1059
B.E. (Information Technology)
Sixth Semester
ITE-656/674: Design and Analysis of Algorithms

allowed: 3 Hours   Max. Marks: 50

TE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

a) What are polynomial and exponential complexities of algorithms?

b) Compare the performance of merge sort and quick sort algorithms.

c) Define multistage graph problem and mention its significance.

d) How do we represent explicit and implicit constraints in sum of subsets backtracking algorithm?

e) What is Satisfiability problem?   (5x2)

UNIT – I

II. Explain the following with example:-

a) Asymptotic Notation

b) Recursive tree method for recurrences   (2x5)

III. Write and explain the recursive algorithm for quick sort using divide and conquer strategy.   (10)

IV. Discuss Greedy method to solve single source shortest path problem.   (10)

UNIT – II

V. Briefly mention dynamic programming approach. Apply it to solve 0/1 knapsack problem.   (10)

VI. What are the steps in backtracking algorithm? How it is used to solve n-queens problem?   (10)

VII. Explain the following with example:-
a) NP completeness
b) Reducibility   (2x5)

x-x-x