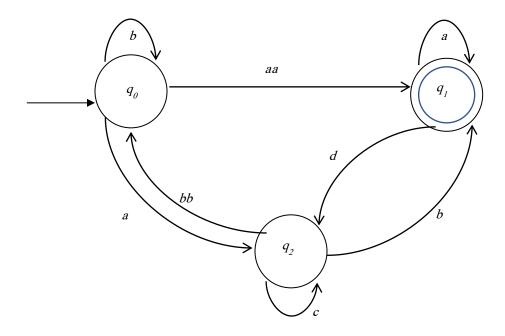
## **Computer Science Department**

## **Kuwait University**

Date: 4/4/2022 CS211 (Theory of Computation I)

DUE: April 12th HOMEWORK III (CO1)

- 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

$$S \rightarrow abA$$
  $A \rightarrow baB$   $B \rightarrow aA$  |  $bb$ 

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

$$\begin{split} M = (Q, \Sigma, q0, \delta, F), \ \delta(q0, a) &= \{q1, q2\}, \quad \delta(q1, \lambda) = \{q3\}, \delta(q3, a) = \{q2, q3\}, \\ \delta(q2, b) &= \{q4\}, \ \delta(q3, b) = \{q5\}, \ \delta(q4, \lambda) = \{q5\}, \ \delta(q4, a) = \{q4\}, \\ \delta(q5, a) &= \{q5\}, \ F = \{q3, q5\}. \end{split}$$