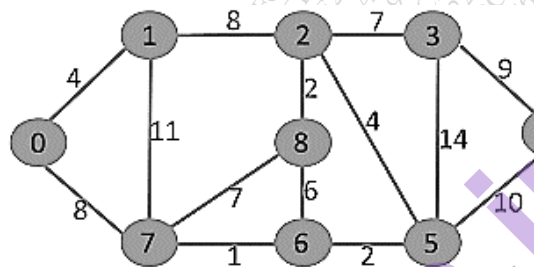


(3 Hours)

[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