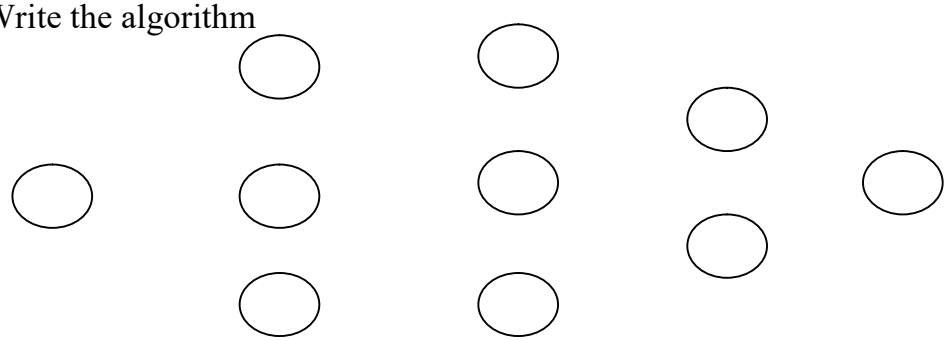
Assignment Questions on Dynamic Programming

Q.1) For the following multistage graph, find shortest path from Source to Destination, using

1) Backward Algorithm

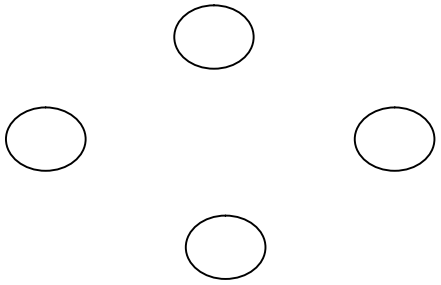
Write the algorithm



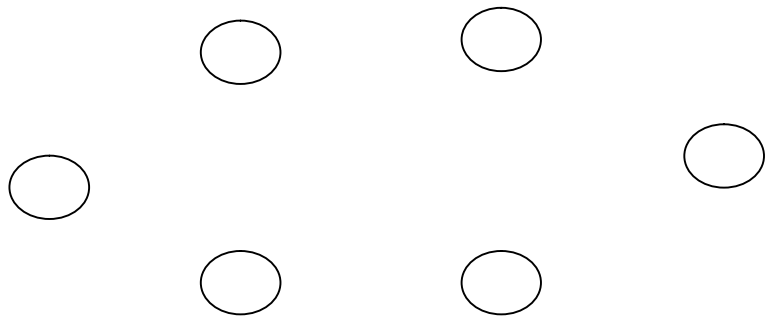
Q.2) For the following complete directed graph, implement Travelling Salesman Problem. Find the shortest path assuming vertex 1 as source vertex. Show how shortest path can be modified if source vertex is changed.

0	**9**	**8**	**10**
12	**0**	**14**	**9**
7	**8**	**0**	**11**
14	**5**	**6**	**0**

Q.3) Implement all pairs shortest path on the following graph. Also write the algorithm for same. Find the cost of path from each vertex to all other vertices present in the graph.



Q.4) What is significance of negative edges Bellman Ford Algorithm. Find the path matrix and parent matrix for the following graph and shortest path length to different vertices.



Q.5) What is longest common subsequence. Find LCS between following strings.

String X = a a b a b a b
String Y = a b b a

Write an algorithm to generate LCS Matrix and Print the LCS Matrix

Q.6) Implement String editing algorithm on following strings and find the cost of string editing. Write an algorithm to generate editing matrix and an algorithm to print sequence of operations involved in editing.

String X = a a b a b a b
String Y = a b a a b a

String A = c y c l e
String B = b i c l e

Q.7) Design the optimal binary search tree for the following probabilities. Write an algorithm to generate the three matrices required for constructing the OBST.

Example – 1						
i	0	1	2	3	4	5
pi	-	0.11	0.08	0.10	0.15	0.06
qi	0.09	0.05	0.12	0.05	0.05	0.04
Example – 2						
i	0	1	2	3	4	
pi	-	0.15	0.10	0.15	0.15	
qi	0.10	0.10	0.05	0.10	0.10	