

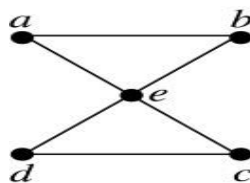
Max.Marks:20

Problem-1

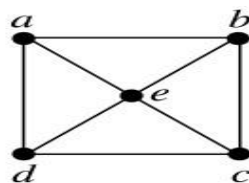
Suppose that there are four employees in the computer support group of the School of Engineering of a large university. Each employee will be assigned to support one of four different areas: hardware, software, networking, and wireless. Suppose that Ping is qualified to support hardware, networking, and wireless; Quiggley is qualified to support software and networking; Ruiz is qualified to support networking and wireless, and Sitea is qualified to support hardware and software. Use appropriate graph to model the four employees and their qualifications.

Problem-2

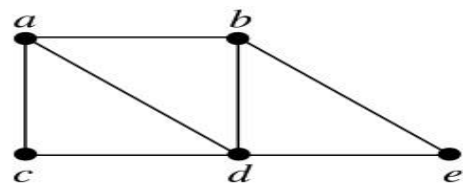
- (a) Check whether the graphs have Euler path, Euler circuit, Hamilton path or Hamilton circuit, if yes find such a path



G_1



G_2

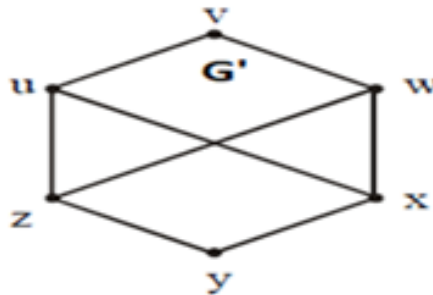
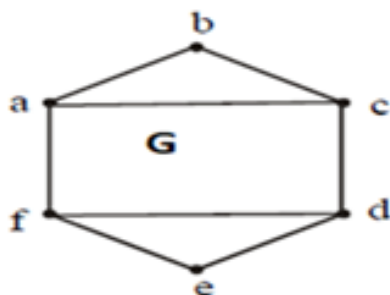


G_3

- (b) Draw the graph of $K_{3,4}$ and determine graph is Bipartite or not if yes then explain?

Problem-3

Determine given two graphs are isomorphic or not ,if yes then write function $F: V(G) \rightarrow V(G')$ that defines the isomorphism and show adjacency matrices If they are not, give an invariant for graph isomorphism that they do not share.



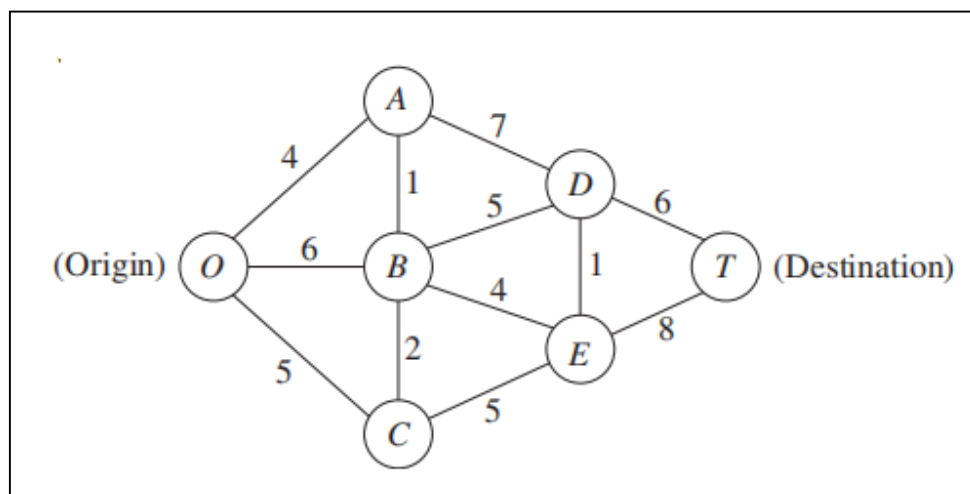
Problem-4 (TSP)

Manuel is the chief operating officer for the Soft Stone Café. Manuel lives in Orlando, FL, and needs to visit Soft Stone Café restaurants in Atlanta, Georgia, Memphis, Tennessee, and New Orleans, Louisiana. He would like to determine the least expensive way to visit each of these cities one time and return to his home in Orlando. To help, Manuel searched online and obtained the least expensive one – way fares offered between each of the four cities. Use the brute force method.

	Orlando	Atlanta	Memphis	New Orleans
Orlando (O)	*	\$103	\$161	\$139
Atlanta (A)	\$103	*	\$229	\$110
Memphis (M)	\$161	\$229	*	\$171
New Orleans (N)	\$139	\$110	\$171	*

Problem-5

Use Dijkstra's algorithm to find the shortest path through each of the following networks, where the numbers represent actual distances between the corresponding nodes. Show all steps in tabular form.



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