Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination
March 2020

Max. Marks: 20 | Duration: 1 Hr.

Class: S.E. | Semester: IV
Course Code:CE41 | Branch: COMP
Name of the Course: Design and Analysis of Algorithms

Instruction:
(1) All questions are compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Q. No.	Questions	Max. Marks	CO-BL-PI
1.a	Define Backtracking , Write and Elaborate general iterative algorithm for backtracking	4M	5-2-2.1.2
1.b	Construct a state space tree to solve sum of subset problem for a subset $w=\{3,5,6,7\}$ and $m=15$, describe the bounding functions for sum of subset problem.	4M	5-3-2.2.3
2.a	Evaluate the following recurrence relation using Master's theorem i) $T(n) = 2^n T(n/2) + n^n$ ii) $T(n)=3T(n/3) - n$	3M	1-5-2.4.1
2.b	Use a recursion tree method to determine a good asymptotic upper bound on the recurrence $T(n) = T(n/2) + n^2$. Use the substitution method to verify your answer.	6M	1-3-1.3.1
3	Explain the strassen's matrix multiplication method and state its time complexity. OR Sort the following numbers using Quicksort. [2 , 1 , 5 , 4 , 3 , 6 , 7 , 8]. state time complexity of quicksort in Best case.	3M 3M	2-2-2.2.4 2-6-2.2.3