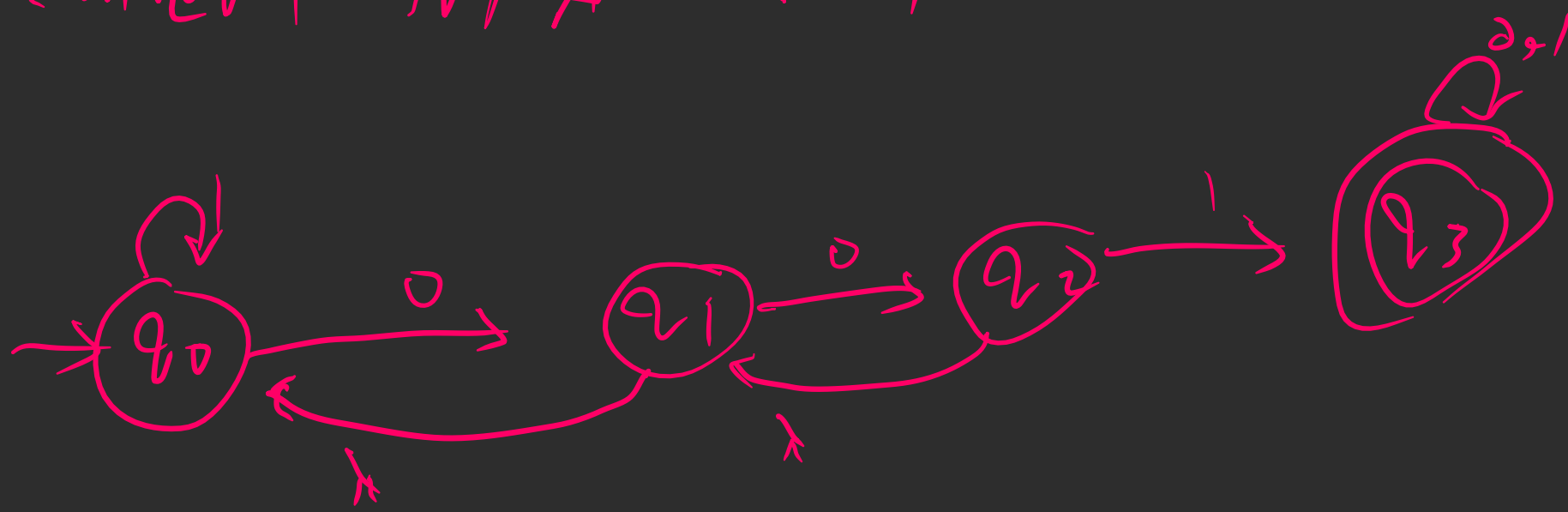


convert NFA \rightarrow DFA:



