(a + b * c * d/e)(f + j * k - l)$  into postfix expression.
2. Write short note on ADT.
3. Write an algorithm to reverse a string using stack.
4. Give an account of classification of data types.
5. What are the characteristics of a good algorithm?
6. Write a note on Fibonacci heaps.
7. What is splay tree?

(4 × 2 = 8 weightage)

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

8. Define max heap. Consider the following max heap, perform delete operation with algorithm.



9. Explain the concept of priority queue with suitable example.
10. Write the algorithm for evaluating postfix expression. Also evaluate the postfix expression  $a b c * d / +$  where  $a = 2, b = 3, c = 4$  and  $d = 6$ .

(P.T.O.)

11. Write a note on complexity of algorithms. Explain various case complexities of linear search.
12. List out various types of hash functions.
13. Write a note on AVL trees.
14. Differentiate between linear probing and quadratic probing.

**(4 × 3 = 12 weightage)**

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

15. List and explain different tree traversal algorithms. Depict the Postorder and Preorder traversal of a binary tree whose Inorder traversal is *e c f b g d h*.
16. Explain Quicksort algorithm and its complexity in detail. Trace out the working of the algorithm for the following input.

38 8 0 27 46 12 88 65 41

17. What is collision? List out various collision resolution techniques.
18. Enumerate various heap structures and their applications.

**(2 × 5 = 10 weightage)**