Muaaz Rajpul
Automata
Assignment 2

①

a)

start → S_0 — 0,1 → S_1
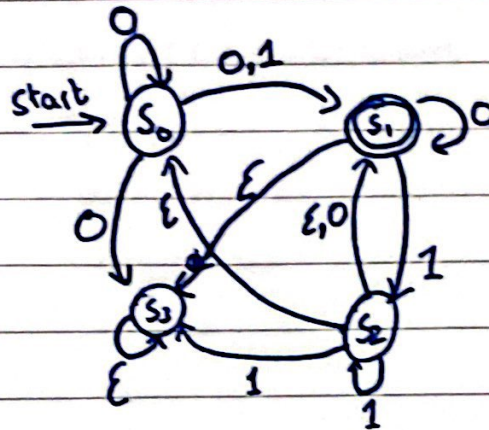
b) $N_2 = (\{Q_0, Q_1, Q_2, Q_3, Q_4\}, \{0,1\} \delta, Q_0, \{Q_3, Q_3\})$

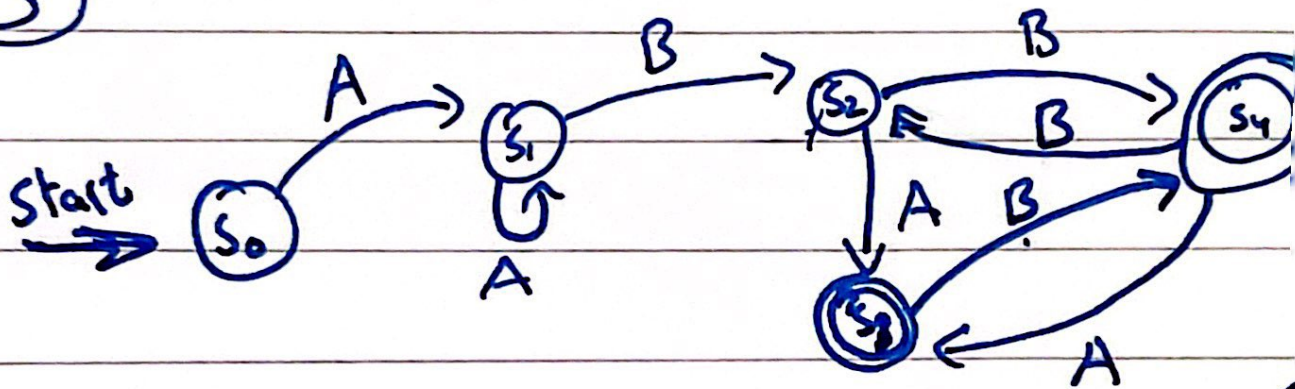| $\delta =$	0	1	ε
Q_0	Q_4	$\{Q_0, Q_1, Q_4\}$	$\{Q_1, Q_4\}$
Q_1	Q_2	Q_2	$\emptyset$
Q_2	Q_0	$\emptyset$	$\emptyset$
Q_3	Q_1	Q_1	Q_4
Q_4	$\{Q_1, Q_4\}$	Q_4	$\emptyset$

②

a) $L = \{w \mid$ starts with zero and ends with at least two 1's$\}$.

b) $L = \{w \mid w$ consists of only 'a' or ε inputs with an 'ab' at the end$\}$.

③

q)

start $\rightarrow$ S_0 $\xrightarrow{A}$ S_1 $\xrightarrow{B}$ S_2 $\xrightarrow{B}$ S_4

S_1 has self-loop A

$S_2 \xrightarrow{A} S_3$, $S_2 \xleftarrow{B} S_4$

$S_3 \xrightarrow{B} S_4$, $S_4 \xrightarrow{A} S_3$

	0	1
S_0	$\{S_0, S_1, S_2\}$	$\{S_1\}$
$\{S_0, S_1, S_2\}$	$\{S_0, S_1, S_2\}$	$\{S_0, S_1, S_2\}$
S_1	S_1	