

Name: \_\_\_\_\_

ID: \_\_\_\_\_

Section: 1 (2:30pm)

2 (1:30pm)

1. PA = LU factorization (5) \_\_\_\_\_

solution (5) \_\_\_\_\_

\_\_\_\_\_ / 10

2. (a) recurrence equations (10) \_\_\_\_\_

(b) cost (5) \_\_\_\_\_

(c) cost (5) \_\_\_\_\_

\_\_\_\_\_ / 20

3. (a) Google matrix (10) \_\_\_\_\_

(b) PageRank (5) \_\_\_\_\_

(c) verification (5) \_\_\_\_\_

\_\_\_\_\_ / 20

4. Markov matrix \_\_\_\_\_ / 10

5. (a) sum preserved (10) \_\_\_\_\_

(b)  $\text{sum}(x_1) \neq -0$  (5) \_\_\_\_\_

\_\_\_\_\_ / 15

6. (a) code (10) \_\_\_\_\_

(b) small web (5) \_\_\_\_\_

(c) top 20 (5) \_\_\_\_\_

(d) experiment (5) \_\_\_\_\_

\_\_\_\_\_ / 25

Total: (100) \_\_\_\_\_