

The following are based on Chapter 25 of the textbook, on all-pairs shortest paths algorithms.

1. (1 pt.)

- This *quick check* is **closed book, notes, etc.**
- You may use a *hand-written* 3 in. × 5 in. **reference card** as announced.
- Use the **textbook's conventions** and terminology.

Read the above carefully; then write your name below:

2. (2 pts.) If we solve an all-pairs shortest paths problem using repeated applications of Dijkstra's single-source shortest paths algorithm with a binary min-heap, the asymptotic running time, as a function of  $V$  and  $E$  is: \_\_\_\_\_

3. (3 pts.) Name three all-pairs shortest path algorithms whose pseudocode is listed in this chapter.

4. (2 pts.) What does the  $(i, j)$ th entry of a *predecessor matrix* represent?

5. (1 pt.) What is the matrix operation that is most closely related to the task of computing all-pairs shortest paths (name it)?

6. (1 pt.) What is the conventional name for a graph  $G^* = (V, E^*)$  where  $E^* = \{(i, j) \mid \text{there is a path in } G \text{ from vertex } i \text{ to vertex } j\}$ ?