

Roll No.....

Total No. of page(s): 1

BT-6/M-20: 36154
IT-302N Analysis & Design of Algorithms (wef 2017-18)

Time: 3 hrs]

[Max. Marks: 75

Note: Attempt five questions in all selecting at least one question from each unit. All questions carry equal marks.

Unit-I

- 1 (a) What do you mean by an algorithm? What is the need to analyze the complexity of an algorithm? Explain with suitable examples.
(b) Differentiate between Worst case and Best case time complexity.
- 2 (a) Explain the divide and conquer paradigm using suitable examples.
(b) What is Strassen Matrix Multiplication algorithm? Show that it is an algorithm with less than cubic (N^3) time complexity.

Unit-II

- 3 What is greedy approach of problem solving? Show how to solve the Knapsack problem using greedy approach using suitable example.
- 4 (a) Show how divide and conquer is different from Dynamic programming.
(b) Solve the LCS problem of following two Strings using Dynamic Programming
Str1 = "ABCDCEBCAD" Str2 = "AEBCABCA"

Unit-III

- 5 (a) Differentiate between Recursion and Backtracking.
(b) Show how to solve 4-queens problem using backtracking.
- 6 What is branch and bound method of problem solving? Show how to solve TSP using branch and bound method.

Unit-IV

- 7 What do you understand by Graph structure? What are the different approaches to traverse a graph? Discuss.
- 8 Differentiate between
(a) Binary tree and Binary Search tree
(b) NP-Hard and NP-Complete Classes