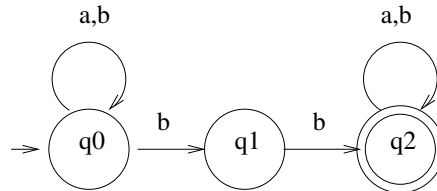The answers must be the original work of the author. While discussion with others is permitted and en-
couraged, the final work should be done individually. You are not allowed to work in groups. You
are allowed to build on the material supplied in the class. Any other source must be specified clearly.

1. *(10+20 points)* Let M_1 be the following NFA:

(a) Give the transition function t for M_1 in tabular form.

(b) Use algorithm 5.6.3 to construct a state diagram of a DFA that is equivalent to M_1.
Give the transition function and draw the state diagram of the equivalent DFA.

2. *(10+20 points)* Let M_2 be the following NFA-λ:
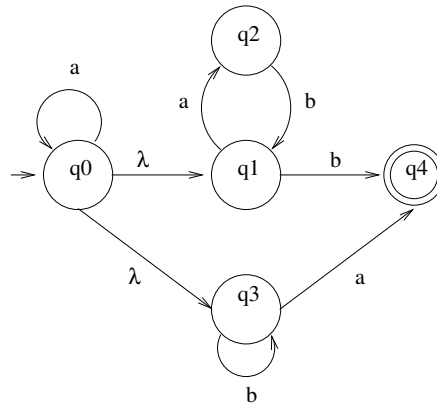
(a) Give the transition function t for M_2 in tabular form. Include a column for the
λ-closure of each state.

(b) Use algorithm 5.6.3 to construct a state diagram of a DFA that is equivalent to M_2.
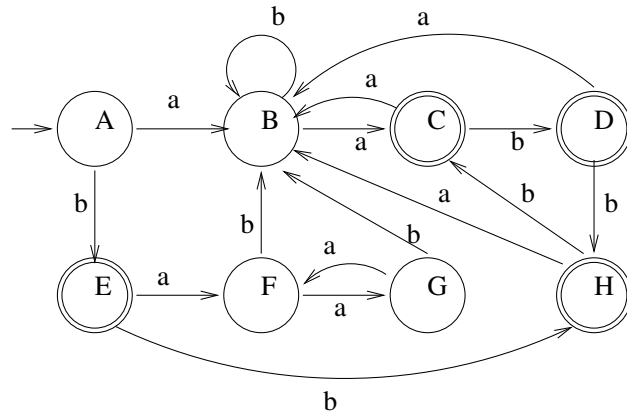Give the transition function and draw the state diagram of the equivalent DFA.

Please turn the page over.

3. *(20+20 points)* Consider the DFA below.

(a) Construct a two dimensional table where the row and column headers are the states of the above DFA. Mark each cell with a '1' (or a higher number representing the iteration number) if the states are "different." Unmarked cells will represent indistinguishable states.

(b) Construct a minimized DFA by collapsing (groups of) indistinguishable states into single states.