Question Paper

Exam Date & Time: 01-Jun-2022 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES IV SEMESTER B.Sc.(Applied Sciences) in Engg. END SEMESTER THEORY EXAMINATION- MAY/JUNE-2022

DESIGN AND ANALYSIS OF ALGORITHMS [ICS 244]

Marks: 50

Duration: 180 mins.

Answer all the questions.

Missing data may be suitably assumed

Analyze the time complexity for given recurrence relation using back (5) substitution method

i) T(n)=2T(n-1)+1 for n>0 ii) T(n)=2T(n/2)+4n for n>1

^{B)} Using the Recursion tree method, calculate the time complexity for the ⁽⁵⁾ below given recurrence relations.

i) $T(n)=T(n/4)+T(n/2)+n^2$ ii) T(n)=3T(n/2)+n

- Distinguish between Brute force v/s input enhancement algorithm for string ⁽⁵⁾ matching with help of an example.
 - ^{B)} Comprehend the method of Decrease and Conquer technique. Perform ⁽⁵⁾ topological sort on the given graph with clear steps.



3)

Create a self-balancing tree with all required comments/rules for the given ⁽⁵⁾ list of values as follows