

Final Assessment Test - June 2023

Course: BCSE202L - Data Structures and Algorithms

Class NBR(s): 5837/5840/5842/5847/5849/5851/5855/

6304/6331

Time: Three Hours

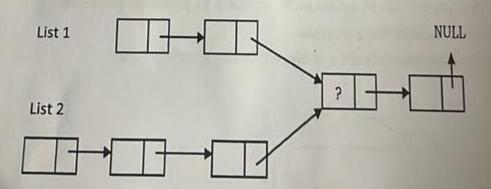
Slot: A1+TA1 Max. Marks:

KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACT

(10 X 10 = 100 Marks)

- 1. a) Find the asymptotic complexity for the function T(n) by using Recursive [5] Tree Method, where T(n) = $2T(\frac{n}{4}) + \sqrt{n}$
 - b) Compute the time complexity of the program by showing all the steps [5] involved.

- a) Reversing elements of a stack using push and pop operations only. Write a [4]
 Pseudocode for find its time and space complexity.
 - b) Suppose there are two singly linked lists both of which intersect at some point as shown in the picture below. The head (or start) pointers of both the lists are known, but the intersecting node is not known. List1 may have n nodes before it reaches the intersection point, and List2 may have m nodes before it reaches the intersection point where m and n may be m = n, m < n or m > n. Give a Procedure for finding the intersection node. Give its time and space complexity. (Note: In the below image the? node is the intersection node).



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