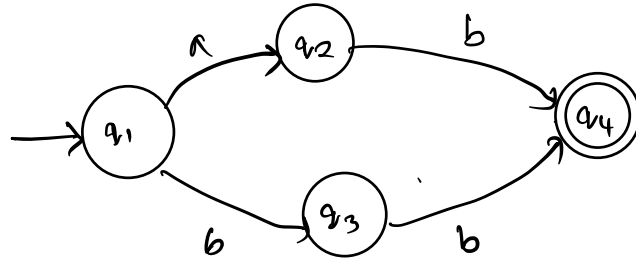$Q_1 =)$
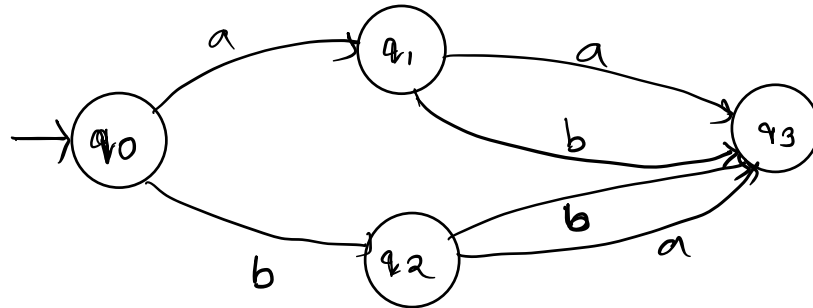
1)

$L = \{ab, bb\}$
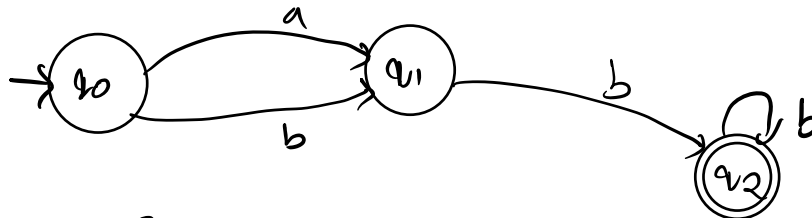

2) $L' = \{aa, ab, ba, bb\}$
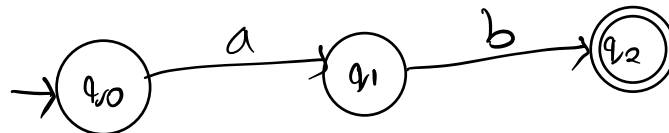

3) $L'' = \{ab, bb, abb, bbb, abbb, bbbb, \ldots\}$
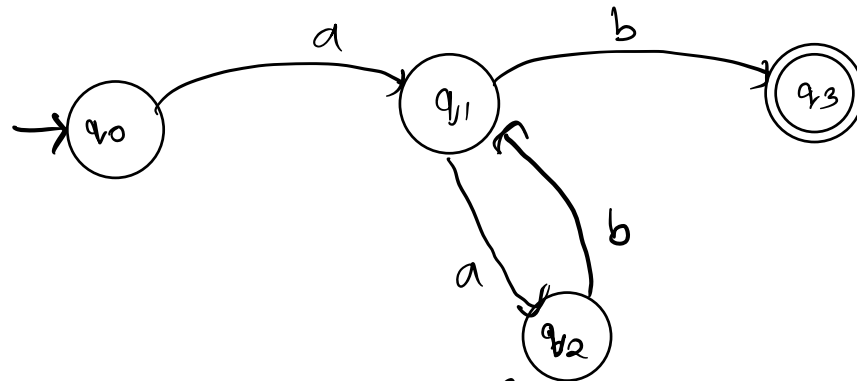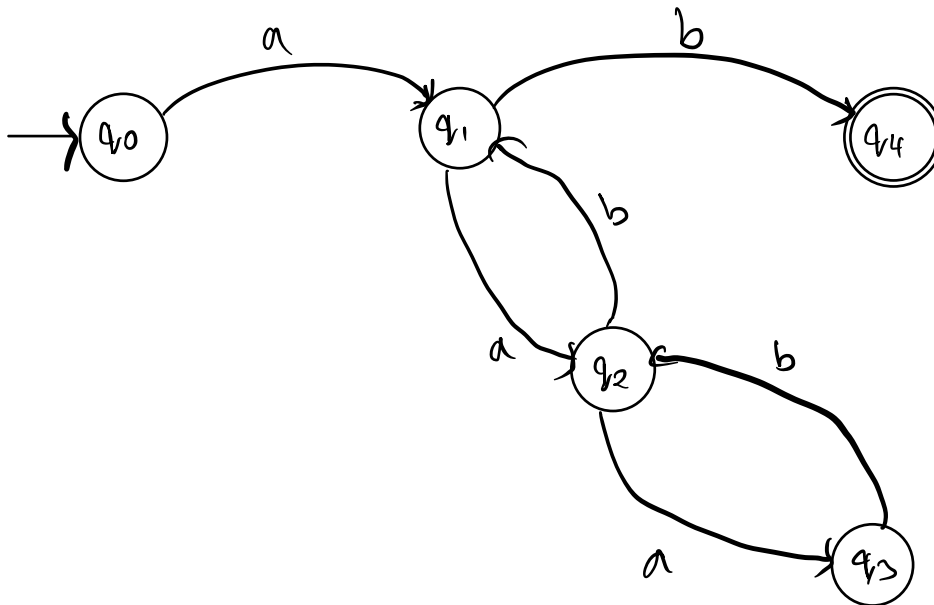
$\{ L'' = \{xb^i \mid x \in \{a,b\}, i>1\} \}$

