Given the circuit below find the following. Note that the binary number is represented by the output of the flip-flops with \( Q_1 \) being the LSB and \( Q_2 \) being the MSB.

1. Derive a state transition table
2. Make a timing diagram starting from the state \( Q_1=0 \) and \( Q_2=0 \) and complete at least 5 transition cycles. (Graph provided)
3. Make a state diagram.