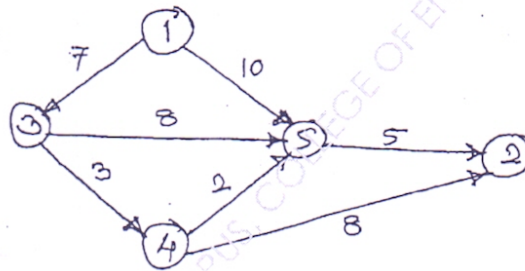


- N.B. : (1) Attempt any four questions out of six.
 (2) Assume suitable data wherever required.

1. (a) Define O , Ω , and θ notations. To find the complexity of given recurrence relation. 10
 - (i) $T(n) = 4T(n/2) + n^2$
 - (ii) $T(n) = 2T(n/2) + n^3$
- (b) Implement the binary search, and derive its complexity. 10
2. (a) Explain 0/1 knapsack problem using dynamic programming 10
- (b) Explain optimal storage on tapes and find the optimal order for given instance. 10
 $n = 3$, and $(l_1, l_2, l_3) = (5, 10, 3)$. 10
3. (a) Let $n = 4$, $(p_1, p_2, p_3, p_4) = (100, 10, 15, 27)$ and $(d_1, d_2, d_3, d_4) = (2, 1, 2, 1)$. Find feasible solutions, using job sequencing with deadlines. 10
- (b) Find a minimum cost path from 3 to 2 in the given graph using dynamic programming. 10



4. (a) Explain 8 Queen problem. 10
- (b) Explain sum of subset problem, Find all possible subsets of weight that sum to m , let $n = 6$, $m = 30$, and $w[1:6] = \{5, 10, 12, 13, 15, 18\}$ 10
5. (a) Write an algorithm for Kunth-Morrie-Pratt (KMP). 10
- (b) Explain the strassen's Matrix multiplication. 10
6. Write note on (any two):- 20
 - (i) Randomized Algorithms.
 - (ii) Branch and bound strategy
 - (iii) Huffman coding
 - (iv) Rabin karp algorithm