Quiz 8

Due May 31 at 11:59pm   **Points** 8   **Questions** 8

Available May 22 at 11:59pm - May 31 at 11:59pm 9 days   **Time Limit** 15 Minutes

Instructions

Note: responses and correct answers will be shown after the due date.

This quiz was locked May 31 at 11:59pm.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	11 minutes	7 out of 8

⚠ Correct answers are no longer available.

Score for this quiz: **7** out of 8
Submitted May 25 at 9:12pm
This attempt took 11 minutes.

Question 1	1 / 1 pts

You are using a polynomial time 2-approximation algorithm to find a tour T for the metric traveling salesman problem. Which of the following statements is true.

○ The tour T is never optimal for any instance of the problem.

⦿ The cost of tour T is at most twice the cost of the optimal tour.

○ All of the above

○ The cost of tour T is always 2 times the cost of the optimal tour.

○

The ratio of the cost of the optimal tour divided by the cost of tour T is 2.

Question 2   1 / 1 pts

Which of the following graph algorithms is used to create a polynomial-time 2-approximation algorithm for the metric traveling salesman problem?

○ DFS

○ Shortest Path

◉ MST

○ None of the above

○ BFS

Question 3   1 / 1 pts

An approximation algorithm with an approximation ratio of 2 is always twice as fast as an exact algorithm for solving the problem.

○ True

◉ False

Question 4   1 / 1 pts

The traveling salesman problem can never be solved exactly.

○ True

◉ False

Question 5 1 / 1 pts

The greedy method can be a good technique to use when designing an approximation algorithm.

◉ True

○ False

Question 6 1 / 1 pts

Approximation algorithms are used to solve NP-complete decision problems.

○ True

◉ False

Question 7 1 / 1 pts

A 2-approximation algorithm for the minimum vertex cover problem can return

○ vertex covers that are at most twice the size of the optimal vertex cover.

○ vertex covers that are at most half the size of the optimal vertex cover.

○ vertex covers that are at least twice the size of the optimal vertex cover.

Incorrect

Question 8

0 / 1 pts

Assuming P $\neq$ NP, which one is true?

○ Metric traveling salesman problem has a constant factor polynomial-time approximation algorithm.

○ General case traveling salesman problem has a constant factor polynomial-time approximation algorithm.

◉ None of the above.

Quiz Score: **7** out of 8