

DARSHAN INSTITUTE OF ENGINEERING AND TECHNOLOGY, RAJKOT

Mid Semester Exam– I (August, 2018)

B.E. Sem.-V (Computer Engineering)

Enroll. No.: _____

Subject: 2150703 - ADA - Analysis and Design of Algorithms

Date: 13/08/2018

Time : 08:00 a.m. to 10:00 a.m.

Total Marks : 42

Instructions: 1. Attempt All Questions.
2. Assume suitable data if necessary.
3. Figure to the right indicate full marks.

Q.1 Attempt any three questions.

1. Define Algorithm. What are the different types of Algorithms? Discuss key characteristics of Algorithm. (3)
2. Define Relation and function. Explain Equivalence Relation with example. (3)
3. Apply counting sort on the following numbers to sort in ascending order. 6, 3, 2, 4, 1, 3, 1, 3, 0. (3)
4. Discuss general characteristics of greedy method. Mention any two examples of greedy method that we are using in real life. (3)

Q.2 Attempt any three questions.

1. Explain Dijkstra algorithm to find the shortest path. (4)
2. What is an amortized analysis? Explain aggregate method of amortized analysis using suitable example. (4)
3. Sort the given elements with Heap Sort Method: 12, 50, 35, 90, 27, 14. (4)
4. Why do we use asymptotic notations in the study of algorithms? Briefly describe the commonly used asymptotic notations. (4)

Q.3 Attempt any three questions.

1. List applications of a minimum spanning tree. Find minimum spanning tree using Kruskal's algorithm for the graph given in Figure 1. (7)
2. Define minimum spanning tree. Find minimum spanning tree using Prim's algorithm for the graph given in Figure 1. (7)
3. Discuss selection sort algorithm with its time complexity. Support your answer with suitable example. (7)
4. Write an algorithm for insertion sort. Sort the letters of word "ENGINEERING" in alphabetical order using insertion sort. (7)

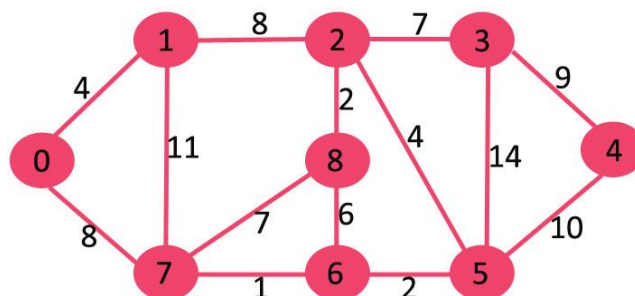


Figure 1