

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.
- Write, and draw, carefully. Ambiguous or cryptic answers receive zero credit.
- Use class and textbook conventions for notation, algorithmic options, etc.
- For the duration of the exam, the only communication (live or network) should be with the instructor for clarifications, etc.

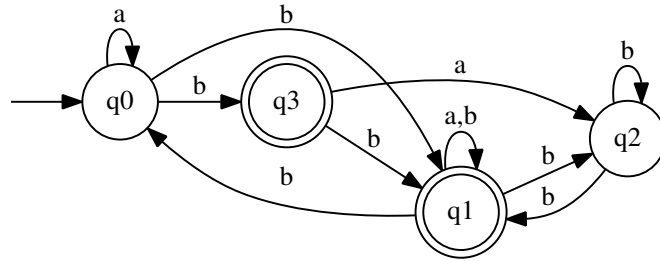
Write your name in the space provided above.

WAIT UNTIL INSTRUCTED TO CONTINUE TO REMAINING QUESTIONS.

Do not write in the following table.

Q	Full Score
1	1
2	14
3	25
total	40

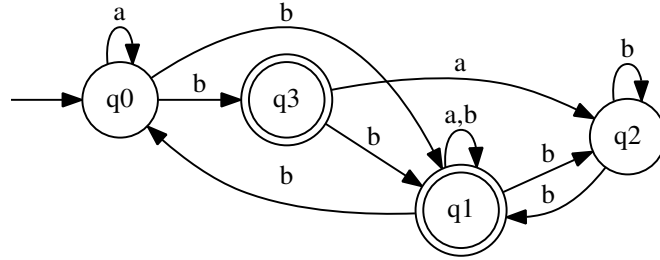
2. (14 pts.) Consider the finite state automaton whose *informal description* appears below:



- (a) Is it an NFA or a DFA? Explain briefly.
- (b) Provide a *formal description* of the automaton.
- (c) Trace the action of the automaton on the following inputs, and indicate whether each is accepted.
- aababba
 - bbbaaabaabb

[additional space for answering the earlier question]

3. (25 pts.) Generate a regular expression that is equivalent to the following finite-state automaton (from Q. 2). *Show enough intermediate results and include brief explanations* to make it clear that the method described in the textbook is being followed.



[additional space for answering the earlier question]

[additional space for answering the earlier question]