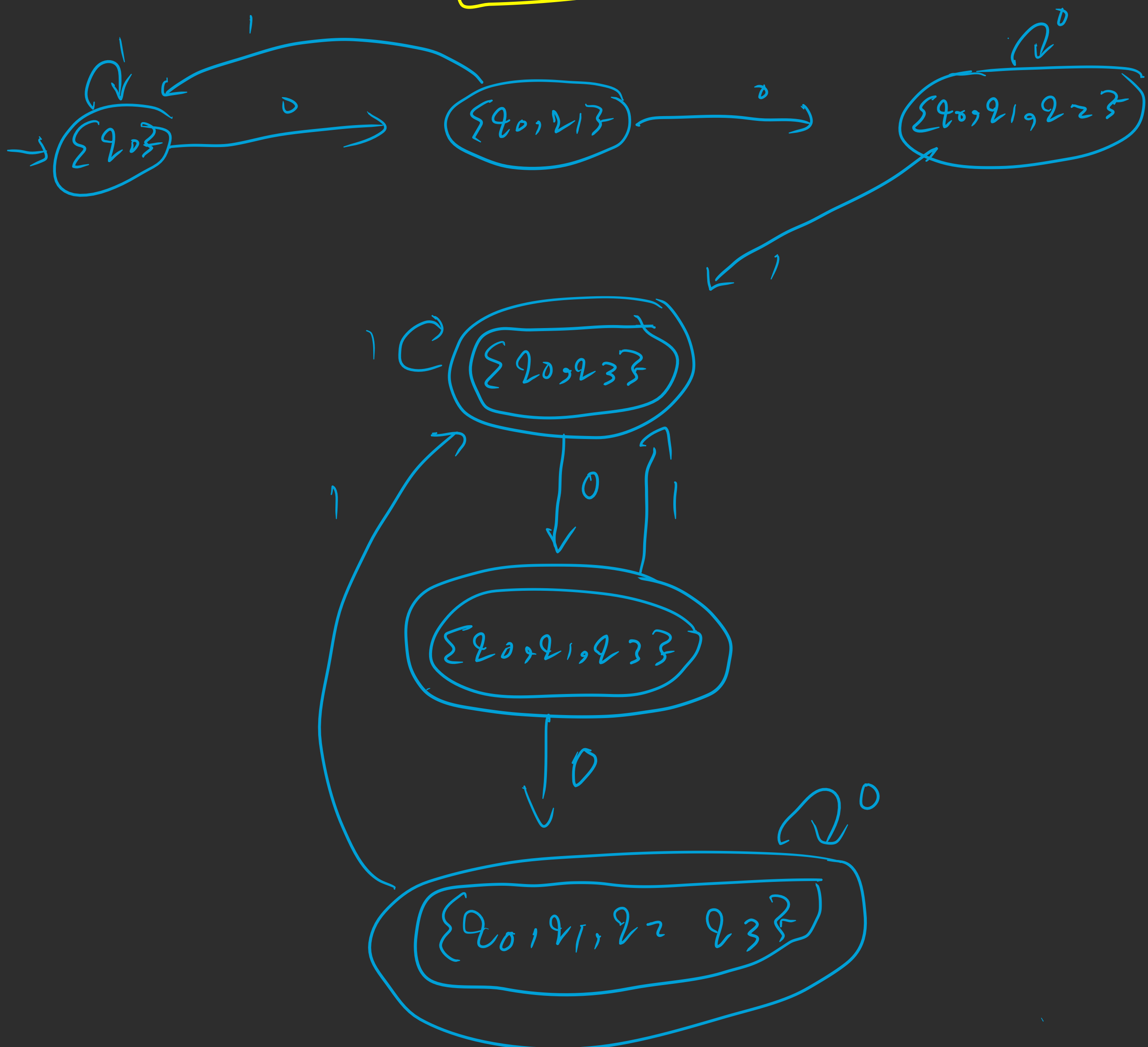
answer:

NFA δ :

State \ Σ	0	1
$\rightarrow q_0$	q_0, q_1	q_0
q_1	q_0, q_1, q_2	q_0
q_2	q_0, q_1, q_2	q_0, q_3
q_3	q_3	q_3

DFA δ :

State \ Σ	0	1
$\rightarrow \{q_0\}$	$\{q_0, q_1\}$	$\{q_0\}$
$\{q_0, q_1\}$	$\{q_0, q_1, q_2\}$	$\{q_0\}$
$\{q_0, q_1, q_2\}$	$\{q_0, q_1, q_2\}$	$\{q_0, q_3\}$
$\{q_0, q_3\}$	$\{q_0, q_1, q_3\}$	$\{q_0, q_3\}$
$\{q_0, q_1, q_3\}$	$\{q_0, q_1, q_2, q_3\}$	$\{q_0, q_3\}$
$\{q_0, q_1, q_2, q_3\}$	$\{q_0, q_1, q_2, q_3\}$	$\{q_0, q_3\}$



2 - give RE of the languages: $\Sigma = \{0, 1\}$

a) length atleast 2 and start and end with same symbol:

$$0\Sigma^*0 + 1\Sigma^*1$$

b) contain sub string 001:

$$\Sigma^*001\Sigma^*$$

c) w has even number of 1's ??

$$\text{where: } (0^*10^*10^*)^*$$