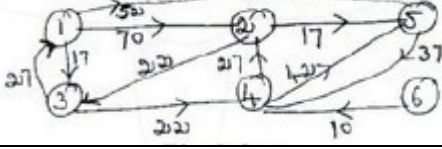
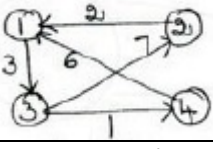
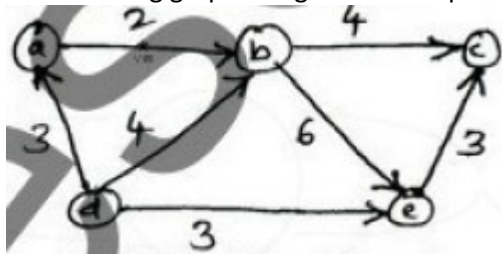
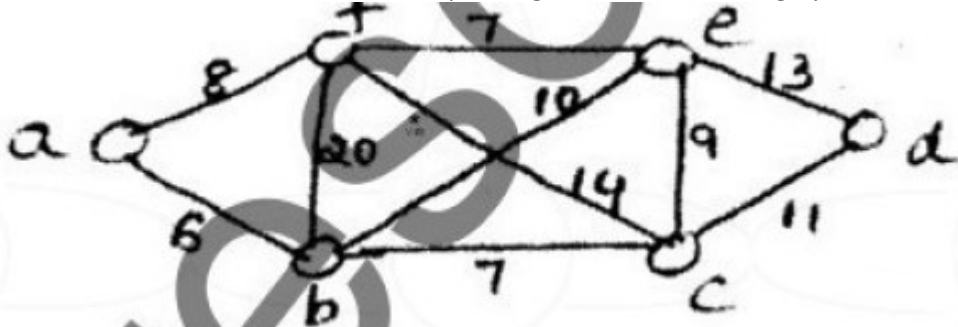
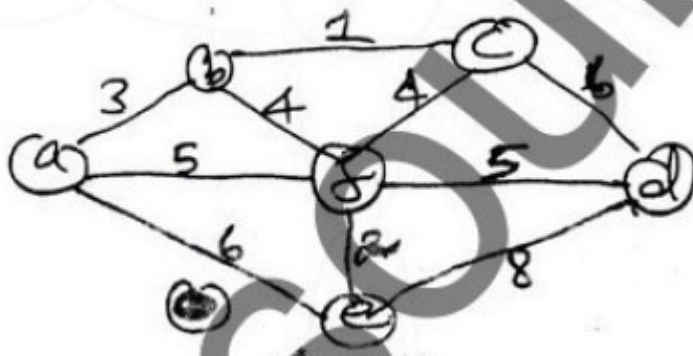


