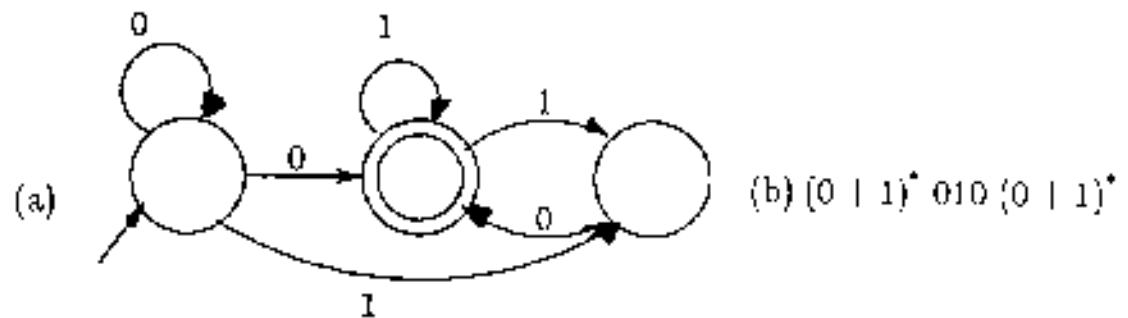


1 [10] Give the deterministic FSA for each of the following:



2 [10]. Give a regular grammar for each FSA from question 1 above.

3. Consider the following grammar G:

$$\begin{array}{lcl} S & \rightarrow & Xa \mid Yb \mid bXb \\ X & \rightarrow & c \\ Y & \rightarrow & c \end{array}$$

- (a) [8]. Is G LL(1)? If so give tables, if not show why.
 (b) [8]. Is G LR(0)? If so give tables, if not show why.
 (c) [8]. Is G SLR(1)? If so give tables, if not show why.
 (d) [8]. Is G LR(1)? If so give tables, if not show why.
 (e) [8]. Is G LALR(1)? If so give tables, if not show why.

4 [32]. For each of following, state whether the statement is true or false and prove your answer:

- (a) A grammar which is LR(0) must generate a regular set.
 (b) A grammar which is LL(0) must generate a regular set. (Hint: Write down what you think the definition of LL(0) is and then see how such an LL(0) parser should work.)
 (c) An ambiguous grammar cannot be LL(1).
 (d) If a grammar is LALR(1), it must be LR(1).

5 [8]. Answer the following about postfix:

- (a) Give the postfix for the expression: $(a^*b) (c-d)^*e$
 (b) Give the postfix for the expression: $-(a^*b) (c-d)^*e$.