



Basic Part

Objective: The aim of this part is to check student abilities to construct DFSA

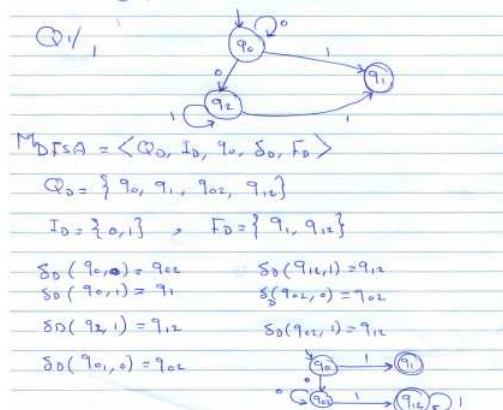
Q1/(8 marks)

Construct DFSA from the following NFSA:

$$M_{NFSA} = \langle \{q_0, q_1, q_2\}, \{0,1\}, q_0, \delta, \{q_1\} \rangle$$

Where transition function δ is given according to the following table:

state	input	
	0	1
q ₀	q ₀ , q ₂	q ₁
q ₁	-	-
q ₂	-	q ₁ , q ₂



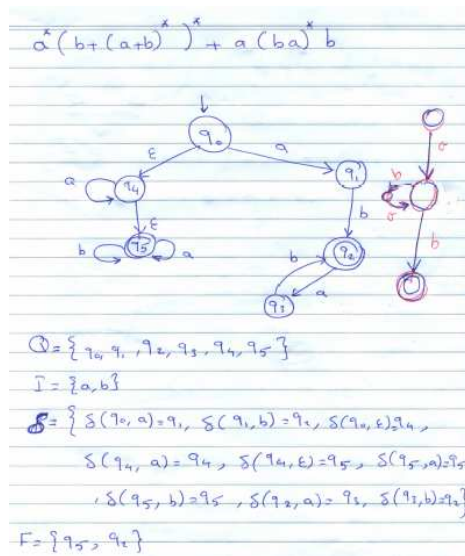
Familiar Part

Objective: The aim of this part is to check student abilities to construct NFSA from the regular language.

Q2/(5 marks)

Build NFSA machines that accept the following regular expressions:

$$a^* (b + (a+b)^*)^* + a(ba)^* b$$



Unfamiliar part

Objective: The aim of this part is to check student capabilities to build CFG from given CFL.

Q3: (7 marks)

Construct CFG for the following language:

$$L(G) = \left\{ A^n a^m B^k a^p \mid A \in \{1\}, B \in \{0\}, n = 2p, m = \frac{3}{2}k, n, m, p, k \geq 1 \right\}$$

