

B.Sc. 4th Semester (Honours) Examination, 2024 (CBCS)**Subject : Computer Science****Course : CC-VIII****(Design and Analysis of Algorithms)****Time: 2 Hours****Full Marks: 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***1. Answer any five questions:**

2×5=10

- Define algorithm.
- What are the advantages of Divide and Conquer Algorithm?
- What is Merge Sort?
- What is Binary Search?
- What is Greedy method?
- What is Strassen's Method?
- What is Red-Black Tree?
- What do you mean by a Dynamic Programming?

2. Answer any two questions:

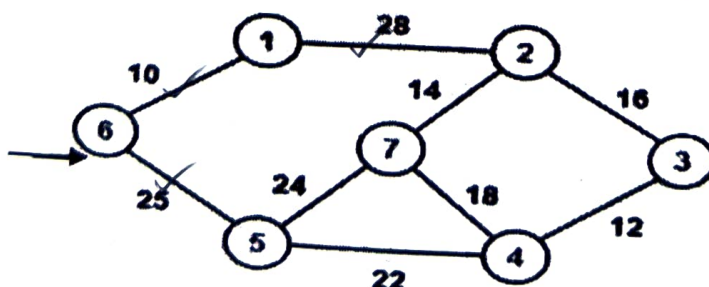
5×2=10

- Discuss the amortized analysis with an example.
- Design Breath-First Search algorithm.
- Explain LR and RL rotations in AVL tree with suitable example.
- Discuss Quick Sort algorithm with an example.

3. Answer any two questions:

10×2=20

- What is Cryptography? What do you mean by P class and NP class? Discuss RSA algorithm. 2+4+4
- Construct AVL tree for the data sequence: 21, 26, 30, 9, 4, 14, 28, 18, 15, 10. 10
- Construct the Minimum Spanning Tree (MST) for the given graph using Prim's Algorithm: 10



SH-IV/COSH/CC-VIII/24

(2)

d. Write short notes (*any two*):

5+5=10

- (i) Dijkstra Algorithm
 - (ii) Rabin-Karp Algorithm
 - (iii) Divide and Conquer Algorithm technique
 - (iv) Greedy Algorithm
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