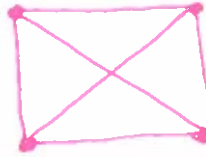


Chapter 6 – Test 2 REVIEW

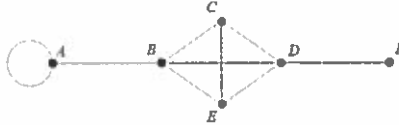
Name: Key
Date: _____

1. Give an example of a graph which has a Hamilton circuit but does not have an Euler circuit?

Answer: one example -



2. Consider the graph shown below; does the graph contain a Hamilton circuit? Explain.



Answer: No. Once you travel from vertex A to vertex B, you are never able to return to vertex A.

3. Consider the graph from problem 2; how many Hamilton paths are there from vertex A to vertex F?

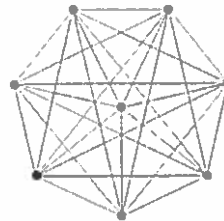
Answer: 2

4. How many vertices are in a complete graph with 21 edges?

Answer: 7

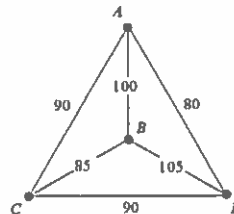
5. How many distinct Hamilton circuits, if any, are there in the graph shown below? (Mirror images of a circuit are considered distinct from the circuit.)

Answer: 7! = 5040



6. For the weighted graph given below, use the brute-force algorithm to find the optimal tour. Write the tour using vertex A as the starting and ending vertex.

Answer: A, B, C, D, A
or
A, D, C, B, A



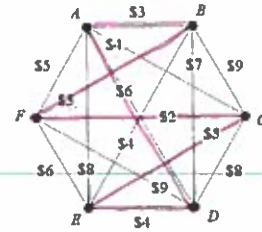
Chapter 6 – Test 2

Name: _____

Date: _____

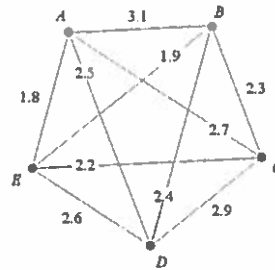
7. For the weighted graph shown below, apply the cheapest-link algorithm and find the cost of the resulting tour.

Answer: \$23



8. For the weighted graph below, apply the nearest-neighbor algorithm with D as the starting point and write the resulting tour.

Answer: D, B, E, A, C, D
or
D, C, A, E, B, D



9. The chart below shows the one-way charge for a taxi-cab ride between five different cities. Give the cost of a tour found by applying the repetitive nearest-neighbor algorithm.

Answer: \$57

	Burlington	Essex Junction	Hinesburg	Milton	Williston
Burlington	*	\$10	\$15	\$15	\$8
Essex Junction	\$10	*	\$12	\$9	\$5
Hinesburg	\$15	\$12	*	\$20	\$14
Milton	\$15	\$9	\$20	*	\$22
Williston	\$8	\$5	\$14	\$22	*

10. Suppose that in solving a TSP (traveling salesman problem) you use the cheapest-link algorithm and find that the length of the tour is 15,000 miles. If the optimal tour has a length of 12,000 miles, then what is the relative error of your cheapest-link tour? Express your answer as a percentage.

Answer: 25%

$$\frac{15000 - 12000}{12000} = 0.25$$