

## Week 9 Quiz

### Q1.

What is the primary objective of the Traveling Salesman Problem (TSP)?

- A. To visit each city at least once with the shortest possible path
- B. To find the longest possible route that visits each city exactly once and returns to the starting city
- C. To find the shortest possible route that visits each city exactly once and returns to the starting city
- D. To visit each city exactly twice and minimize the travel distance

### Q2.

What does the approximation ratio of an approximation algorithm represent?

- A. The sum of the optimal solution and the solution found by the algorithm
- B. The time complexity of the algorithm
- C. The ratio of the quality of the solution found by the algorithm to the quality of the optimal solution
- D. The number of steps taken by the algorithm to find a solution

### Q3.

Which of the following correctly describes the relationship between the complexity classes P and NP?

- A. All problems in NP can be solved in polynomial time, so  $P = NP$ .
- B. All problems in P can be verified in polynomial time, so  $P \subseteq NP$ .
- C. No problems in P can be verified in polynomial time.
- D. Problems in NP are easier to solve than problems in P, so  $NP \subseteq P$ .