M.Sc. DEGREE EXAMINATION,APRIL 2020
I Year II Semester
Design and Analysis of Algorithms

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

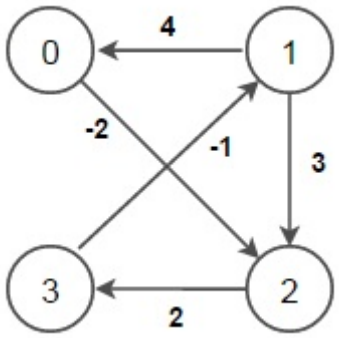
Answer any **TEN** questions

1. Define time complexity.
2. Write the advantages and disadvantages of randomized algorithm.
3. Define objective function.
4. What is optimal and feasible solution?
5. What are bi-connected components?
6. Define spanning tree.
7. Write the strategies for branch and bound technique.
8. What is back tracking?
9. Define Lower bound.
10. Describe merging problem.
11. What is a directed graph?
12. Define a vertex.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Draw the tree of merge Sort algorithm and explain.
14. Explain Strassen's Matrix multiplication with an example, and analyse its efficiency.
15. Explain how do you solve All-Pairs-Shortest-Paths problem for the following graph.



16. Describe the importance of graph coloring problem.
17. Write the concept of lower bound techniques
18. Explain Depth First traversal technique.
19. Explain briefly about optimal storage on tapes problem with suitable example.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Write an algorithm for primality testing and explain.
21. Find the optimal solution for the following knapsack instance with Knapsack Capacity W = 25 and Number of items (N)=4. Profit(Pi)=12,9,9,5 and Weight(Wi)=24,10,10,7
22. Explain single source shortest path problem with an example.
23. Explain the sum of subset problem with an example.
24. Explain NP completeness in detail.

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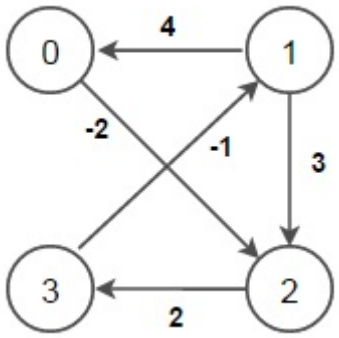

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