

Code: CS4T2

**II B.Tech - II Semester – Regular / Supplementary Examinations
April 2019**

**DESIGN AND ANALYSIS OF ALGORITHMS
(COMPUTER SCIENCE & ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22 M

1.

- a) List the advantages of an algorithm.
- b) What is average case efficiency of an algorithm?
- c) What is pivot element in quick sort?
- d) What are the advantages of divide and conquer?
- e) List the application of greedy method.
- f) Explain principle of Optimality.
- g) Write the differences between the Greedy method and Dynamic programming.
- h) Write the recursive relation of all pair shortest path in Floyd's algorithm.
- i) Is the optimal binary search tree is the minimization problem? And justify your answer.
- j) What is branch and bound?
- k) List the NP-complete problems.

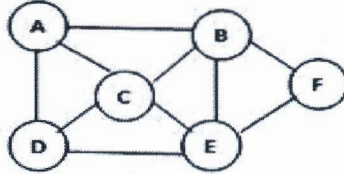
PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Explain different types of asymptotic notations with examples. 9 M
- b) Write an algorithm to find the 'gcd' of two numbers. 7 M
3. a) What is the worst case complexity in merge sort? Explain with a suitable example. 7 M
- b) Write an algorithm for quick sort by using recursive method. Analyze the average time complexity of quick sort. 9 M
4. a) Explain the working principle of Kruskal's algorithm. 7 M
- b) Explain Dijkstra's algorithm with an example. 9 M
5. a) Write the advantages and disadvantages of dynamic programming. 6 M
- b) Number of elements $n=4$, knapsack capacity=5, elements(weights, profits)={ (2,3), (3,4), (4,5), (5,6) }. 10 M

6. a) Find the Hamiltonian cycle in the following graph. 8 M



b) What is sum-of-subsets problem? Write a recursive backtracking algorithm for sum of subsets problem. 8 M