

Q.3 Answer the following.

[16]

A Given an array of integers, write an algorithm to find the second largest element of the array using recursion. Present running time analysis of your algorithm. (06)

CLO1

BL4

B Solve the following recurrence relations.

(10)

CLO1 1) $T(n) = T(n/2) + n$

BL3 2) $T(n) = 9T(n/3) + n^2$

SECTION - II

Q.4 Answer the following.

[18]

A Find the optimal order of multiplying following matrices using dynamic programming approach (complete trace expected). $A_{Total} = A_1 A_2 A_3 A_4 A_5 A_6$ (12)

CLO3

BL3 where $A_1: 2 \times 7$, $A_2: 7 \times 9$, $A_3: 9 \times 11$, $A_4: 11 \times 4$, $A_5: 4 \times 6$, $A_6: 6 \times 3$

B Write an algorithm to decrease the key of a node x in a Binomial heap H to a new value k . Assume that k is not greater than x 's current key. (06)

CLO4

BL2

Q.5 Answer the following.

[16]

A Find longest common subsequence in given two strings A and B using dynamic programming approach (complete trace expected), where $A = \text{pqrspqrspq}$ and $B = \text{pqppaqp}$. (12)

CLO3

BL4

B "Greedy approach always gives an optimal solution for the given problem" – State True or False with a justification. (04)

CLO3

BL5

Q.6 Answer the following.

[16]

A Write an algorithm for Huffman encoding using greedy approach. Derive time complexity of your algorithm. (08)

CLO4

BL4

B Write Floyd's algorithm to find the shortest path between every pair of vertices of a graph. Present running time analysis of the algorithm. (08)

CLO4

BL3