

(3 Hours)

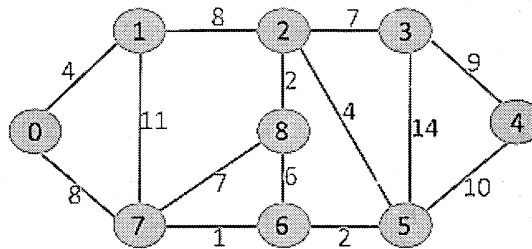
[Total Marks : 80]

N.B.: (1) Question No. 1 is compulsory.

(2) Attempt **any three** out of the remaining **five** questions.

(3) Assumptions made should be **clearly stated**.

1. (a) Explain recurrences and various methods to solve recurrences. 5
(b) Differentiate between P and NP. 5
(c) Differentiate between Prim's and Kruskal's algorithm. 5
(d) Explain Dynamic programming with example. 5
2. (a) Define Branch and Bound and Explain 15 Puzzle problem. 10
(b) Apply Dijkstra's algorithm on the following graph. 10
Consider vertex 0 as source.



3. (a) Find Longest Common Subsequence for Following strings : 10
X = ababcde
Y = bacadb
(b) Explain Backtracking with n-queen problem. 10
4. (a) Formulate Knapsack problem, Explain and differentiate between greedy knapsack and 0/1 knapsack. 10
(b) Explain Multistage graph with example. 10
5. (a) Rewrite KMP algorithm and explain with example. 10
(b) Define chromatic number of graph. Explain Graph coloring algorithm. 10
6. Write a short note on following (**any 4**) : 20
 - a) Master theorem
 - b) Rabin Karp algorithm
 - c) Steps for NP Completeness proofs
 - d) Assembly line scheduling problem
 - e) Strassen's matrix multiplication