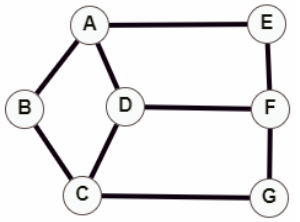
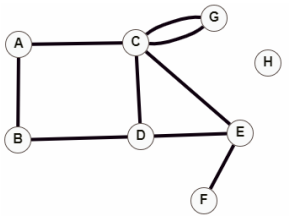
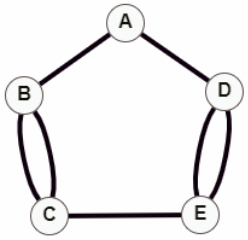
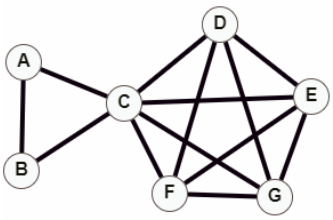
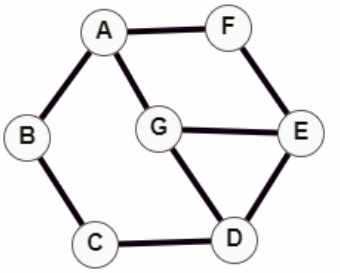
Subject: DM **SEM: 04** **AY: 2024-25**

Assignment: 4
Unit: Graphs & Trees

1	Define the graph. State and prove first theorem of graph theory	Apply
2	Find the degree of all vertex of graph. 1]  2]  3]  4]  5]  	Understanding
3	Draw a graph with five vertices a, b, c, d, e such that deg(a) =3, b is an odd vertex, deg(c)=2 and e and d are adjacent.	Evaluate
4	Show that the maximum number of edges in a simple graph with n vertices is $\frac{n(n-1)}{2}$.	Understanding
5	Prove that in a graph the number of the vertices with odd degree is even.	Analysing
6	A graph has five vertices of degree 4 and two vertices of degree 2. How many edges does it have?	
7	Draw K_7 , $K_{3,5}$, $K_{2,6}$	Application
8	a. For each of the given Graph G, draw picture of subgraphs G-{A}, G-{F}, G-{h}.	Evaluate

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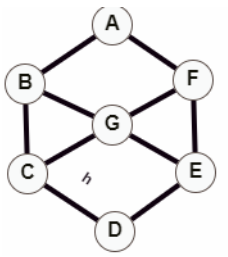
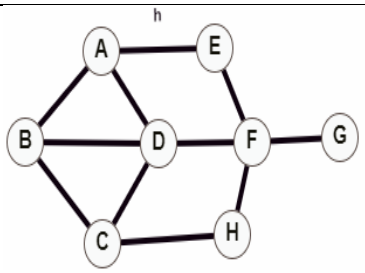
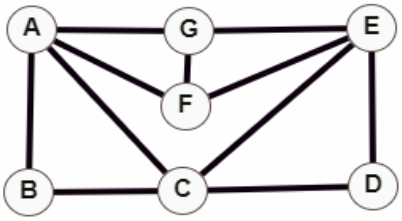
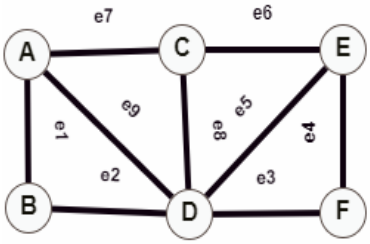
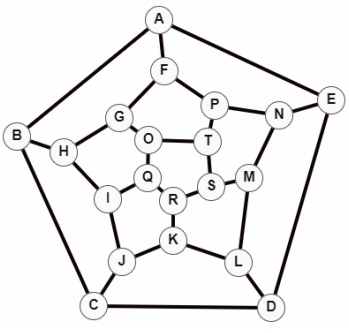
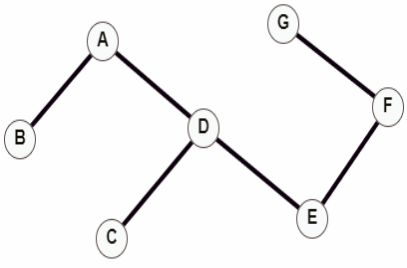
	1]  2] 	
9	Define (1) Hamiltonian Graph (2) Euler Graph (3) Petersen graph.	Evaluate
10	Check the following are Hamiltonian graph or not. 1]  2]  3]  4] 	Understanding
11	Is the graph Eulerian? Explain your answers. Also check for Hamiltonian graph?	Understanding

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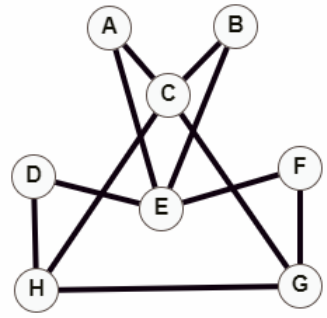
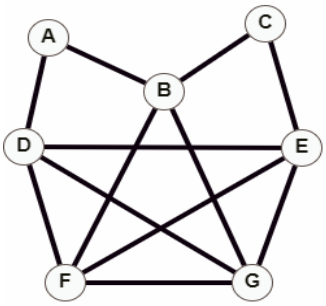
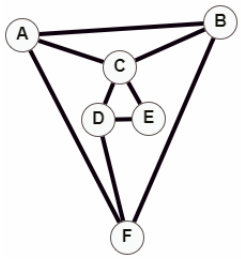
Assignment: 4
Unit: Graphs & Trees