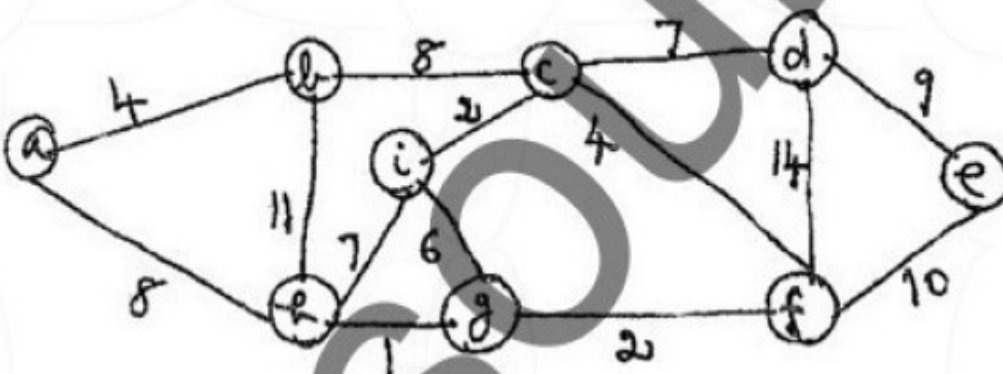
Question Bank for II IA

Sl No	Questions
1	What are the three major variations of decrease and conquer technique? Explain each with an example
2	Sort the letters of the word “EXAMPLE” in alphabetical order using insertion sort
3	Describe the Johnson Trotter algorithm for generating permutations. Generate all permutations of {3,5,7} using the following i) Bottom up minimal change algorithm ii) Johnson trotter algorithm
4	Write an algorithm for DFS. With an example, explain how this algorithm can be used to solve topological sorting problem.
5	Write and explain DFS and BFS algorithm, with example
6	In the weighted digraph given below, determine the shortest paths from vertex 1 to all other vertices 
7	Obtain the shortest paths from every vertex to every other vertex in the digraph given below 
8	Using Warshall's algorithm , obtain the transitive closure of the matrix given below: $R = \begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \\ 1 & 0 & 1 & 0 \end{pmatrix}$
9	Apply Warshall's algorithm to find the transitive closure of the graph defined by the following adjacency matrix $\begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix}$
10	Using Floyd's algorithm, solve the all-pairs shortest path problem for the graph whose weight matrix is given below:

	$\begin{pmatrix} 0 & 2 & \infty & 1 & 8 \\ 6 & 0 & 3 & 2 & \infty \\ \infty & \infty & 0 & 4 & \infty \\ \infty & \infty & 2 & 0 & 3 \\ 3 & \infty & \infty & \infty & 0 \end{pmatrix}$																		
11	<p>Apply the dynamic programming following instance of the knapsack problem and solve.</p> <table><tr><td>Item</td><td>Weight</td><td>Value</td></tr><tr><td>1</td><td>2</td><td>\$12</td></tr><tr><td>2</td><td>1</td><td>\$10</td></tr><tr><td>3</td><td>3</td><td>\$20</td></tr><tr><td>4</td><td>2</td><td>\$15</td></tr></table>	Item	Weight	Value	1	2	\$12	2	1	\$10	3	3	\$20	4	2	\$15			
Item	Weight	Value																	
1	2	\$12																	
2	1	\$10																	
3	3	\$20																	
4	2	\$15																	
12	<p>Solve the following knapsack problem using dynamic approach:</p> <table><tr><td>Item</td><td>Weight</td><td>Value</td></tr><tr><td>1</td><td>3</td><td>25</td></tr><tr><td>2</td><td>2</td><td>20</td></tr><tr><td>3</td><td>1</td><td>15</td></tr><tr><td>4</td><td>4</td><td>40</td></tr><tr><td>5</td><td>5</td><td>50</td></tr></table> <p>Capacity $W=6$</p>	Item	Weight	Value	1	3	25	2	2	20	3	1	15	4	4	40	5	5	50
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1	3	25																	
2	2	20																	
3	1	15																	
4	4	40																	
5	5	50																	
13	<p>Write an algorithm to solve knapsack problem using Greedy technique. Find the optimal solution to the knapsack instance $n=7, m=15$ $(P_1, P_2, \dots, P_7)=(10, 5, 15, 7, 6, 18, 3)$ $(W_1, W_2, \dots, W_7)=(2, 3, 5, 7, 1, 4, 1)$</p>																		
14	<p>Enlist Floyd's algorithm and explain its working with an example. Also find all pairs shortest path for the following graph using this technique</p> 																		
15	<p>Use Kruskal's method to find min cost spanning tree for the below graph</p> 																		
16	<p>Write and explain Prim's algorithm and Prim's algorithm for the following graph</p>																		



- 17 Using Kruskal's algorithm, obtain a minimum cost spanning tree for the graph shown below



- 18 With an example and algorithm explain the working of kruskals algorithm

- 19 Construct a Huffman code for the following data:

Character	A	B	C	D	E
Probability	0.4	0.1	0.2	0.15	0.15

Decode the text whose encoding is 100010111001010 using the above Huffman code

- 20 Obtain topological sorting for the diagram given below
Using i) Source elimination Method ii) DFS Method

