Code: IT5T2

III B.Tech - I Semester – Regular Examinations - December 2016

DESIGN METHODS AND ANALYSIS OF ALGORITHMS
(INFORMATION TECHNOLOGY)

Duration: 3 hours   Max. Marks: 70

PART – A

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

11x 2 = 22 M

1.

   a) How is amortized efficiency different from the regular efficiency?
   b) Mention the methods of specifying an algorithm.
   c) Define Brute force approach and mention few brute force algorithms.
   d) Differentiate the sequential and brute force searching process.
   e) What is Decrease and Conquer Technique? Give some algorithms of this technique.
   f) Write algorithm for Insertion sort.
   g) Define Greedy Technique
   h) Define All-Pairs Shortest path problem.
   i) What is minimum cost spanning tree?
   j) Draw decision tree for 3-element insertion sort.
   k) What is Hamiltonian Circuit problem?

PART – B

Answer any *THREE* questions.   All questions carry equal marks.   16 x 3 = 48 M

2. a) Given a specific problem interpret the typical steps with a legible flowchart for "Designing and analysis of its algorithm".   8 M

   b) List in an organized order the Basic efficiency classes.
                                                                          8 M

3. a) Exemplify the Brute force String matching with the string "NO BODY NOTICED HIM".   10 M

   b) With appropriate example explain Knapsack Problem with exhaustive search.   6 M

4. a) Write pseudocode of Quick sort and mention the best, worst and average time complexities.   8 M

   b) With neat diagrams and algorithm for Bottom-Up-Construction, construct the heap for {2,9,7,6,5,8}.   8 M

5. a) Solve Dijkstra's algorithm for a graph with at least 5 nodes.   8 M

b) Discuss difference between Prim's and Kruskal's algorithm in detail with examples.   8 M

6. a) With appropriate example explain Knapsack problem using Branch and Bound technique.   10 M

b) Solve Subset-sum problem instance S={3,5,6,7} and d=15 using backtracking and draw the state space tree.   6 M