	1]  2] 	
12	What is Petersen graph? Is the graph Hamiltonian? Is it Eulerian? Explain your answers.	Understanding
13	Is the graph Hamiltonian? If no, why not? If yes, find all Hamiltonian cycles. 	Understanding
14	Prove that the following are equivalent for an n-vertex graph T. 1. T is a tree. 2. T is connected and has no cycles. 3. For u, v ∈ V (T), T has exactly one path between u to v. 4. T is connected and has exactly n − 1 edges.	Understanding
15	Explain the spanning tree. Consider the following graph and draw its possible spanning tree.	Applying

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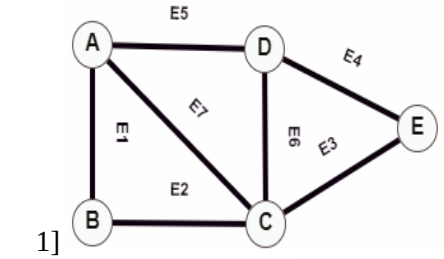
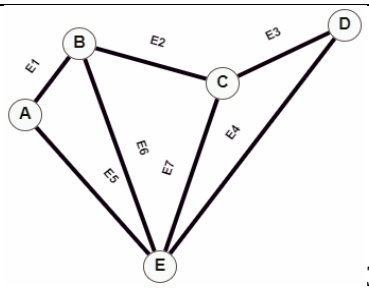
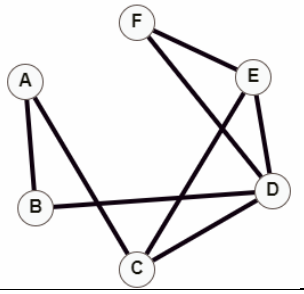
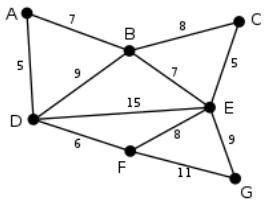
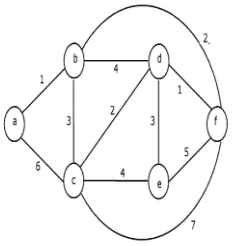
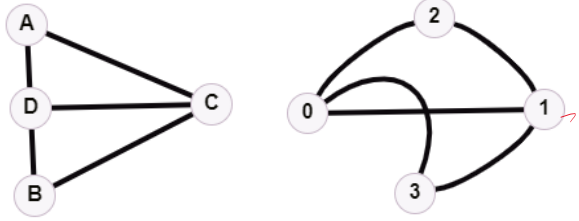
	 1]  2] 3] 	
16	How many spanning trees does K_4 have? why?	Evaluate
17	Derive the minimum weighted spanning tree of following graph.  (1)  (2)	Understanding
18	Which of the following are Isomorphic? 1]  2]	

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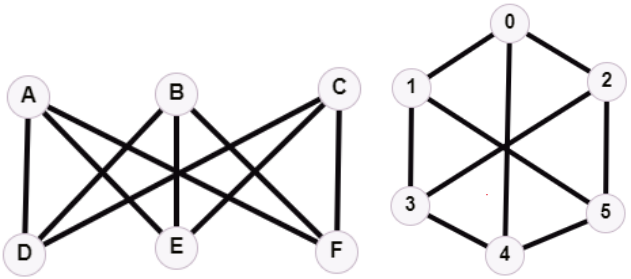

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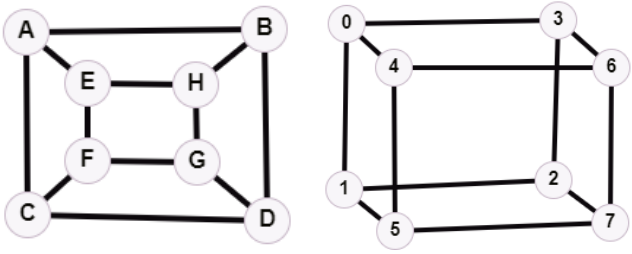

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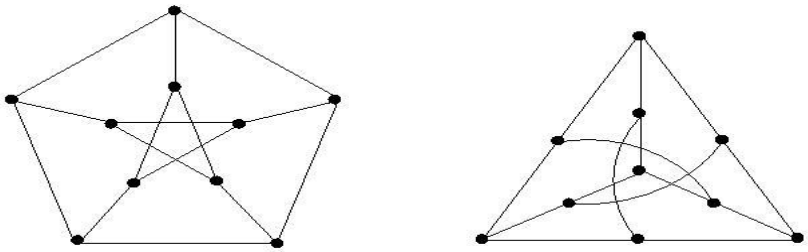

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