

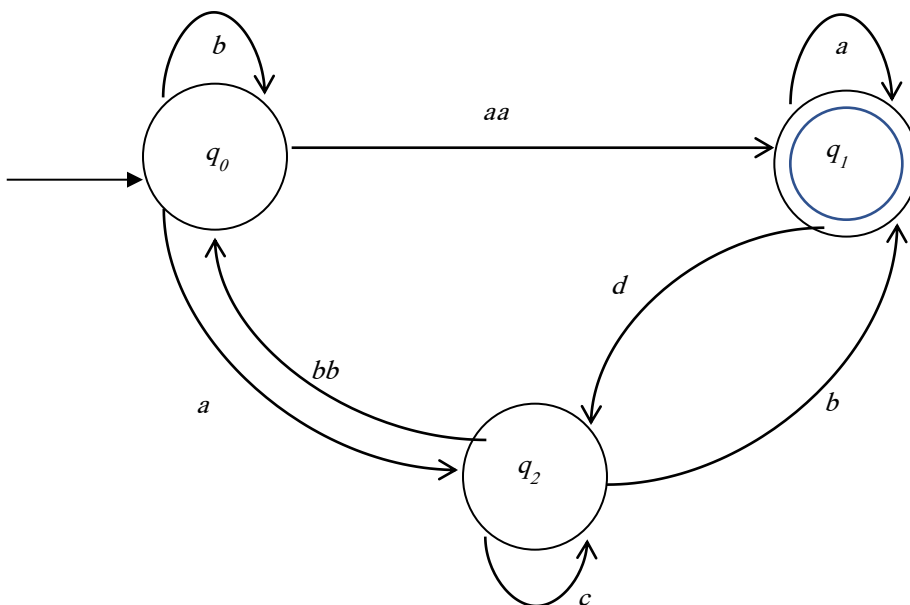
**1- Submit your solution as a single PDF file using Moodle.**

**2- Organization and Presentation worth 20% of the mark.**

**Q1.** Give an NFA that accepts the language  $L((a + b)^* b (a + bb)^*)$ .

**Q2.** Design a DFA that accepts the language  $L((abab)^* + (aaa^* + b)^*)$ .

**Q3.** Give a regular expression corresponding to the following GTG:



**Q4.** Construct a DFA that accepts the language generated by the grammar

$S \rightarrow abA \quad A \rightarrow baB \quad B \rightarrow aA \mid bb$

**Q5.** Find a regular grammar (right-linear) for the following NFA:

$M = (Q, \Sigma, q_0, \delta, F), \delta(q_0, a) = \{q_1, q_2\}, \delta(q_1, \lambda) = \{q_3\}, \delta(q_3, a) = \{q_2, q_3\},$

$\delta(q_2, b) = \{q_4\}, \delta(q_3, b) = \{q_5\}, \delta(q_4, \lambda) = \{q_5\}, \delta(q_4, a) = \{q_4\},$

$\delta(q_5, a) = \{q_5\}, F = \{q_3, q_5\}.$