



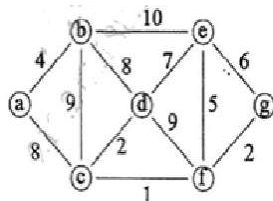
	InSem Examination-II Summer 2024		
	Exam Seat No.:		
	Academic Year: 2023-2024	Semester: IV	
	Name of Programme: B.Tech	Pattern: 20	
	Name of Course: Advanced Data Structures	Course Code: COM222012	
	Max. Marks: 30	Duration: 1	

	<p>Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.</p> <ol style="list-style-type: none">1. This question paper contains 4 page(s).2. Answer to each new question is to be started on a new page.3. Assume suitable data wherever required, but justify it.4. Draw the neat labelled diagrams, wherever necessary.5. The last column indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.	
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Question No. 1 Attempt following Question

- a) Construct a minimum spanning tree (step by step) from the following graph using Prim's algorithm.

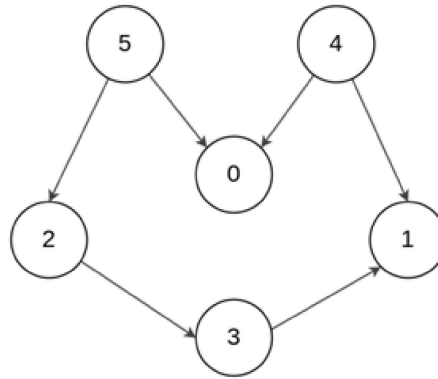
(5) Col



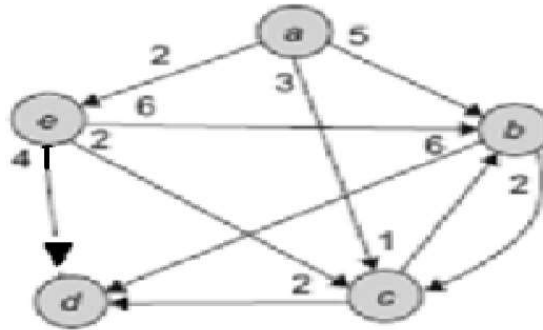
OR

- b) Identify the Topological ordering for following graph also mention 2 applications

(5) Col

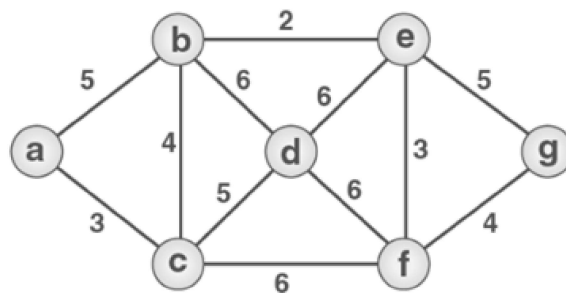


- c) Make use of following graph to compute the shortest path using dijkstra's algorithm and distance between the vertices a and all vertices. (5) Col



OR

- d) Construct a minimum spanning tree (step by step) from the following graph using Kruskal's algorithm. (5) Col



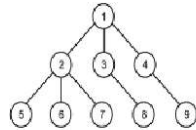
- e) Develop an algorithm for Breadth-first search and mention its time complexity (5) Co1, CO5

OR

- f) Develop Prim's algorithm and mention its time complexity (5) Co1, CO5

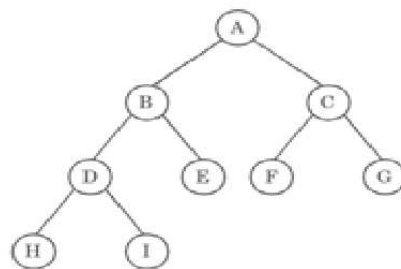
Question No. 2 Attempt following Question

- a) Construct Binary tree from following general tree (5) Co1



OR

- b) With the help of diagram, show different Binary tree representation methods and specify their advantages and disadvantages (5) Co1
- c) Convert following binary tree into threaded tree. Also show memory representation of the threaded tree with the help of node structure. (5) Co1



OR

- d) From the given traversal construct a binary tree (5) Co1
- Preorder: 1 2 4 5 7 3 6 8

Inorder: 4 2 7 5 1 8 6 3

- e) Develop C++ function a non-recursive C++ function to traverse a binary tree containing integers in (5) Col
inorder.

OR

- f) Develop C++ function for insertion of a node into a BST. (5) Col

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