4) $L_1 = \{ab\}$

5) $L_2 = \{ab, aabb\}$
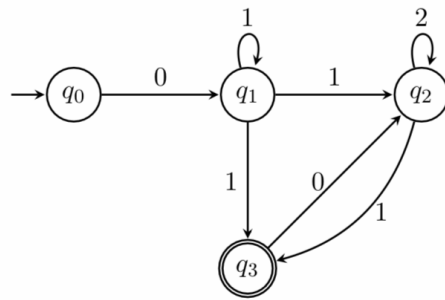

6) $L_3 = \{ab, aabb, aaabbb\}$

Q2) 1) B is non-deterministic because from q_1 using "1"
you can reach q_2, q_3 and q_1.

2)

2)

δ	0	1	2
q_0	$\{q_1\}$	$\emptyset$	$\emptyset$
q_1	$\emptyset$	$\{q_1, q_2, q_3\}$	$\emptyset$
q_2	$\emptyset$	$\{q_3\}$	$\{q_2\}$
q_3	$\{q_2\}$	$\emptyset$	$\emptyset$

Transistion

le

δ'	0	1	2
$\{q_0\}$	$\{q_1\}$	$\emptyset$	$\emptyset$
$\{q_1\}$	$\emptyset$	$\{q_1, q_2, q_3\}$	$\emptyset$
$\{q_1, q_2, q_3\}$	$\{q_2\}$	$\{q_3\}$	$\{q_2\}$
$\{q_2, q_3\}$	$\{q_2, q_3\}$	$\{q_3\}$	$\{q_2\}$

3)
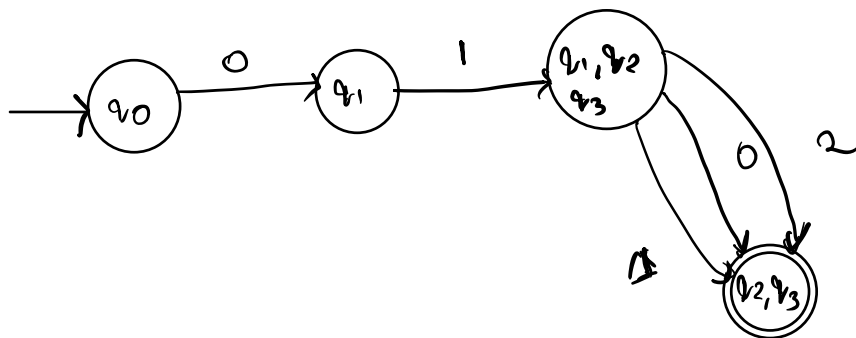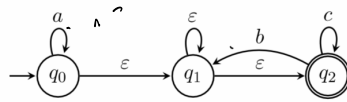
δ	a	b	c	ε	$\hat{c}$
q_0	$\{q_0\}$	$\emptyset$	$\emptyset$	$\{q_1\}$	$\{q_0, q_1, q_2\}$
q_1	$\emptyset$	$\emptyset$	$\emptyset$	$\{q_1, q_2\}$	$\{q_1, q_2\}$
q_2	$\emptyset$	$\{q_1\}$	$\{q_2\}$	$\emptyset$	$\{q_2\}$

δ'	a	b	c
q_0	$\{q_0\}$	$\{q_1\}$	$\{q_2\}$
q_1	$\emptyset$	$\{q_1\}$	$\{q_2\}$
q_2	$\emptyset$	$\{q_1\}$	$\{q_2\}$
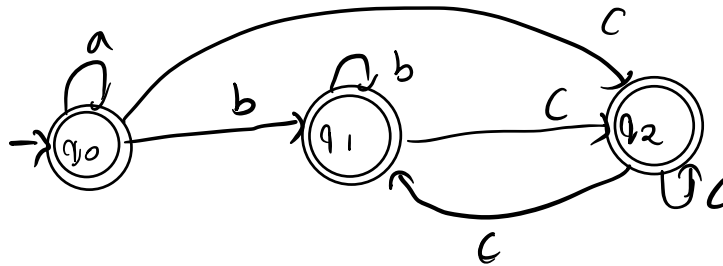
4)

```
23          alphabet = new String[]{"a","b","c"};
24          delta = new Transition[]{
25                  new Transition( f: 0, l: "a", t: 1),
26                  new Transition( f: 1, l: "b", t: 2),
27                  new Transition( f: 2, l: "b", t: 2),
28                  new Transition( f: 2, l: "c", t: 0),
29          };
30          finals = new int[]{0};
31          A2 = new FSA ( n: 3,alphabet,delta,finals);
32          // end of TODO part
33          System.out.println(A2);
34      }
35  }
36
```

```
n:  Question4 ×
/Library/Java/JavaVirtualMachines/jdk1.8.0_301.jdk/Contents/Home/bin/java ...
({a, b, c}, {q0, q1, q2}, {(q0,a,q1), (q1,b,q2), (q2,b,q2), (q2,c,q0)}, q0, {q0})

Process finished with exit code 0
```