SUBJECT CODE : 19MT/PE/AL15

M. Sc. DEGREE EXAMINATION, NOVEMBER 2019
BRANCH I - MATHEMATICS
FIRST SEMESTER

COURSE   : ELECTIVE
PAPER   : ANALYSIS OF ALGORITHMS
TIME   : 3 HOURS   MAX. MARKS :   100
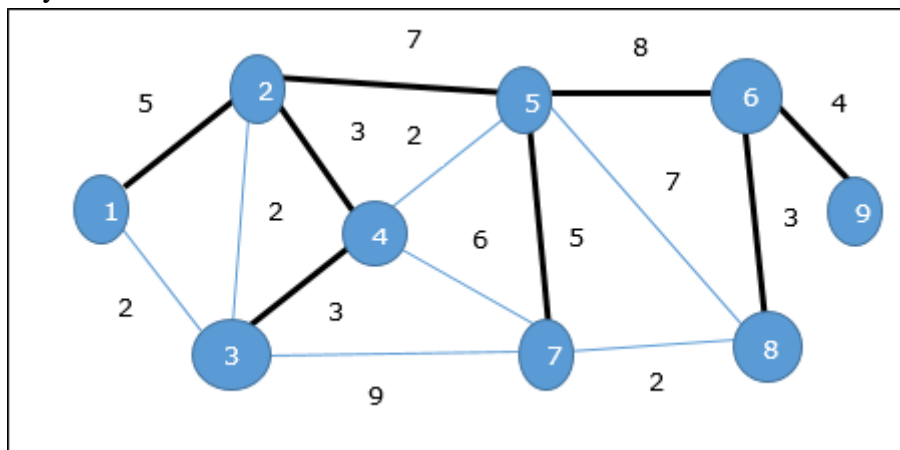
SECTION – A
ANSWER ALL THE QUESTIONS: (5 × 2 = 10)

1. Define Big-O and small-o notations.
2. Explain how k^{th} smallest element algorithm can be used to find the median of a list.
3. Define heap. Mention one of its use.
4. Define Adjacency List.
5. State Job scheduling problem.

SECTION – B
ANSWER ANY FIVE QUESTIONS: (5 × 6 = 30)

6. What are recurrence relations? Explain with suitable example.
7. Explain space complexity.
8. Write an algorithm to count the occurrence of a number in the given list using sequential search.
9. Show the results of quick sort on 42, 23, 74, 11, 65, 58, 94, 36, 99, 87
10. For the following graph, find the minimum cost spanning tree and write the algorithm that you have used.

11. Explain with example NP-complete problems.
12. Explain how automata can be used in solving string matching problem.

SECTION – C

ANSWER ANY THREE QUESTIONS: **(3 × 20 = 60)**

13. Explain how can you measure the efficiency of an algorithm with suitable example.

14. Write and analyse to search for an element in an ordered array.

15. Explain Merge sort algorithm with a suitable example.

16. Write and explain Knuth-Morris-Pratt algorithm.

17. Explain and write algorithm to find solution for the Graph Colouring problem.

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