1. Minimize the following DFA:

![Diagram of a DFA with states q0, q1, q2, q3, q4 and transitions for 0 and 1 inputs.]

Explain your steps.

2. Give an NFA that accepts the language

\[ L((a + b)^*b(a + bb)^*). \]

3. Construct a finite automaton that accepts the language generated by the regular grammar

\[ S \to aS, \]
\[ S \to bS, \]
\[ S \to aaa, \]

where \( S \) is the start variable.

4. Find a regular grammar for the language

\[ L = \{ w \in \{a, b\}^* | w \text{ does not end in } aa \}. \]