Code: CS4T2

II B.Tech - II Semester – Regular/Supplementary Examinations – April 2017

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

1.
   a) Define order of an algorithm and the need to analyze the algorithm.
   b) What is order of growth?
   c) Define big 'Oh' notations.
   d) List out any two drawbacks of binary search algorithm.
   e) What is divide and conquer method?
   f) Define greedy method.
   g) Define prims algorithm.
   h) List the features of dynamic programming.
   i) What is Floyd's algorithm?
   j) Define solution states and answer state.
   k) Define Hamilton path.

PART – B

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

$$3 \times 16 = 48 \text{ M}$$

2. a) Discuss various Asymptotic notations used for best case, average case and worst case analysis of algorithms.   8 M

   b) What is an Algorithm? How to analyze algorithm efficiency?   8 M

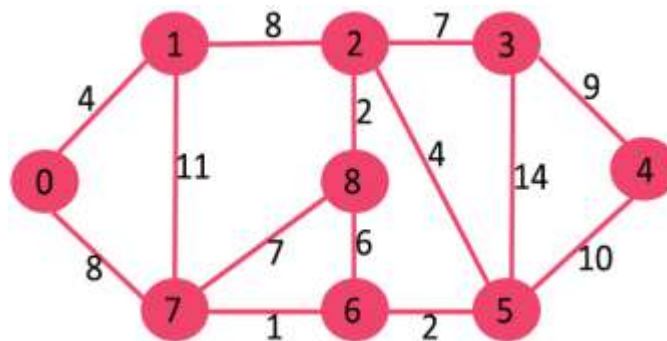3. a) Explain quick sort algorithm and simulate it for the following data: 8 M
      20, 35, 10, 16, 54, 21, 25

   b) Write and explain Merge sort algorithm.   8 M

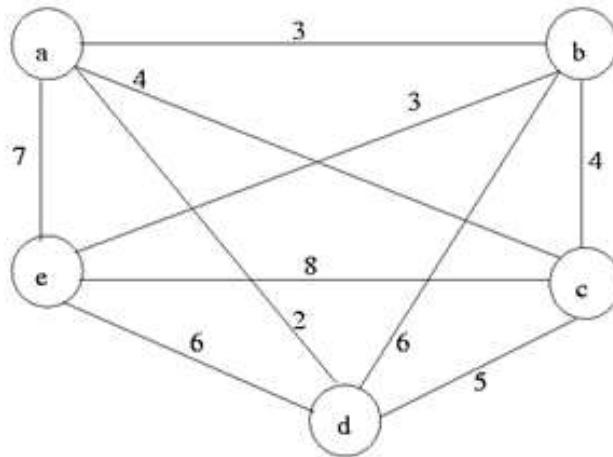4. a) What is greedy method? Explain kruskal's algorithm. 8 M

   b) Find shortest path using dijkstra's algorithm for following graph.   8 M

5. Compute OBST w(i,j), r(i,j), c(i,j), 0<=i<=j<=4 for set(a1,a2,a3,a4)=(for, if, else, while) with p1=1, p2=4, p3=2, p4=1, qo=4, q1=2, q2=4, q3=1, q4=1 .Using r(i,j) construct OBST.   16 M

6. a) Solve the following instance of travelling sales person problem using Least Cost Branch Bound.   8 M

b) Compare NP-hard and NP-completeness. Explain deterministic and non-deterministic algorithms.   8 M