

Name: _____

1. (1 pt.)

- **Read all material carefully.**
- *If in doubt whether something is allowed, ask, don't assume.*
- You may refer to your books, papers, and notes during this test.
- E-books may be used *subject to the restrictions* noted in class.
- Computers are not permitted, except when used strictly as e-books.
- Network access of any kind (cell, voice, text, data, ...) is not permitted.
- Write, and draw, carefully. Ambiguous or cryptic answers receive zero credit.
- Use class and textbook conventions for notation, algorithmic options, etc.

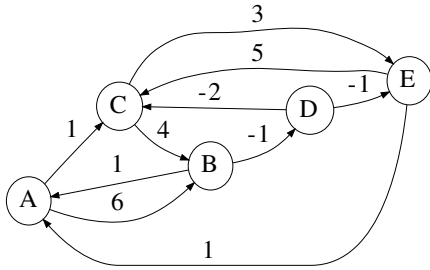
Write your name in the space provided above.

WAIT UNTIL INSTRUCTED TO CONTINUE TO REMAINING QUESTIONS.

Do not write on this page below this point.

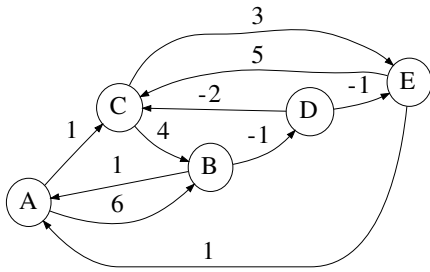
Q	Full Score
1	1
2	20
3	20
4	9
total	50

2. (20 pts.) Trace the execution of the textbook's FASTER-APSP algorithm (p. 653) on the following graph. Depict all intermediate matrices. Order vertices lexicographically (alphabetically).



[additional space for earlier material]

3. (20 pts.) Repeat Question 2 with the textbook's FLOYD-WARSHALL algorithm (p. 657), using Figure 23.4 (p. 658) as a model.



[additional space for earlier material]

4. (9 pts.)

- (a) For an algorithmic problem of your choice, provide a precise but informal English description of the problem, input, desired output along with constraints. [Hint: Pick a simple problem!]
- (b) Using the textbook's terminology, formally define an *abstract problem* corresponding to the above.
- (c) Using the textbook's terminology, formally define an *concrete problem* corresponding to the above. Describe the *encoding* used by the concrete problem.

[additional space for earlier material]

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